STUDY OF COMPETENCES

SELECTED AREAS OF CREATIVE BUSINESS SECTOR

FINAL RESEARCH REPORT

Center for Evaluation and Analysis of Public Policies

Interdisciplinary Centre for Organizational Research and Development

Jagiellonian University

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SUMMARY

The report presents effects of research works carried out under the project: "Balance of competences" in the creative business sector. With regard to social, economic and promotional aspects of the sector, its development should be one of the most important components of the city development strategy.

For the purpose of the present report, it is assumed that the selected segments of the creative business sector are represented by entities engaging in developing, distribution and sale of computer games; production, post-production and distribution of films, video recordings, TV shows, sound and music recordings; management of websites; running web portals; and running advertising agencies. Due to inhomogeneous nature of the analysed segments of the creative business sector, detailed presentation of the study findings is broken down into two groups, both encompassing business entities and universities: active in the area of computer games, software, and advertising (in short: **creation**) and in the area of traditionally understood culture and creative work, namely film, music, journalism, design (in short: **culture**).

Within the framework of research works, and based on the analysis of job offers and in-depth interviews with opinion leaders and representatives of businesses, we identified more than 80 competences which – to a different degree – are important for the sector, these include specialist knowledge (16 competences), specialist skills (37 competences), business knowledge and skills (14 competences), soft skills (16 competences) and foreign languages and other requirements (17 competences). At the next stages of research work, quantitative analysis related to the demand for competences (40 sector companies employing more than 1500 employees in total), was compared with results related to the supply of competences (23 fields, more than 35 specialisations of studies, and 2000 students). The research method was considerably modified as compared to that used in 2012 and suits better the specific entities operating in the selected segments of the creative business sector.

The demand analysis shows information related to the most important competences sought by employers, including co-operation, integrity, commitment, English language, learning, analytical skills) as well as competences that will be demanded in a five-year perspective, including: game production environment, human-computer interaction, Knowledge of AGILE methodology in management, learning, analytical skills), along with the assessment of difficulties in acquiring these competences from the labour market. We also present key information related to the dynamics of employment in the sector, which – in case of the creative business sector – shows an increasing tendency. Most graduates now and in the five-year perspective will be offered employment on the basis of civil law contracts or self-employment. The report also contains information related to jobs/positions that are most frequently offered in recruitment processes .

The supply analysis shows information related to fields of studies the curricula of which, according to employers, offer the profile of education best fitting the needs of the sector. The analysis also presents the assessment of educational effects (or results) as seen by employers (the definitions of the competences were "translated" into educational effects). Competences

important for employers, are, inter alia, **analytical skills, learning, focus on development (or development orientation) and integrity**.

Co-operation between universities and the representatives of businesses in the selected segments of the creative business sector is gaining its momentum, although the co-operation, except in computer games area, may be said to be potential and informal rather than to have any systemic dimension.

Difficulties in acquiring competences are juxtaposed in the study with the achieved educational results. As regards majority of competences important for the creative business sector, **both companies and universities agree on their presence in syllabuses of university courses intended to prepare graduates to work in this specific sector**.

The strongest disagreement between business entities and universities concerning competences needed in the creative business sector is observed around **the sense of aesthetics, being concerned about quality, and ability to influence others**. Employers are of the view that these features are hard to find in graduates, while universities claim that they are being developed in the course of studying. There is much more agreement among universities as regards the competences related to **collaboration** and **project management**. In the culture segment, perception of the effectiveness of the supply of competences such as **collaboration**, **innovation,** and **initiative** is different in the case of universities and employers; the two groups agree more when it comes to **analytical skills** which are both hard to acquire and to a relatively little extent taught at universities.

The final part of the report presents conclusions derived from analyses along with proposed actions aimed at the development of universities and sector companies.

CONTENTS

BACKGROUND

In September 2012 the Study of Competences in BPO/SSC and ITO/IT in Kraków was published. In subsequent reports, while continuing our work and focus on the analysis of demand and supply in sectors of vital importance for the development of the city of Kraków, we are pleased to present the results of research work in the four sectors:

1. Passive houses and low-energy building sector
2. Power sector
3. **Selected segments of the creative sector**
4. Life science sector.

In reports focusing on each of the aforementioned sectors, we present the most important conclusions related to the demand of Kraków's companies for certain competences and the supply of such competences by Kraków's universities. The principal tasks that were assigned to the research team have not changed and are focused on a reply to key questions: what competences should possess graduates of Kraków's universities now and in the future, and to what extend the competences are taught at the universities. The reports also help to find an answer to the question: how businesses and universities perceive the role of the latter in teaching selected groups of competences and what consequences may have differences (if any) between those two perspectives. In the reports, interested Readers will also find information related to the state and development perspectives of and challenges faced by the sectors, as well as barriers related to cooperation between research institutions and businesses.

A large number of assumptions and guidelines related to the outcome presented herein are a result of research work carried out within the framework of the first edition of the study dedicated to the balance of competences. Accordingly, whenever it is possible or advisable, we will refer to materials previously developed and published. However, considering specific features of the sectors which are analysed in this year's reports an the necessity of adapting research methods, substantial changes have been made to the methods and described in details.

Conclusions presented in the reports were formulated on the basis of research questionnaires and several dozen interviews with sector experts and with the representatives of companies and universities. The subject matter of research was also a set of job offers and, to a lesser degree, documents related to university curricula of selected fields of university studies.

The project was commissioned by the Kraków City Hall and carried out in cooperation with the Centre for Evaluation and Analysis of Public Policies and the Interdisciplinary Centre for Organizational Research and Development at the Institute of Psychology of the Jagiellonian University. The execution of the project would not have been possible without the courtesy and professional assistance from the representatives of the Kraków City Hall, businesses and Kraków's universities. We would like to express our thanks to them, and declare that we, as the research teem, feel responsible for shortages and/or imperfections (if any) of the reports. Particular thanks are addressed to the following (in alphabetic order):

- Sector experts and persons who enabled us to understand the core of the operation of the said sectors in a broader context and submitted, often very critical remarks, which helped to

improve the quality of tools and definitions applied by us: Adam Biernat (Regional Labour Office), Paweł Błachno (Jagiellonian Innovation Centre), Zuzanna Drożdzak (Centre for Evaluation and Analysis of Public Policies of the Jagiellonian University), Joanna Homa (Department of Evolutionary Immunology of the Jagiellonian University), Paweł Jastrzębski (Małopolska Energy and Environment Agency), Stanisław Just (11 bit studios), Paweł Kołodziej (xtech.pl sector Internet service), Dawid Kurdziel, Maria Leńczuk (Regional Labour Office), Kazimierz Murzyn (Lifescience Cluster), Rafał Orlicki (Kraków Festival Office), Tomasz Pyszczek (Passive Architecture, Polish Institute of Passive and Low-Energy Building), Barbara Siorek (Career Office of the Academy of Fine Arts), Anna Szczucka (Centre for Evaluation and Analysis of Public Policies of the Jagiellonian University), Dariusz Szklarczyk (Centre for Evaluation and Analysis of Public Policies of the Jagiellonian University), Paweł Szlachta (INRET – Cluster of the Culture and Free Time Industries), Paweł Węgrzyn (Department of Games Technology of the Jagiellonian University), Michał Wojtulewicz (ASTOR), Ewelina Woźniak-Łyp (Creative Kraków Foundation), Katarzyna Wysocka (Kraków City Hall);

- representatives of companies[1]: 365 PR, Cieślik Studio L Advertising Agency, Espronet Advertising Agency, S4 Advertising Agency, Alternative Studio, Amistad, AnanaStar, balsamstudio, Berrylife, Brainnovative, CD Projekt RED, Comunicado brand APIO FILM, EDISONDA, Hand Made, HarmoniquePR, Imperia Film, Interform, IVISION.PL, Len Design, LPP, madwands media, Mediapixel, NetCenter Solution, NETFACE, Nano Games, Onet, Radio Kraków, Smultron, SoInteractive, Studio Mrówka, Studio Produkcyjne Nieustraszeni Łowcy Dźwięków, Trendmaker, Union Square Internet Development Polska, VML

- representatives of universities, linked with the sector: AGH University of Science and Technology (Faculty of Computer Science, Electronics and Telecommunications, Faculty of Non-ferrous metals, Applied IT, Faculty of Humanities), Academy of Music (Composition, Interpretation and Musical Eductation Faculty), Academy of Fine Arts (Faculty of Intermedia, Faculty of Interior Design, Faculty of Graphic Arts), Kraków University (Faculty of Management and Social Communication), Jagiellonian University (Faculty of Philosophy, Faculty of Polish Philology, Faculty of Mathematics and Computer Sciences, Faculty of Physics, Faculty of Astronomy and Applied Computer Science, Faculty of Management and Social Communication).

We intended to develop the reports in such manner that – on the one hand – each report could be used independently from the other reports by employers, universities, public authorities, students or graduates, and – on the other hand – could help to create a tool for effective communication platform between the aforementioned groups. As it was shown by the discussion on the results of our previous research works, such a project, commissioned by the Kraków City Hall and unique in the country scale, may easily fulfil the aforementioned tasks.

[1] The list of companies covers only these entities that permitted their names to be published in the report. The list covers all universities and business institutions that filled up the research questionnaire, either in the whole, or in part, or participated in in-depth interviews.

RESEARCH TEAM

Leading experts:

Prof. Jarosław Górniak, PhD., [prof. dr hab.], dean of the Faculty of Philosophy of the Jagiellonian University, director of Centre for Evaluation and Analysis of Public Policies, director of Department of the Sociology of Economy, Education and Research Methods at Institute of Sociology of the Jagiellonian University. A sociologist and an economist, an expert in social research methods and data analysis, evaluation methodology and analysis of public policies as well as the sociology of economy and organisation. Scientific patron of the systemic research project "Study of Human Capital in Poland" (BKL) and previously – director of multiple research projects and author of studies on the labour market and public policies. A member of the Consulting Council at the Presidium of Kraków.

Prof. Małgorzata Kossowska, PhD, [prof. dr hab.], deputy dean for educational issues at the Faculty of Philosophy of the Jagiellonian University, director of the Social Psychology Unit, president of the Polish Society of Social Psychology (2008-2011 and 2011-2013), President of the Management of the Interdisciplinary Centre for Organizational Research and Development at the Institute of Psychology of the Jagiellonian University (ICBRO). She conducts research connected with issues such as: individual differences, political approaches and beliefs, conditions for political beliefs, cognitive rigidity. Holder of multiple prestigious prizes and distinctions. Author of numerous books and articles.

Team members

Piotr Prokopowicz, holder of PhD title in liberal arts and sciences, graduate of sociology and psychology at the Jagiellonian University. Assistant of deputy dean for development at the Jagiellonian University, associate researcher at the Center for Evaluation and Analysis of Public Policies at the Jagiellonian University. Co-worker and lecturer at Cologne Business School and Jagiellonian University, Visiting Fellow at Saint Mary's University in Halifax. Specialist in organisation of research and data analysis. When working as a consultant for Great Place to Work Institute Europe in Copenhagen, he took part in preparing the list of 100 best employers in Europe and South America. Author and editor of many studies, books and articles about sociology and psychology of management.

Grzegorz Żmuda, psychologist and sociologist, Managing director, ICBRO, manager of a specialization path in organisational psychology at the Institute of Psychology of the Jagiellonian University. He specializes in psychology of management and organisation, in particular in psychological organisational diagnostics, participatory management and psychology of personnel. He is also working on creating innovative tools for organisational development. He is working on his PhD thesis concerning the preferences of management styles among the young entrepreneurs, he is the author of multiple publications and presentations about organisational psychology.

Katarzyna Jaśko, holder of a PhD title in liberal arts and sciences, a psychologist. She specializes in social and political psychology. She is working on the conditionality of beliefs about justice, in particular in the context of inter-group relations. She is also interested in psychology of purposes and motivation as well as in creativity. Author of multiple articles about motivation through compensation.

Joanna Pyrkosz, psychologist, managing director, ICBRO, manager of a specialization path in organisational psychology at the Institute of Psychology of the Jagiellonian University. She specializes in psychology of management and organisation, in particular in psychology of entrepreneurship and project management. Author and coordinator of many development projects for the University, with the support of the European Funds. She is working on her PhD thesis concerning the impact of motivation factors of young entrepreneurs on their professional success. She holds a British certificate NVQ 3 issued to vocational counsellors.

Karolina Dukała, psychologist, a PhD student at Social Psychology Unit of the Institute of Psychology at the Jagiellonian University. She specializes in psychology of hearing and lies. Certified trainer in group training; leads training sessions mainly in personal development and application of soft skills in business, with particular focus on negotiations. President of the Jagiellonian University Society of PhD Students, engaged in the promotion of science and arts and involved in the development of a platform for co-operation between businessmen and Jagiellonian University scholars.

Bartłomiej Baryła, sociologist. He specializes in social psychology and behavioural economics, paying particular attention to the areas at the junction of psychology, sociology and economics. A scholarship holder of Central European University in Hungary and Antioch College in USA.

Maciej Taraday, psychologist, PhD student at the Experimental Psychology Unit of the Jagiellonian University. He participates in the PhD research project on educational measurement. Fields of interest: relationship between working memory and human intelligence, cognitive control, methodology of research and statistics. He is a holder of many awards and fellowships. He specialises in statistical analysis using R, SPP, STATISTICA and AMOS programming environment.

Marianna Król, psychologist, a PhD student at Social Psychology Unit of the Institute of Psychology at the Jagiellonian University. As a coach and a trainer she specializes in holding development programmes for companies and organisations, which include trainings in soft skills necessary for effective acting in a complex business environment and individual coaching sessions focused on increasing efficiency and motivation among the employees.

KEY UNDERLYING ASSUMPTIONS

Adapting the educational offer to the needs of the labour market continues to be one of the main topics of discussions concerning university education development directions, technology transfer and mutual relations between business and educational institutions. As the topic gets more and more exposed, the risk that the problem will be oversimplified or generalised gets increasing, which obstructs cooperation instead of making it easier. One of the main goals of research works carried out within the framework of the balance of competences is to demythologise the problem of intellectual capital transfer from universities to business. Another goal is to create an objective description of expectations and perspectives adopted in the perception of the process of educating students.

The starting point for the study of competences are the needs of Kraków's businesses. It does not mean that the needs should be the only one factor defining the quality and nature of educational programmes. In this context, we want to emphasise clearly what we wrote in the previous report, i.e. that our views are far from sharing quite a common belief that universities must adapt their educational offer to the labour market regardless of what the market looks like. A view that problems related to cooperation between universities and business arise only from employers not being ready or being unable to use the potential offered by universities, in our opinion, cannot be upheld, either. Our goal is to present a perspective that will enable the main stakeholders – students, universities, employers and public authorities – to get to know better the relationships between demand for and supply of certain competences, and to develop solutions which will serve each of the interested milieus.

One of the already diagnosed problems related to cooperation between universities and businesses lies in that there is no common language and notions suitable for the description of human resources. There are several factors indicating that the said barrier will diminish when the guidelines provided by the National Qualification Framework (Krajowe Ramy Kwalifikacji) are implemented more efficiently by the universities and the educational effects are used in a more professional manner. A detailed discussion of the problem is presented in last year's study[2], while this time we present only key information related to the meaning of core definitions.

In this report, as in that of the previous year, we define "competence" as: "a set of behaviours belonging to a common category, enabling effective realization of the purposes in an organisation and the tasks at the given position, determined by various psychological factors."

In this understanding, competences constitute sets of behaviours connected with characteristics expected at the given position. The following list includes the categories of factors, identified in the demand analysis:

- Knowledge – information acquired during learning process (e.g. knowledge related to heat circulation in buildings, graphic composition, etc.)

[2] Balance of competences in BPO and ITO in Kraków. http://www.krakow.pl/zalacznik/1165 Chapter: The premises behind the study of competences

- Skills – learnt actions within a given area (e.g. operation of MS Office, a foreign language, but also communication and social skills, etc.)
- Abilities – inborn predispositions within a given area (e.g. analytic abilities)
- Other – the qualities that cannot be attributed to the aforementioned categories (e.g. mobility, integrity, etc.)

In order to make the discourse clearer and simple, further in this study, the term "competence" will be used collectively to denote their behavioural manifestations in the aforementioned categories. This approach is compliant with both: the Polish research tradition and the commonly accepted international convention.

Competences, which constitute one of the key notions in businesses, find their counterpart at the universities in the notion of educational effects. Kraśniewski[3] says that the essence of educational effect may be found simply in "a statement (–) what the learner should know, understand and be able to do after a certain period (process) of education." In Poland, educational effects are often classified in three categories: **knowledge, skills and social competences**. However, these categories often overlap. Within the framework of our study we made a simplifying translation of expectations related to competences into the code of educational effects. As in the previous study, we decided to use a general catalogue of effects so that they may be easily specified in details and adapted to specific fields of study.

RESEARCH METHOD

The research method applied for the purpose of this report has been considerably modified as compared to research related to BPO/SSC and ITO/IT sectors. The factors which made the modifications necessary, provide, as such, important information related to the analysed sectors and deserve to be briefly described here.

The first important factor is related to the technique of defining a sector. In case of four sectors analysed in this year's study, there occurred more substantial differences in opinions as to the criteria for the classification of a business to a given sector. In order to meet the challenge, in-depth also interviews with persons related to each sector were additionally incorporated into the preparatory phase of the study. The interviews allowed, inter alia, to additionally precise definitions previously adopted and to identify companies and specialisations of university studies of vital importance to the sector. Exceptionally important remarks were provided by the Regional Labour Office. Another challenge that we faced was related to the defragmentation of the sectors analysed in this year's study, as compared to the BPO/SSC or ITO/IT sectors. Of course, there are large companies in each sector, but most businesses may be classified into small and medium enterprises (SME). This fact made it impossible to cover the whole population of the representatives of the analysed sectors.

[3] Cf: : A. Kraśniewski (2011). Jak przygotować programy kształcenia zgodnie z wymaganiami Krajowych Ram Kwalifikacji dla Szkolnictwa Wyższego. [How to prepare curricula in compliance with the requirements of the National Qualification Framework for Universities.] Warszawa: MNiSW; E. Chmielecka (2010). Autonomia programowa uczelni. [Curriculum autonomy of universities] Ramy kwalifikacji dla szkolnictwa wyższego. [Qualification framework for universities] Warszawa: MNiSW; Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dn. 02.11.2011 w sprawie Krajowych Ram Kwalifikacji dla Szkolnictwa Wyższego [On the National Qualification Framework for Universities]

With view to the budget of and the number of personnel engaged in the project, the whole set of companies employing more than 9 employees, engaged in activities selected according to the Polish Classification of Economic Activities (PKD) was included into the survey pool, except the sectors of passive and low-energy building and some PKD segments of the other sectors where PKD does not provide sufficient information on the profile of activities and its application appears impracticable. The pool was extended by a target sample from micro-enterprises , following recommendations of experts from a given sector and based on activities in the business space (participation in fairs and sector events, high recognition of the company). Although such approach directly implies that the overall assessment of the size of employment in a given sector (no random sample available) is impossible, it helped to improve the evaluation of market trends and anticipated dynamics of the demand for competences.

The previous report was criticised for the importance of specialist "hard" competences having been underestimated in it, whilst soft competences were given too much focus. As it occurred later, such distribution of results was, to a considerable degree, caused by the specific features of outsourcing sectors and by the employers focusing mostly on the importance of competences missing in their sectors. In the event of all the sectors analysed in this year's study, exactly the same relationship was observed at the initial stage of research, save that the phenomenon was manifested to a smaller degree in the life science and in the passive and low-energy building sectors. The representatives of companies and experts attached the highest weight to soft competences and ability to use acquired knowledge in practice. In regard of the foregoing, the subject of the analysis was extended by job offers from the whole country, combined with the classification and categorisation of information on specialist knowledge and skills specific for the sector and/or jobs offered to university graduates (with maximum 1 year of experience).

The extension of the initial list of competences required that the research tools had to be modified so that their use would be less time-consuming. The time needed by the participants to take part in the project had to be reduced also with view to the relatively low interest of companies in the participation in the project, which fact was identified at the initial stage of the project. While the last year's research scheme provided that the supply questionnaire required 1.5h to 2h to be filled in, depending on the profile of the company, the time needed to fill-in this year's questionnaire required 30 minutes or 1 h, although the number of assessed competences was greater.

Within the framework of the research work, we decided that the analysis of demand for competences should be carried out at a more general level (in abstraction from specific jobs/positions). There were three reasons for such decision. Interviews with experts and employers indicated that the development of the Strategic Human Resource Management (SHRM) considerably varies from one company to another. We also noted a trend that there were no schemes for the creation of jobs/positions (defined as employment under labour contracts) and that the cooperation under another legal scheme (under civil law contracts, for instance) appeared more important and prevailing, which phenomena occurred quite common (particularly in the creative sector and in the passive and low-energy sector) and depends on the nature of actually performed projects. Entities subject to the study quite often indicated that their seeking of employees and collaborators depended on the winning (or failing to win) a certain project. With regard to the foregoing, the companies, although being capable of indicating clearly what competences are important for them now and will such in the future,

cannot or are reluctant to give a reply to the question how many employees and at which positions they will employ in a longer perspective of time.

All modifications adopted in our approach were also reflected in the tools applied for the purpose of the analysis of supply from Kraków's universities. The tools are presented in the appendix to this report. To summarise the foregoing, the research work consisted of the following steps:

1. **Initial phase**

    a. In-depth interviews with experts and persons related to a given sector and consultations with the Kraków City Hall and the Regional Labour Office, Kraków, purported to define more precisely the notion of a sector, as well as to recognise the context in which a given sector operates and, identify key players (on the part of businesses and universities). At the initial phase ca. 10 interviews and consultations were carried out in regard of each sector.

    b. The desk research of the sector and the analysis of job offers, purported mainly to identify key challenges faced by the sector, and to develop an initial list of competences sought by employers.

2. **Analysis of the demand for competences**

    a. In-depth interviews with the representatives of selected companies, which gave insight into the sector experience related to recruitment procedures, selection and development of employees, as well as the assessment and completion of the list of competences sought (competence demand questionnaire).

    b. The development and testing of the competence demand questionnaire as a research tool.

    c. The development of the pool of companies, based on PKD items related to the creative business sector, desk research analysis as well as guidelines provided by experts and companies. The initial list of companies invited to the research work counted 271 entities. After the list had been reviewed, in the course of which certain entities were removed from the list where they no longer existed, had moved their activities to other towns, or no longer carried out activities related to a given sector, or where they had declared that in the next five years they would not employ university graduates, the base survey sample counted 182 items.

    d. Survey of sector companies with the use of questionnaires, which allowed to collect quantitative data on current and projected market requirements concerning the most important competences of the graduates of Kraków's universities, and to assess difficulties in acquiring such competences along with opinions on the responsibilities of universities for teaching the said competences. In addition, we collected information related to employment schemes (for 2014 and 2019), as well as information on competences required of graduates in order to get promoted in their companies, fields and specialisations of university studies the profiles of which, in the opinion of companies, fitted best the profile of their businesses (in the creative business sector, the survey covered 40 companies in total, each employing more

than 1500 employees, which makes 22% of the survey sample realization; 20% of companies definitely refused to participate in the survey, whilst others declared their being ready to participated, but eventually failed to fill-in the questionnaires).

3. **Analysis of the supply of competences**

   a. The development and testing of the competence supply questionnaire as a research tool.

   b. The development of a survey sample for research of the fields and specialisations of university study (based – in the creative business sector – on information provided by desk research analysis, guidelines provided by experts and companies, the initial list of field study invited to participate in the research work – total: 52)

   c. Structured interviews combined with filling in the supply questionnaire, purported to obtain quantitative data on currently achieved educational effects and projections of the number of future graduates, as well as to get insight into the context in which the field of study exists, challenges related to cooperation with businesses and expectations from companies and the Kraków City Hall.

   d. Questionnaire on-line survey of the representatives of universities responsible for the profiles of the curricula of studies. The main purpose was to collect quantitative information on currently achieved educational effects and on projections of the number of future graduates. In addition, we collected information on additional educational effects that may be of significance to the sector and that are achieved at a given field of study. For the purpose of the creative business sector survey, the questionnaire was filled up by the representatives of 23 fields of studies (out of the total of more than 35, including post-graduate studies), currently attended by almost 2000 students of full-time courses and other forms of studying, which makes 44% of the sample realisation.

SECTOR DEFINITION

The creative business sector is comprised of companies delivering products or services, which – to a considerable degree – are characterised by originality of the content and significant contribution of talents, skills, and creativity of the authors. In the broadest possible sense, creative business is a foundation of culture sector, comprising both traditionally understood high culture (museums, theatres, operas, philharmonic orchestras, galleries, etc.) and mass culture, including film, graphic arts, music or popular literature[4]. A narrower definition describes the **creative business as a sector generating value through creating intellectual property rights and using cultural assets to create non-cultural products (design, graphic arts, advertising)**. Based on the Polish Classification of Activities (PKD)[5], entities belonging to this sector include: 63.12.Z Operation of websites, 73.11.Z Advertising agencies, 58.21.Z

[4] Lewandowski, P., Mućk, J., i Skrok, Ł. (2010). Znaczenie gospodarcze sektora kultury. Wstęp do analizy problemu. Raport końcowy. [Economic Significance of Culture Sector. Introduction to the Problem Analysis. Final Report] Instytut Badań Strukturalnych. Warsaw

[5] In some cases, PKD codes do not enable adequate identification of entities belonging to a given sector, as the list of codes is not exhaustive and companies operating in a given area may report other activities as their core business. In such cases, identification of companies belonging to the sector was based on opinions of experts, other companies operating in the sector, and desk research of sector-related web portals and sites.

Publishing of computer games, 59.20.Z Sound recording and music publishing activities, 62.01.Z Computer programming activities, 74.10.Z Specialised design activities, 59.11.Z Motion picture, video and television programme production activities.

Due to numerous problems with defining the sector, pointed out by experts[6], **analysed for the purpose of the present report are selected segments of the creative business sector, in particular connected with:**

- **developing, distribution, and sale of computer games;**
- **production, post-production, and distribution of films, video recordings, TV shows, sound and music recordings;**
- **managing web sites;**
- **running web portals;**
- **running advertising agencies.**

Due to inhomogeneous nature of the analysed segments of creative business sector, detailed presentation of the study findings is broken down into two groups, both encompassing business entities and universities:

1) active in the area of computer games, software, and creative work for the purpose of advertising (in short: **creation**)

2) active in the area of traditionally understood culture and creative work, namely film, music, journalism, design (in short: **culture**)

[6] The picture of the market obtained through the application of PKD criteria to identify entities active in the creative business sector is inadequate – when the broadest possible definition is used, the result is 50 000 of such entities operating in Małopolska alone. According to experts providing their opinions for the purpose of the present report, majority of the enterprises satisfying the formal criteria to be classified as creative business entities do not engage in any activity in this area.

BASIC INFORMATION ABOUT THE SECTOR[7]

The creative business sector is a driving force of economic development in countries which undergo deep de-industrialisation processes[8]. In 2006, six and a half million people in Europe were employed in the cultural and creative industries, with the highest concentration of jobs in the sector in the richest European regions[9].

Employment in the creative business is not as much adversely affected by the process of automation and mechanisation, like simple manual work; therefore, the expected employment growth in this sector is significantly higher than in agriculture, industry, or trade. In the highly-developed countries, creative business grows much faster than other economy sectors[10], which results in the growing number of jobs for the best educated employees. **This is particularly tempting for Kraków with huge population of young university graduates who, thanks to the expected growth, will be able to finds jobs in this fast-developing market.**

Compared to the rest of Europe, Poland is rather below average as regards the level of employment in the creative business and of revenues generated by this sector. This is mainly due to historical reasons which slowed down the process of de-industrialisation in Poland and to the emergence of new post-materialistic values[11]. As regards employment in culture and creative business sectors, Poland is ranked third but last in the European Union[12], with the total employment in the sector in whole Poland equalling approximately 300 000 jobs, which is comparable to that in Paris, London, or Berlin. Although, presently the only important segment in this sector in Poland are museums (Małopolska stands out against other regions here, with approx. 1.2% of labour force employed in museums), **given the trajectory of growth of the sector's importance in Western Europe, it can be assumed that in the coming years creative business will grow in importance also in Poland.**

Kraków is commonly perceived as the most important culture centre in Poland and rather important centre in Europe, thus enjoying a competitive advantage over other Polish cities. Thanks to its strong position, Kraków was the first country in Central and Eastern Europe to enjoy the status of the European City of Culture (2000). In order to retain and strengthen its position, the creative business sector has been included among the most important sectors in the Kraków development strategy. One of the objectives of the 2010-2014 Kraków Cultural Development Strategy is to make Kraków a "creative city", attracting artists and creating conditions for their development. Similar goals are set by the Małopolska Region in the 2011-

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7 This chapter is based on desk research of documents and publications concerning the sector and on the information obtained from interviews with experts and with representatives of business entities and universities.

8 Florida, R. (2002), The rise of the creative class. Ulatowska, R., Grawon, A., Klimas-Kuchta, E., Małkiewicz, E., Materska-Samek, M., Potoczny, J. (2012). Innowacje i nowe technologie przemysłów kreatywnych. Perspektywy rozwoju rynku audiowizualnego w Małopolsce. [Innovation and New Technologies in Creative Business. Audiovisual Market Development Perspectives in Małopolska]. Fundacja Rozwoju Kina. Kraków.

9 Power, D., Nielsén, T. (2010, March). Priority Sector Report: Creative and Cultural Industries.

10 Marcus, C.(2005, April). Future of Creative Industries. Implications for Research Policy. Foresight Working Documents Series of the European Commission. http://ec.europa.eu/research/social-sciences/pdf/future-of-creative-industries_en.pdf

11 Inglehart, R. (1977). The Silent Revolution. Changing Values and Political Styles among Western Publics. Princeton.

12 Power, D., Nielsén, T. (2010, March). Priority Sector Report: Creative and Cultural Industries.

2020 Małopolska Regional Development Strategy[13] where active promotion of Małopolska as a region of knowledge and creativity is proposed. **This requires support for companies offering jobs in this sector and incentives for entrepreneurs and investors looking for locations for their investment projects.**

SECTOR CONDITION IN KRAKÓW

The creative business sector in Kraków is represented by almost every type of activity, starting from advertising, design and artistic agencies to film industry and companies providing auxiliary services to film studios. **A feature characteristic for the sector is its huge dispersion, predominance of small and medium enterprises, and interrelations among entities, resulting from collaboration on projects exceeding capabilities of a single firm.** Although none of the entities operating on the local market is a world or at least European leader, Kraków hosts numerous various supra-regional meetings and festivals. This is mainly consequent upon its cultural diversity and its unique urban arrangement within Planty, preserved in the original forms since medieval times and entered in the UNESCO's list of world's cultural heritage. Kraków is often mentioned as one of the most prominent sites on the cultural and tourist map of Europe, along with such cities as Prague, Budapest, or Berlin[14]. Being a recognisable city, Kraków can attract famous people more easily and organise international events, both when it comes to artistic festivals and trade fairs or conferences.

Thanks to many cultural events, creative business sector is well visible in Kraków. Krakowskie Biuro Festiwalowe [Kraków Festival Bureau] is the most active player on the local market of organisation of cultural events, preparing a large number all-Poland and international events. Taking into account initiatives of other local government entities as well as private persons and companies, Kraków may be considered an important European festival centre. Every year Kraków hosts over 100 festivals, including: Festiwal Kultury Żydowskiej [Jewish Culture Festival], Krakowskie Zaduszki Jazzowe [Kraków All Jazz Soul's Day] , Krakowski Festiwal Filmowy [Kraków Film Festival], Międzynarodowy Festiwal "Muzyka w Starym Krakowie" [Music in Old Kraków International Festival], Międzynarodowe Triennale Grafiki [International Triennale of Graphics], Festiwal Teatrów Ulicznych [Festival of Street Theatres], Sacrum Profanum, Misteria Paschalia, Festiwal Muzyki Polskiej [Polish Music Festival], Festiwal Muzyki Filmowej [Film Music Festival], Conrad Festival, and many other. This group of renowned events has been lately joined by the European Game Festival Digital Dragons.

One of the strengths of the creative business sector in Kraków is the film industry – the region's resources in this respect are characterised by full complementarity. Festivals, film societies (DKF), and numerous educational institutions teaching audio-visual arts are supplemented by Regionalny Fundusz Filmowy [Regional Film Fund] and Krakowska Komisja Filmowa [Kraków Film Board] financially supporting film productions connected with or made in Małopolska. The latter are realised in the collaboration with Krakowskie Biuro Festiwalowe as part of the project named Małopolska Filmowa, aimed at promoting Kraków as a place friendly to film production industry. The attractiveness of this area of activity in Kraków is also confirmed by active operation of non-governmental organisations, in particular of Fundacja Rozwoju Kina [Cinema

[13] http://www.malopolskie.pl/Pliki/2011/strategia.pdf

[14] Van Reed, G. (2009, 29 November). Kraków: from our correspondent. Downloaded on 14 August 2013 from: www.theguardian.com/travel/2009/nov/29/Kraków-poland-from-our-correspondent

Development Foundation] and Krakowska Fundacja Filmowa [Kraków Film Foundation], facilitating development of cinemas and film culture in Kraków.

Film industry enterprises and high level of IT services in Kraków contribute to the development of video game industry which may be situated somewhere on the borderline between these two segments. At least two major studios with international reach operate in Kraków, as well as some smaller teams, the most important among them being: Nimbi Studios, Future Reality Games, Artifex Mundi, Bloober Team, Drago Entertainment, Ganymede, Reality Pump, Tate Interactive and Teyon. Kraków has also numerous smaller teams creating more and more popular applications for mobile devices, which generate greater and greater earnings. The growing importance of Kraków on the video games market is evidenced by the fact that in 2013, CD Projekt RED – the largest Polish video game producer and one of the key market players – opened its office here.

An exceptional initiative for the sector is the European Game Centre – a cluster intended to ensure development of technical infrastructure and skills of employees with a view to ensuring even more dynamic growth in the video games industry. The cluster is intended to facilitate collaboration and transfer of solutions from universities to enterprises operating on the global video games market. The establishment of the European Games Centre was a top-down decision, but Kraków has all it takes (strong film industry, presence of other artistic industries, favourable political environment) to look with optimism into the future of this undertaking[15]. Kraków also hosts the European Games Festival Digital Dragons – the largest games industry meeting in Poland. All the above-mentioned institutions contribute to the Kraków's strong position on the Polish video game production market.

An important institution in the Kraków's creative business sector, combining film and game production, is Alvernia Studios, established by a long-time owner of RMF FM radio station – Stanisław Tyczyński. It is the most technically advanced film studio in Poland, deploying technologies used in film and music production, which are also useful in computer games development. Major Polish video game companies (Techland and CD Projekt RED) realised their projects there, as well as numerous foreign film studios. Alvernia Studios provide comprehensive services as regards multimedia productions, attracting to a small town near Kraków film production projects from all over Poland, but also from India or the USA.

Film and computer games industries are the only areas where Kraków enjoys special position compared to other Polish cities, although it should be mentioned that headquarters of two out of three most popular Polish web portals – Onet and Interia are located here. There are over 300 advertising agencies[16], but – with just a few exceptions – these are mainly small regional entities. The largest and best known among them are: Agencja Reklamowa S4, VML (former Pride & Glory Interactive) and Pro Media House. Małopolska have only 9% of advertising tenders[17], and the advertising agencies operating here are mainly focused on the local market, so their territorial reach is much more limited than in the case of Warsaw agencies.

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[15] Pilon, S., i Tremblay, D. G. (2013). The Geography of Clusters: The Case of the Video Games Clusters in Montreal and in Los Angeles. Urban Studies Research.

[16] Targetmarketing (2013). Agencje reklamowe w liczbach. [Advertising Agencies in Numbers] Downloaded on 5 September 2013 from: http://targetmarketing.pl/att/1/RAPORT_I_KALENDARZ_TargetMarketing.pl.pdf

[17] Dwornik, B., Ratuszniak, B., Rynkiewicz, M., Hawryszuk, B. (2012) Agencje reklamowe i domy mediowe [Advertising Agencies and Media houses]

BUSINESS AND SCIENCE

As it is the case with any other sector or industry, collaboration between business and universities encounters numerous problems. According to experts, discrepancies in objectives, cultures, and work styles make effective and successful collaboration rather difficult. **A positive counter-example in Kraków is the computer games industry where these obstacles have been successfully surmounted, enabling collaboration between business and science .** As a result, the Jagiellonian University and AGH University of Science and Technology offer specialist university courses in production and development of computer games, which have been prepared with the participation of private business representatives. Entrepreneurs teach some classes there and some master's degree theses are written under supervision of people working in game industry. Experts say that students also participate in traineeship and internship programmes and that there are science clubs dealing with computer games, operating in both universities. This initiative, unique for the whole Poland, may in future strengthen even more the position of Kraków in this sector.

Breaking barriers between the methods of creation and between art and science produced a new educational initiative in the Academy of Fine Arts [ASP]in Kraków. The Intermedia faculty has been established there, featuring digital creation, media operations, or animation labs. This is a showcase example of a trend to combine modernity and tradition. Kraków ASP is one of the best artistic universities in Poland as regards painting, sculpture, and design; such initiatives help to build new bridges between members of the public brought up in a non-traditional culture of reception and the artists.

According to experts participating in the research, Kraków universities offer courses related to "creative domains", but they do not cover all areas of the creative business sector. Business representatives are of the view that the areas of particular importance for the report, namely video games and film industries, still lack adequate academic support. As regards teaching in film industry, Kraków cannot compete with much more renowned schools in Łódz and Katowice[18]. Like in other sectors and industries, there is a discrepancy between what companies need and expect from graduates and the actual knowledge and skills students acquire at universities. This refers both to inadequate teaching profile and to the absence of the latest technical achievements and business trends in teaching resources. The situation is getting better in the video games industry, thanks to specialist university courses in computer games development. Yet, despite pioneering character of these courses, there is still a huge gap between market needs and the number and "quality" of graduates. The discrepancy between academic and business circles is of structural nature, but arrangements like the one described above could blaze a trail for collaboration in other sectors, thus reducing the gap between the graduates' competences and the market's expatiations.

SECTOR DEVELOPMENT OUTLOOK

The existence of numerous enterprises or even clusters or local government institutions supporting the creative business sector does not guarantee long-term success. Yet, a large number of grass root initiatives is a sign of the private sector's growing awareness of the significance of structured collaboration between science, business, and public administration.

[18] Apart from academic deficiencies, experts pointed to insufficient human resources as regards simple auxiliary jobs needed in film production process. This leads to higher costs and hampers film production logistics.These obstacles prevent further development of the film industry in Kraków.

Clusters offer more institutionalised form of collaboration and facilitate knowledge sharing among enterprises, which can increase the chance for market success. Clusters also help to cross the boundaries between individual sectors and industries. The presence of many "creative" companies in Kraków enables numerous initiatives going beyond such boundaries (e.g. a recording studio can realise more projects for film or computer games industry). Mutual inspiration and media convergence may enable film and computer game industries to produce interactive films and computer animations transgressing the traditional boundaries of the genre.

An open issue is the development direction of the global computer games market. Polish market is affected by worldwide tendencies, because the best Polish productions generate greatest earnings on the foreign markets. According to the sector representatives participating in the research, if universities and business enhance collaboration in the area of research and development and of promotion of their achievements, this may have a positive impact on the quality of subsequent productions and on the increase of the share in the international market. A game cluster may be a perfect platform for such initiatives. Business implementations of innovative solutions are of key importance for building competitive advantage. Innovation flow channel could be opened in both directions, resulting in more effective research and faster implementation.

To sum up, the creative business sector is presently strong in Kraków, comprising a number of enterprises, organisations, and educational institutions. Thanks to this diversity, particularly fast development of domains on the borderline of genres and styles is observable. A dynamic growth of the computer games industry and very active institutions promoting film art change the image of Kraków which is no longer associated exclusively with historic sites and museums, but also with economy based on creativity and state-of-the-art technologies.

Should the city enhance its collaboration with major market actors, it may be able to attract investors from outside the region, who will strengthen the ties between local and international markets and provide know-how for the development of local initiatives. The condition of the creative business depends on the global economic situation and trends in leisure time industry; however, there are no threats to the development of the creative business market in the foreseeable future. Kraków may benefit from the dynamic growth of the market and become one of the Polish, or even European, leaders.

PESTER AND SWOT ANALYSES

Presented below are key conclusions from the analysis of the environment surrounding the creative business sector. PESTER analysis provides an overview of opportunities and threats originating from the current political, economic, social, technological, environmental, and regulatory situation.

a) Political and Legal Environment

Like any other sector, the creative business is subject to tight legal regulations. The most important aspect of these regulations for the creative business sector is the protection of intellectual property rights. Should this protection weaken, an outflow of capital from the sector could be observed.

b) Business Environment

As a consequence of economic crisis, many people in search for a stable source of income leave the region for countries offering better financial conditions. This is particularly the case with well-educated professionals having universal skills needed in film production, advertising agencies, and studios developing and designing computer games all around the world. Insufficient human resources may cause delays and increase the costs of implemented projects.

Crisis may also cause a drop in demand. As the people get poorer, they may reduce their spending on leisure time industry, which will adversely affect the financial situation of creative business companies.

c) Social and Cultural Environment

A serious threat may be a change in the leisure time activity patterns and outflow towards more active forms of spending free time, such as tourism or sports. These forms are quite a strong competition for passive watching of films or playing video games. On the other hand, they have very positive impact on the quality of life, and the analyses of Małopolska's potential[19] show that the region's culture and heritage have enormous potential to attract tourists.

An important element strongly affecting the current situation of the creative business sector is illegal copying and distribution of digital contents. Social campaigns, growing wealth of the society, and technological advancement may reduce piracy and facilitate further development of the creative business sector in Kraków.

d) Technological Environment

Particularly negative impact on the traditional film distribution system may have falling prices of big screen TV sets and HD projectors. This may cause a decrease in the number of cinema goers and, consequently, in the earnings of producers, distributors, and filmmakers. On the other hand, the development of micro-payment and on-line payment systems may generate additional profits with the concurrent decrease in the level of piracy. This may be achieved through growing accessibility of VOD system of digital film distribution.

e) Natural Environment

There are no links between natural environment and the condition of the creative business sector.

f) Regulatory Environment

Availability of film resources and games due to digital distribution may be slowed down if new tighter regulations are introduced as regards content distribution via the Internet. Enhanced protection of children and youth against contents which have not been subject to any regulations (e.g. games involving acts of violence) may result in enactment of additional restrictions and, consequently, lead to the decrease in demand for such contents.

The SWOT analysis that follows, is a summary of strengths and weaknesses of the sector as well as opportunities and threats in the surrounding environment.

Strengths of the creative business sector in the region:

[19] http://www.malopolskie.pl/Pliki/2011/strategia.pdf

- Large number of creative business enterprises (particularly in film and video games industry)
- Large number of institutions in traditional segments of the sector (museums, galleries)
- Political support for the development of the sector
- Large number of universities and equivalent educational institutions conducting research
- Young people coming from around Poland to study and find a job
- Well-recognised brand of Kraków
- Kraków is an important festival and conference centre
- Clusters

Weaknesses of the creative business sector in the region:

- Dispersion of entities
- Lack of specialisations
- Lack of capital necessary to implement projects with international reach

Opportunities of the creative business sector in the region:

- Growing importance of leisure time and resultant growing demand for creative business products
- Utilisation of region's academic potential
- Increase in utilisation of multimedia in education and training

Threats to the creative business sector in the region:

- No enforcement of protection of intellectual property rights
- Growing competition abroad
- Competition from other media

DEMAND ANALYSIS
SECTOR DEMAND FOR COMPETENCES

An overview of findings as regards the demand for competences in the sector begins with a presentation of a list of jobs/positions that are most frequently offered in recruitment processes – the list below is based both on questionnaires as well as interviews with employers from the Kraków creative business sector.

Job offers for graduates in the sector, as stated by companies active in the sector
Account manager, junior account manager
Network administrator
Promotion/advertising assistant
Business development manager
Copywriter
Creative Director, Junior Creative Director
3D graphic designer (Enviro Artist)
Computer graphic designer (2D, 3D, Web designer, DTP)
Salesperson, Sales specialist
Illustrator
Sound engineer
Project manager
Programmer (PHP, FX, .NET, Ruby on Rails, Flash, front-end, back-end, Action Script)
Functional designer
New media, marketing, advertising specialist

Table 1. List of jobs offered to graduates in the creative business sector.

The diversity characterising the list of jobs offered by Kraków companies operating in the creative business sector, ranging from salespersons, copywriters, graphic designers and programmers, to sound engineers – illustrates the broad scope of positions necessary for that companies to pursue their goals and objectives.

Quite interesting is the dynamics of growth in employment of graduates in the creative business sector in the years 2014 and 2019 (Table 2). In 2014, graduates employed will account for 16.9% of the current employment in the sector, which is optimistic. But even more optimistic is the fact that within the next five years, the dynamics of growth in employment in the creative business sector in Kraków will nearly double.

Graduates employed in 2014	Graduates employed in 2019
16.9%*)	**30.4%*)**
Increase in dynamics of employment of graduates	

Table 2. Growth dynamics in employment of graduates in the creative business sector.

*) graduates to be employed in 2014 and in 2019 as a percentage of current employment level (accounting for all legal forms of employment)

60% of the employees of companies that participated in the research is employed under contracts of employment, and 40% – under civil-law contracts (Fig. 1).

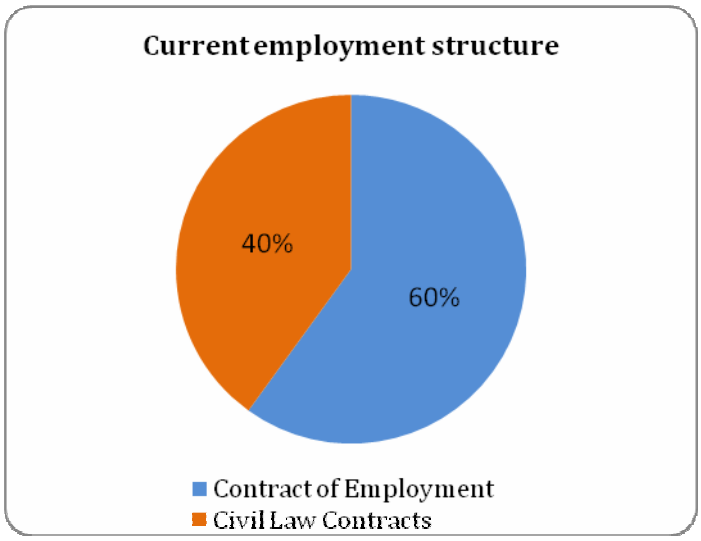

Fig.1. Structure of employment in the creative business sector by contract type

A reverse situation – which is understandable – is observed in the case of planned employment among graduates (Fig. 2). In 2014, as much as 61% of all graduates will be employed under civil law contracts and this rate shall be retained in 2019. **This is a sign that creative business companies prefer flexible forms of employment, both as regards graduates and persons with whom they engage in long-term collaboration.**

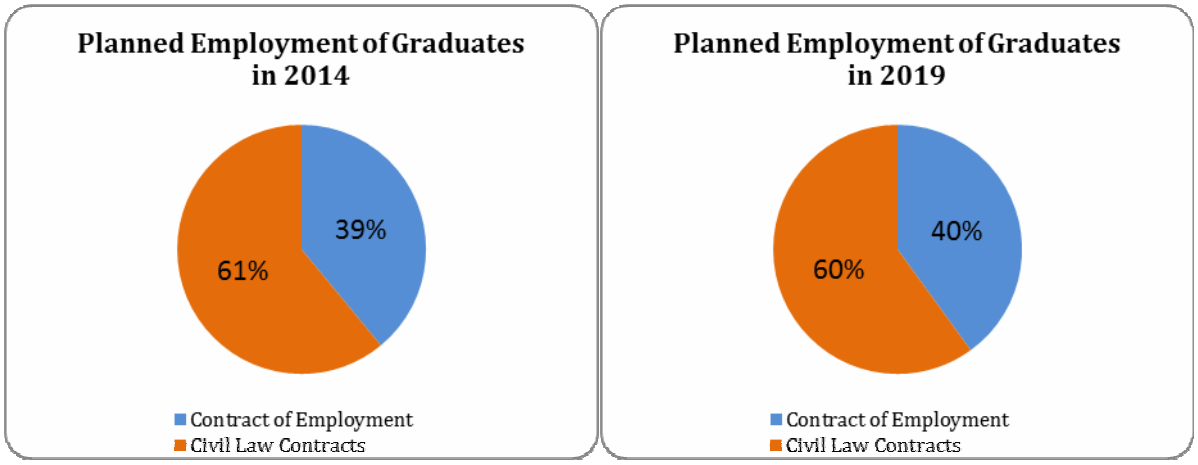

Fig. 2. Structure of planned employment of university graduates in the creative business sector by contract type in 2014 and 2019.

THE COMPETENCES OF TODAY AND THE COMPETENCES OF TOMORROW

Before we present results of research works related the importance of given competences for the creative business sector, it is necessary to make certain reservations.

The competences, subject to analysis, were identified on the basis of the interviews with opinion leaders, companies and the analysis of job offers. For better clarity of the report, the competences were split into 5 groups: specialist (professional) knowledge, specialist (professional) skills, business knowledge and skills, soft skills, foreign languages and other requirements. **As extensive as the list of competences is, it is not necessarily exhaustive. Of course, there may be many companies that operate on the market and that need other competences – often very specific or exceptional.**

Within the framework of preparatory works, we attempted to set all sought competences at the same level of generality. Not always was it possible or desirable, though. That is why competences will vary as to their level of precision, which fact, to a certain degree, reflects the specific characteristics of the sector.

The companies participating in the survey replied to questions related, inter alia, to the importance of each competence today and in the future. Due to diversity characterising the sector, pointed out in the introductory part of the report, quite visible in the results are considerable differences in importance of individual skills, depending on the business profile and specialisation of a given entity. In practice, this means that regardless of the current employment level, **answers of firms planning to employ a larger number of graduates in 2014 and 2019 are assigned greater weights.**

It should be noted that **data presented in the report reflect opinions of persons who are responsible for human resources policies or the management of companies operating in the sector. Hence, the said data have not a prescriptive nature**. In other words, we present the views of persons who manage companies, and we refrain from judging whether such views are correct, or not, and whether strategies based on these views are good.

The presentation of detailed results for each category is preceded by two tables containing the lists of 20 competences to be required from graduates in the nearest and more distant future, perceived by companies as the most important.

Table 3 contains a list of 20 most important competences (requirements) in 2014 and 2019 estimates. The most important – from the perspective of the creative business labour market as a whole – are the following competences: **collaboration, commitment, integrity, English, learning**[20]**.** The five competences that will become the most important in more distant future are: **game production environment, knowledge of AGILE methodology in project management, human-computer interaction, learning, and analytical skills.** Green fields in the table presenting "competences of the future" denote those competences which recorded the biggest growth in importance among the top twenty.

[20] Precise definitions of these and other skills are provided in Appendix No.1.

20 most important competences (requirements) today	Importance 2014
Collaboration	4.92
Commitment	4.92
Integrity	4.92
English	4.80
Learning	4.79
Analytical skills	4.77
Focus on customer	4.75
Being concerned about quality	4.75
Focus on development	4.73
Innovation	4.71
Organisation of own work	4.69
Knowledge of AGILE methodology in management	4.67
Adaptive skills	4.58
Test-driven development	4.57
Project management	4.57
Initiative	4.57
Creating www pages	4.50
Sense of aesthetics	4.50
Focus on targets	4.46
Ability to influence others	4.46

20 most important competences (requirements) in the future	Importance 2019
Game production environment	4.75
Knowledge of AGILE methodology in management	4.57
Human-computer interaction	4.57
Learning	4.55
Analytical skills	4.55
New trends	4.50
Game designing	4.50
Being concerned about quality	4.45
Test-driven development	4.43
Initiative	4.43
Adaptive skills	4.42
Project management	4.42
Knowledge of the sector	4.38
Designing user interfaces	4.38
English	4.36
Technical English	4.36
Collaboration	4.33
Integrity	4.33
Innovation	4.33
Ability to influence others	4.33

Table 3. Competences of today (perceived as important in 2014) and competences of tomorrow (perceived as important in 2019). Orange fields denote competences that within five years will no longer be included in top 20. Green fields denote competences which within five years will enter top 20.

Particularly interesting is that among the first 20 competences which are the most important for creative business employers, only three (test-driven development, creating www pages, and the sense of aesthetics) are related directly to knowledge and skills specific to this sector – the remaining ones are either soft skills or transferable skills (i.e. skills that can be used in various working environments). This coincides with the opinions of experts who, although they notice the important role of specialist skills possessed by job applicants, point to the significance in professional career of competences such as ability to work in a team, innovation, and being concerned about quality.

GROUPS OF COMPETENCES

The charts below present detailed results concerning the importance of competences in individual groups discussed in the report (specialist knowledge, specialist skills, business knowledge and skills, languages and other requirements), comparing the present situation with the five-year perspective, broken down into two segments: **creation** and **culture**.

In the case of specialist knowledge in the **creation** area (see Fig. 3a) the importance of individual competences in the coming years, as declared by employers, should remain more or less the same – the skills considered the most important in this area are and will be: **designing user interfaces, graphic composition, human-computer interaction, knowledge of social media, ability to operate equipment used in work**. Quite noticeable is the expected growth in importance of the knowledge concerning **human-computer interaction, 3D modelling, and animation.**

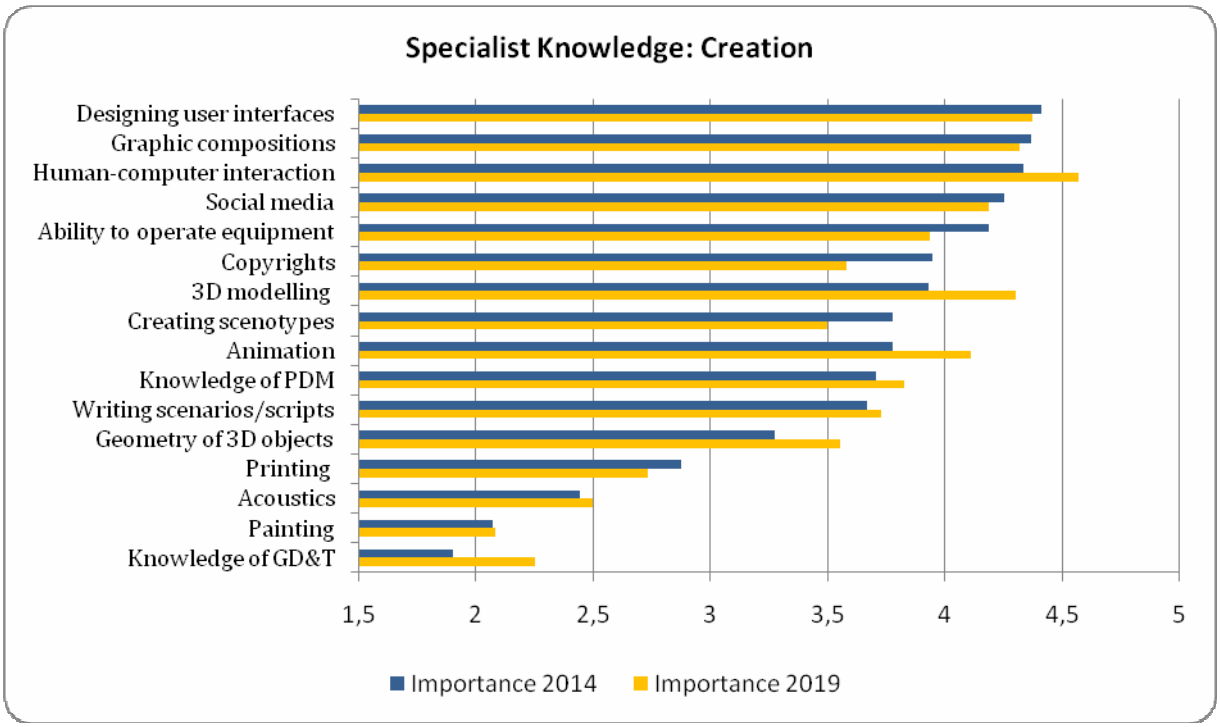

Fig. 3a. Expected importance of individual competences in the area of "Specialist Knowledge" as perceived by employers in 2014 and 2019.

Figure 3b presents the importance of competences in the area of **culture**. According to the representatives of this segment of the creative business sector, the most important competences expected from graduates are: **graphic composition, ability to operate equipment, copyrights, animation, and knowledge of PDM principles.** Interesting in this context are expected increases in importance of competences in the area of Specialist Knowledge. It might be expected that in 2019, the most important competence in this segment of the creative business sector will be **the knowledge of product development management (PDM) principles** – a competence that recorded the biggest growth in the research. Also **graphic composition, animation, and social media** will grow in importance.

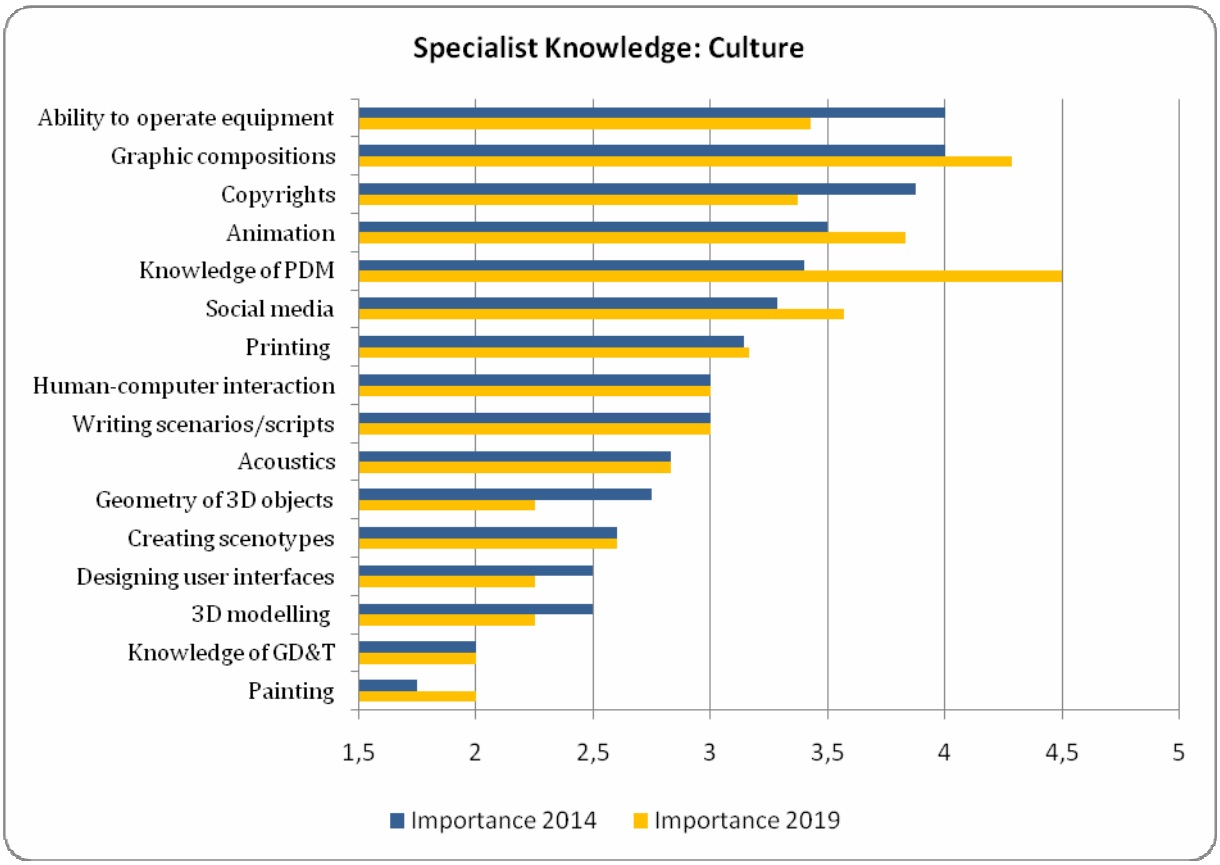

Fig. 3b. Expected importance of individual competences in the area of "Specialist Knowledge" as perceived by employers in 2014 and 2019.

From a broad catalogue of competences, the creation segment employers selected those they found the most important (Fig. 4a). In their opinion, the key competences in their segment include: **test-driven development, creating www pages, sense of aesthetics, JavaScript language programming** and ability to effectively use **Windows operating system**. The most significant growth in importance of competences should be expected in the case of **skills related to game production** (game production environment, game designing) and certain programming languages: **Objective-C, C#, Ruby** and **Python**.

Rather moderate changes in importance of competences expected from graduates should be observed with respect to specialist skills in the culture segment (Fig. 4b). Advertising skills will gain importance, **particularly those related to adaptation of ATL and BTL materials.** Specialist skills, particularly important in the culture segment – today and in five-year-time – include: **ability to prepare presentations, sense of aesthetics, operating 3D graphic design software, operating 2D vector graphic design software, and ability to express oneself with ease in writing.**

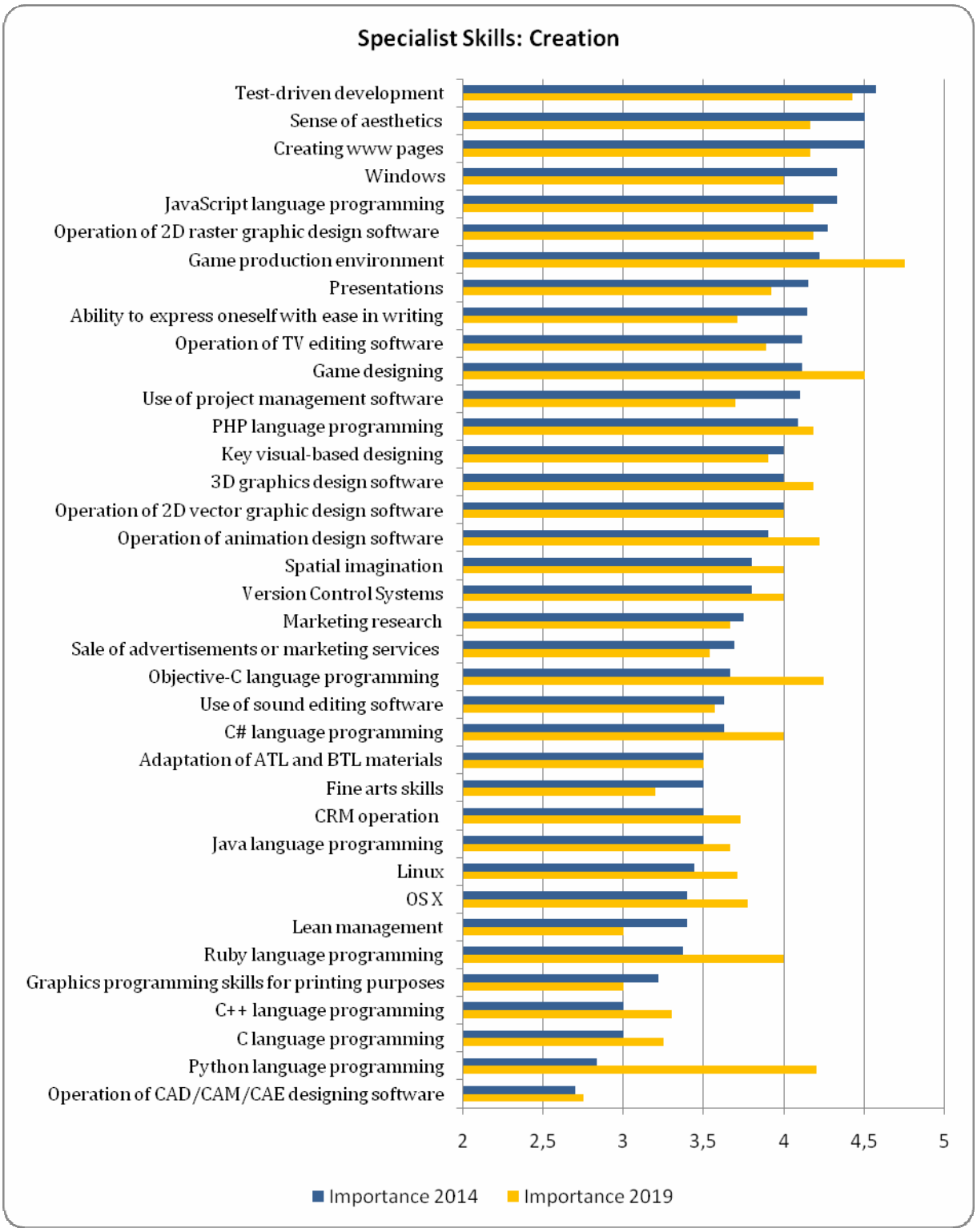

Fig. 4a. Expected importance of individual competences in the area of "Specialist Skills" as perceived by employers in 2014 and 2019.

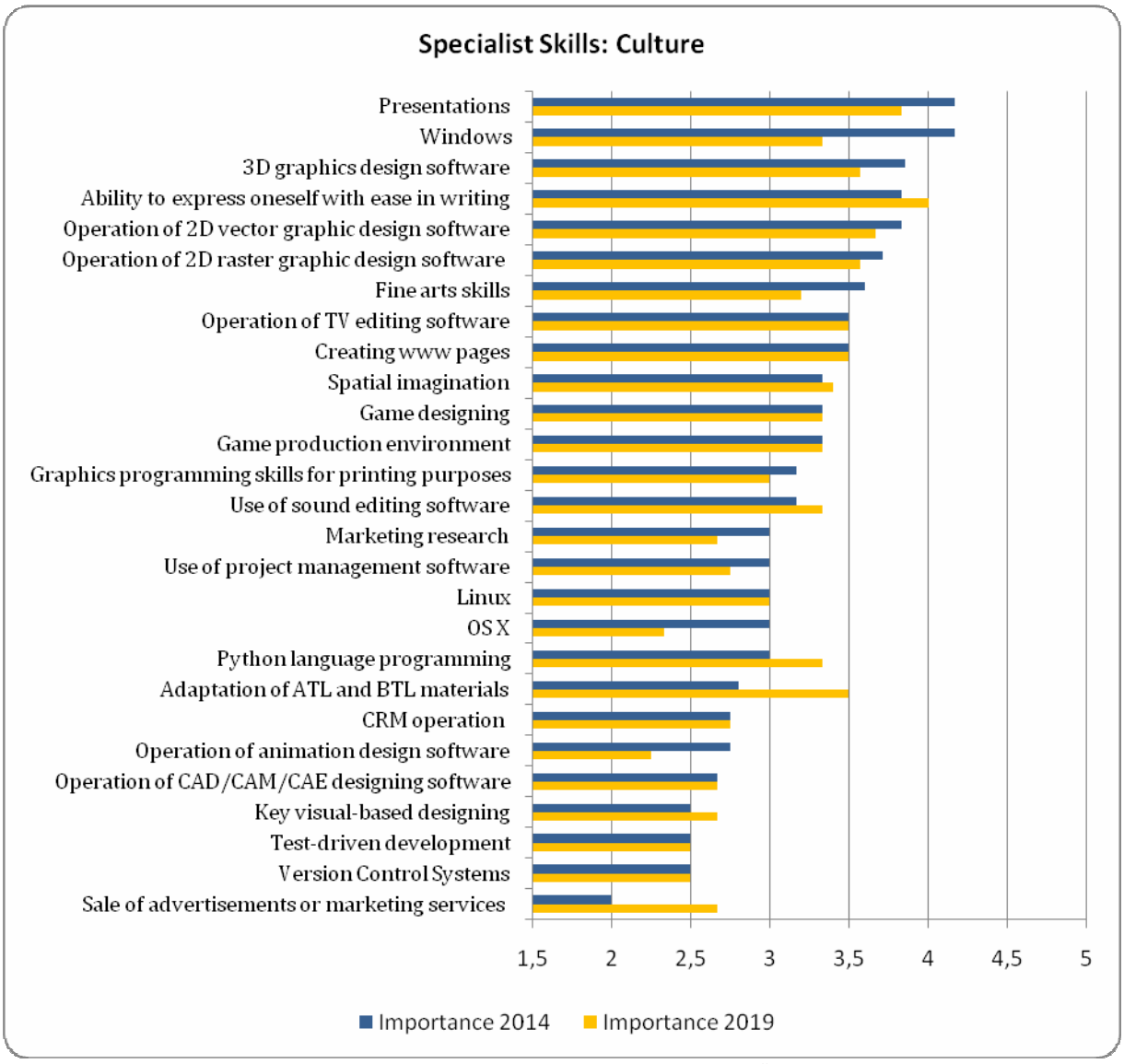

Fig. 4b. Expected importance of individual competences in the area of "Specialist Skills" as perceived by employers in 2014 and 2019.

Based on opinions of the employers participating in the research, it can be said that during recruitment process, business skills are at least equally or sometimes even more important than specialist knowledge and skills – particularly when compared to other sectors. Representatives of the creation segment (Fig. 5a) pointed to competences, such as **knowledge of AGILE methodology in project management, project management, new trends, knowledge of the sector,** and **holistic perspective.** What's interesting, employers in the creation segment anticipated relatively big growth in the importance of knowledge of the sector, marketing, and other project management methodologies, while the demand for other competences should – in their opinion – remain stable.

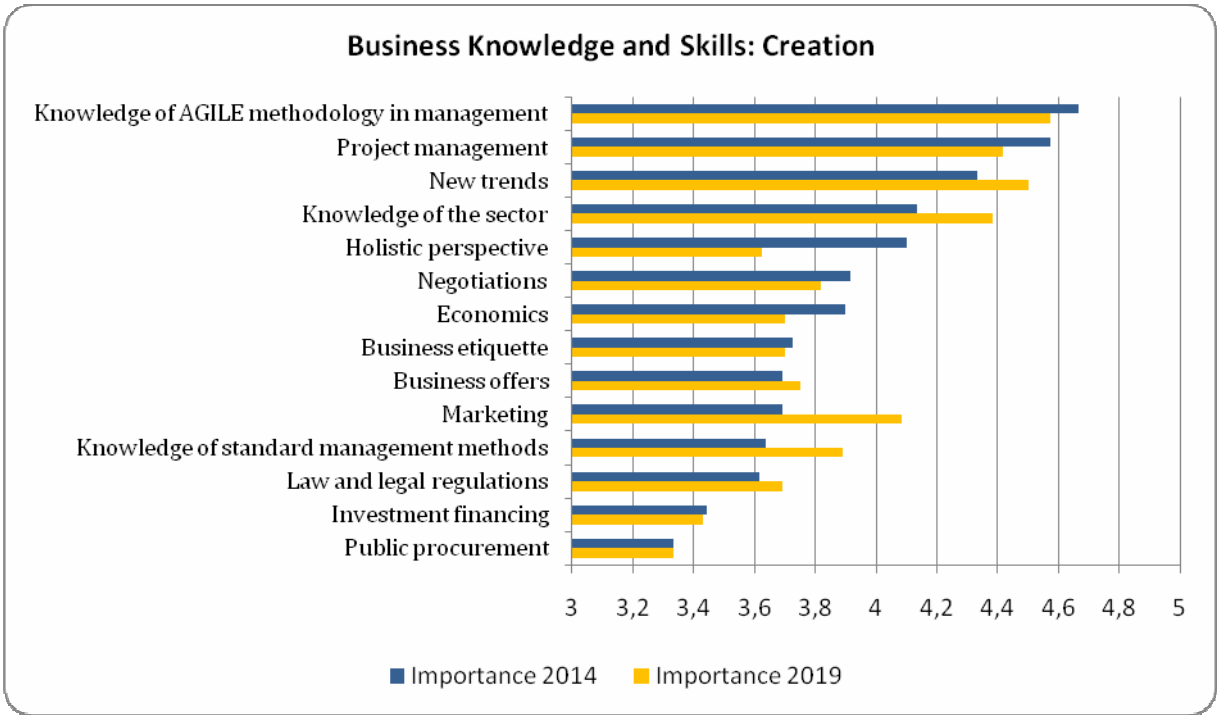

Fig. 5a. Expected importance of individual competences in the area of "Business Knowledge and Skills" as perceived by employers in 2014 and 2019.

It can be concluded that the demand for competences in the culture segment will be rather stable over the period of five years (Fig. 5b). According to employers, the most important are and will be the following business skills and knowledge: **knowledge of the sector, new trends, economics, marketing, and business offers**. Quite significant growth in importance will be recorded with respect to **negotiations skills.**

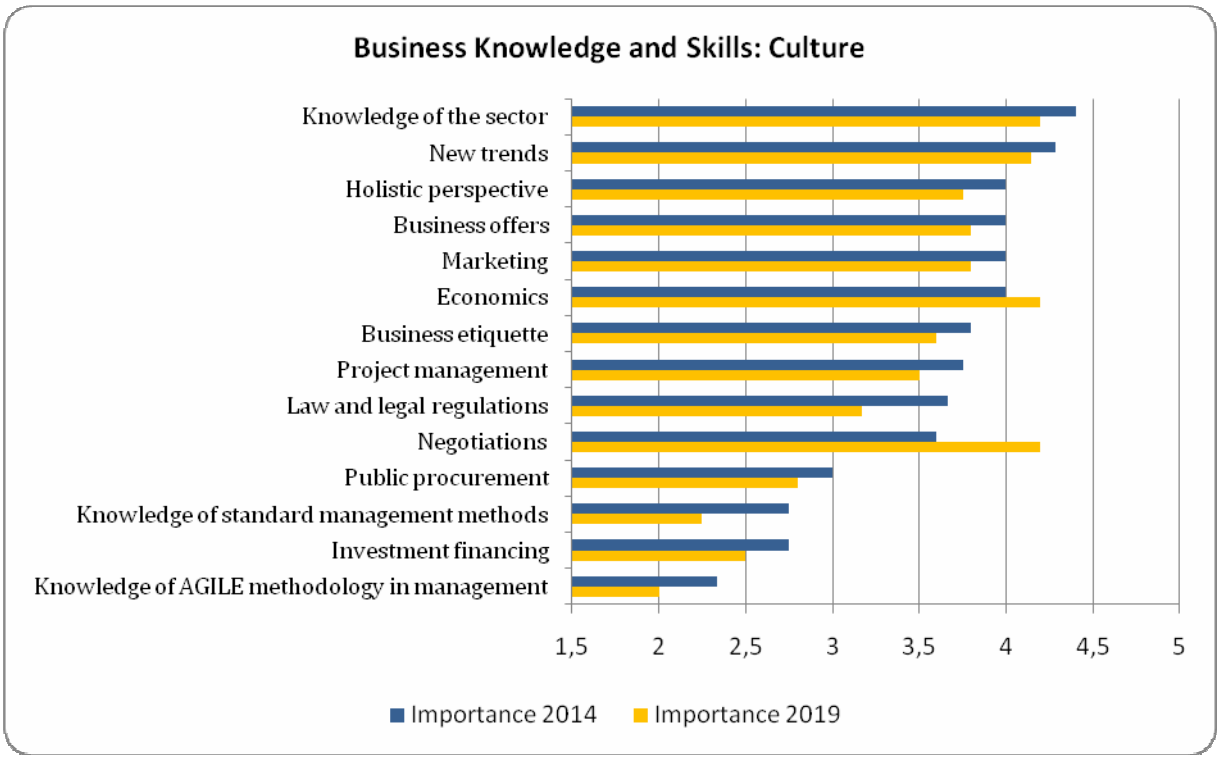

Fig. 5b. Expected importance of individual competences in the area of "Business Knowledge and Skills" as perceived by employers in 2014 and 2019.

As already pointed out, employers often consider soft skills as the most important ones. The soft skills which are presently the most desired by representatives of the creative business sector (Fig. 6a) include: **collaboration, commitment, learning, analytical skills, and being concerned about quality**. Interestingly enough, their importance in the coming years will slightly decrease (although they still will be considered important) and the top five in 2019 will be: **learning, analytical skills, being concerned about quality, initiative, and adaptive skills.** Quite noticeable is a relatively low importance assigned by survey participants to the communication skills (both oral and written) and to intercultural sensitivity. This may result from a small number of large international projects in the sector. Very similar is the list of the most important soft skills in the creation segment (Fig. 6b). For the employers operating in this segment, the most important competences expected from graduates are: **collaboration, commitment, innovation, learning, and initiative.**

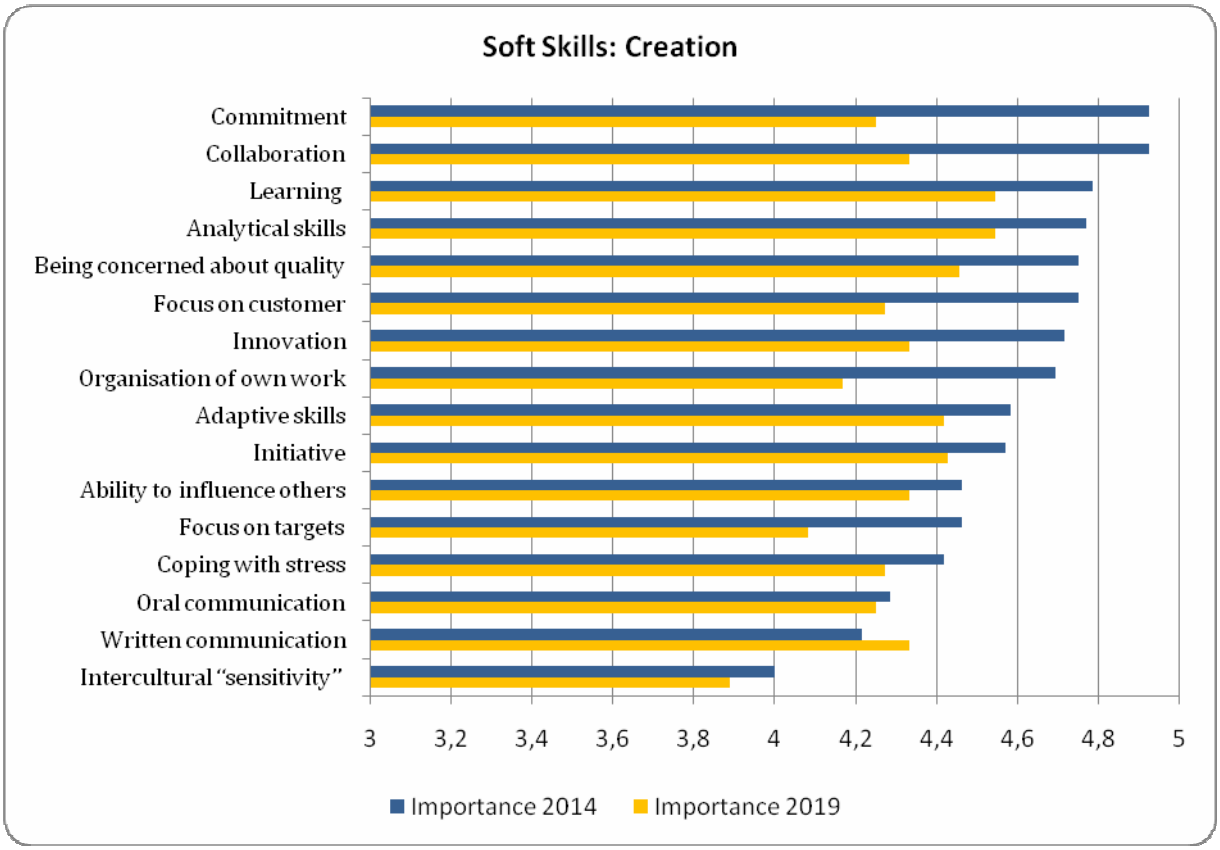

Fig. 6a. Expected importance of individual competences in the area of "Soft Skills" as perceived by employers in 2014 and 2019.

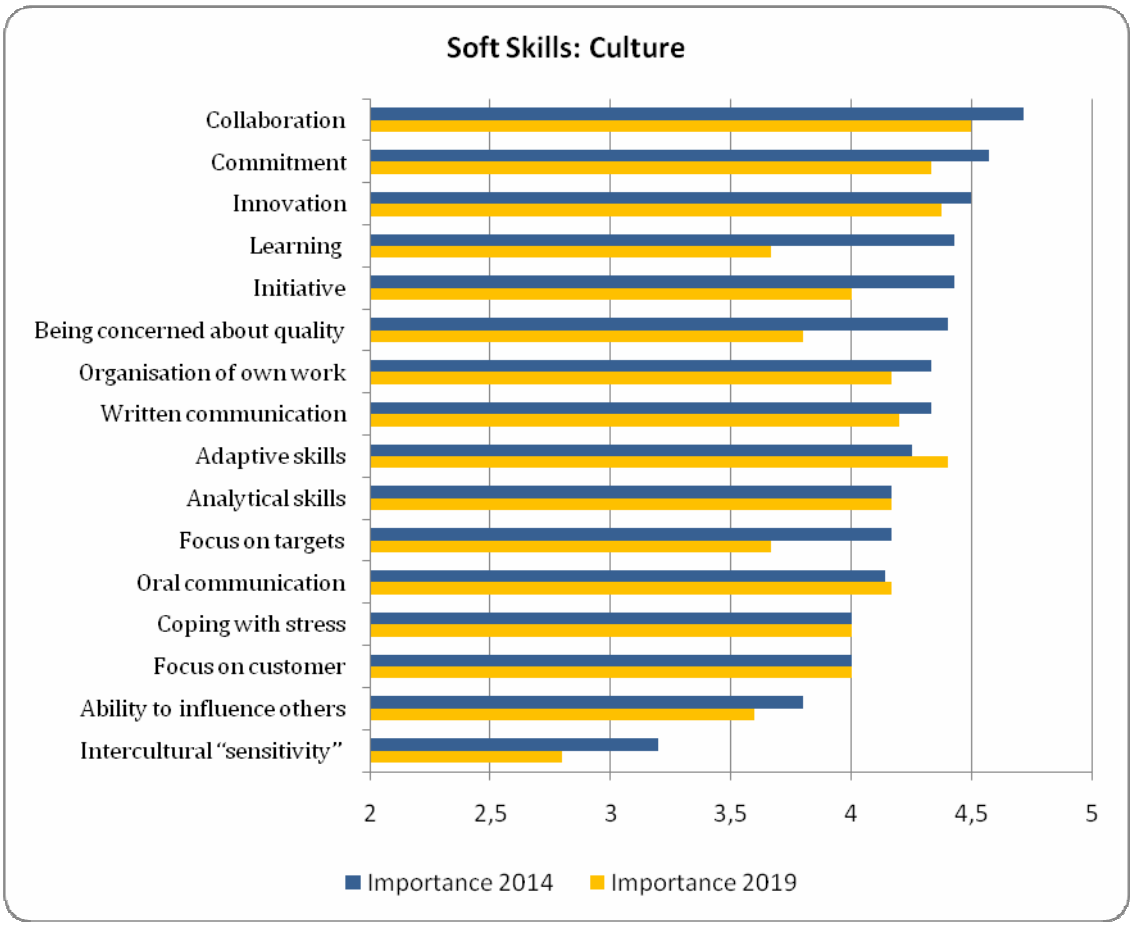

Fig. 6b. Expected importance of individual competences in the area of "Soft Skills" as perceived by employers in 2014 and 2019.

As for foreign languages, the most important for the creation segment – presently and in future – is definitely **English, both spoken and technical**. Based on the results and materials gathered during interviews with experts, it can be concluded that university graduates in Kraków should be aware of very high expectations among employers in this respect. Employers anticipate growing importance of the **German** language, although it will still remain rather limited.

As regards other expectations which cannot be classified either as knowledge or as skills, the most important for the creation segment employers are: **integrity, ability to use basic office applications, and focus on development**. In the coming years, growth in importance will be observed with respect to already very important **mobility**.

The picture is very similar in the culture segment (Fig. 7b). The only difference observed, compared to the creation segment, is the greater role of the **availability** and relatively high expectations as regards knowledge of **Russian** among graduates.

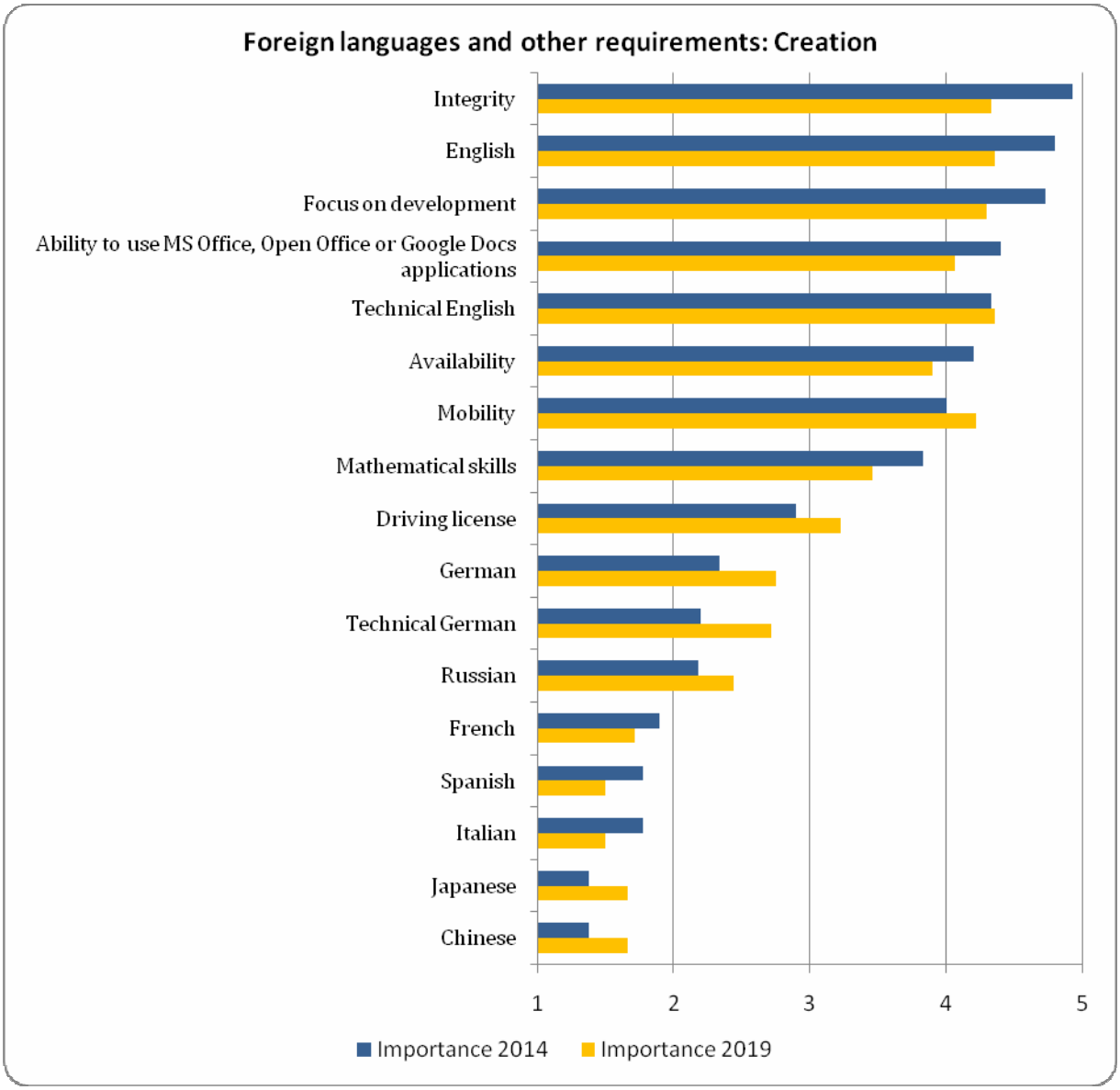

Fig. 7a. Expected importance of individual competences in the area of "Foreign Languages and Other Requirements" as perceived by employers in 2014 and 2019.

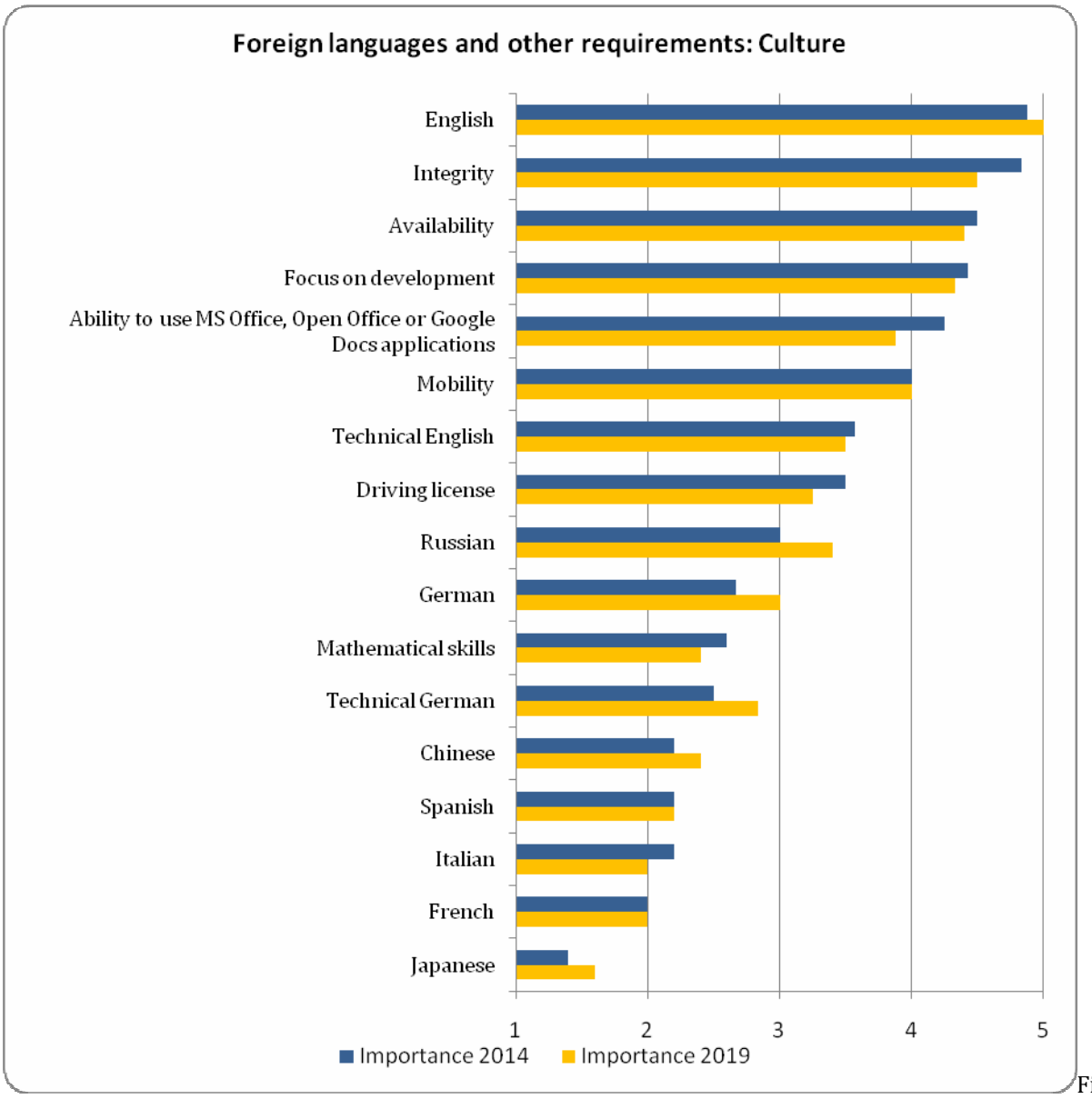

Fig. 7b. Expected importance of individual competences in the area of "Foreign Languages and Other Requirements" as perceived by employers in 2014 and 2019.

We asked employers to indicate competences which are of key importance in the context of professional promotion. The list of these competences is presented in table below.

List of competences / requirements of key importance in the context of promotion at work
Desire to develop
Experience
Innovation
English
Communication skills
creation
Ability to use graphic software
Ability to handle criticism
Courage

List of competences / requirements of key importance in the context of promotion at work
Openness
Reliability
Being concerned about quality
Integrity
Learning
Collaboration
Commitment
Analytical skills
Ability to use tools
Understanding of the sector

Table 4. List of competences of key importance for graduates in the context of promotion at work

Interestingly enough, the competences mentioned in this context by employers are, to a great extent, soft skills. This means that **although specialist skills are necessary to get a job in the sector, further professional development may depend – apart from business skills – on competences such as integrity, focus on development, or commitment.**

COMPETENCES OF KEY IMPORTANCE (CORE COMPETENCES) FOR THE SECTOR

One of the most important indicator of the perception of the education market from the employers' point of view is the comparison of the importance of certain competences with the difficulty in acquiring them. Data in Table 5 show that amongst 20 most important competences there are those that may be easily acquired (marked in green colour) as well as those that are difficult to acquire (marked in red colour) from the market. Following this line of thinking, competences that from the demand and supply point of view may be considered to be core competences are those that the representatives of the sector consider important, but hard to acquire like a painfully missing and particularly hardly-available good. Therefore, on the basis of Table 5, one may find that the core competences are as follows: **co-operation, integrity, innovation and focus on targets (or target orientation).**

20 most important competences (requirements) today	Importance 2014	Difficulties in acquiring
Collaboration	4.92	4.11
Commitment	4.92	3.20
Integrity	4.92	4.22
English	4.80	3.21
Learning	4.79	3.89
Analytical skills	4.77	3.73
Focus on customer	4.75	4.00
Being concerned about quality	4.75	4.00
Focus on development	4.73	3.44
Innovation	4.71	4.18
Organisation of own work	4.69	3.88
Knowledge of AGILE methodology in management	4.67	3.89
Adaptive skills	4.58	3.70
Test-driven development	4.57	3.83

20 most important competences (requirements) today	Importance 2014	Difficulties in acquiring
Project management	4.57	3.75
Initiative	4.57	4.08
Creating www pages	4.50	3.50
Sense of aesthetics	4.50	4.10
Focus on targets	4.46	4.20
Ability to influence others	4.46	3.64

Table 5. Top 20 competences in the creative business sector and difficulties in acquiring them.

In the charts below we present the importance and difficulties in acquiring each competence in 5 major groups (specialist knowledge, specialist skills, business knowledge and skills, soft skills, foreign languages and other requirements) broken down into two segments: **creation and culture**.

According to the creation segment employers participating in the research, individual fields of specialist knowledge differ moderately in terms of difficulties with finding graduates who possess them (Fig. 8a). **Designing user interfaces, human-computer interaction,** and **3D modelling** are considered very important and – at the same time – difficult to acquire, while **knowledge of social media and ability to use specialist equipment** are perceived as commonly present on the labour market.

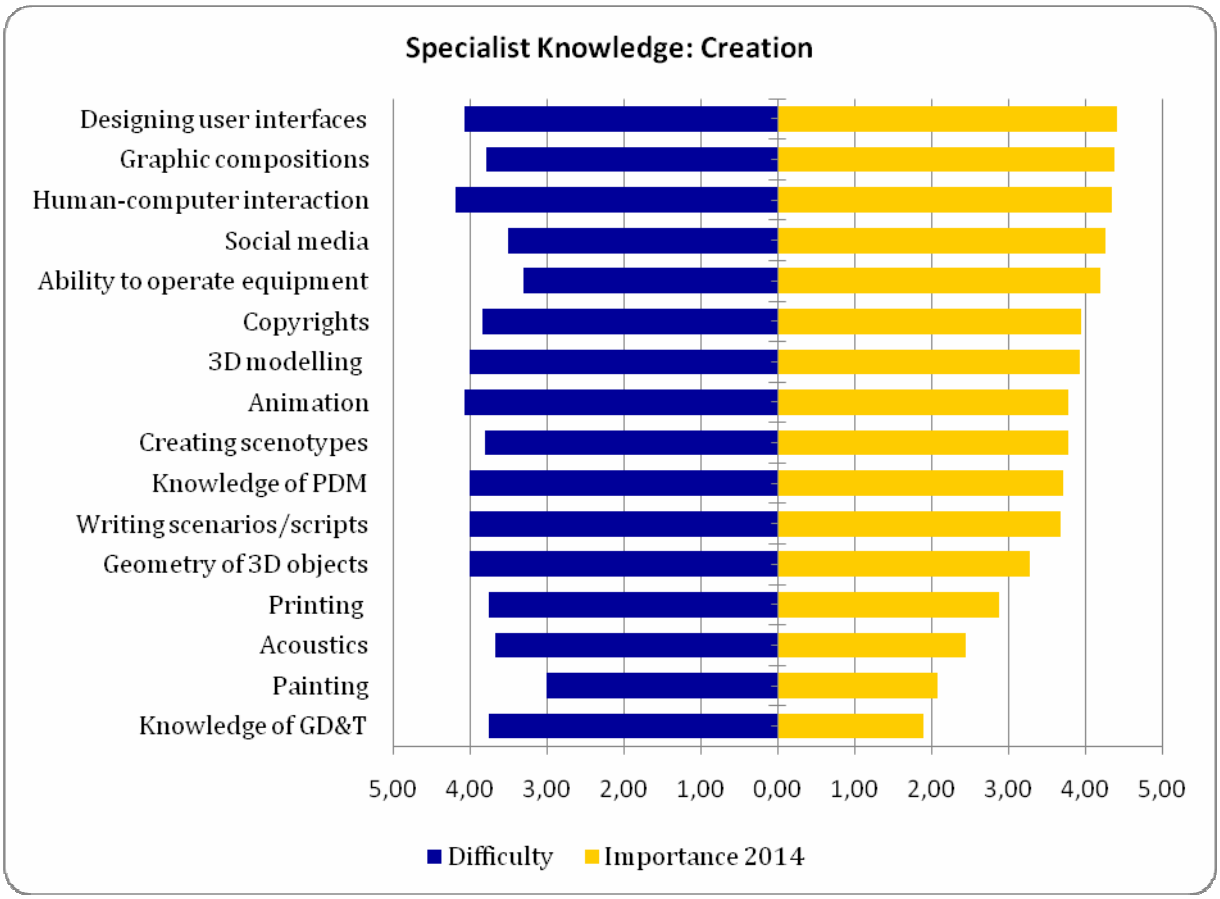

Fig. 8a. Importance of and difficulty in acquiring individual competences in the area of "Specialist Knowledge" as perceived by employers.

In the opinion of the employers representing the culture segment (Fig. 8b), the following key competences are at the same time important and hard to acquire: **graphic composition, animation and knowledge of PDM Principles**. On the other hand, **ability to use specialist equipment or 3D modelling** is perceived as skills relatively more common among graduates of Kraków universities.

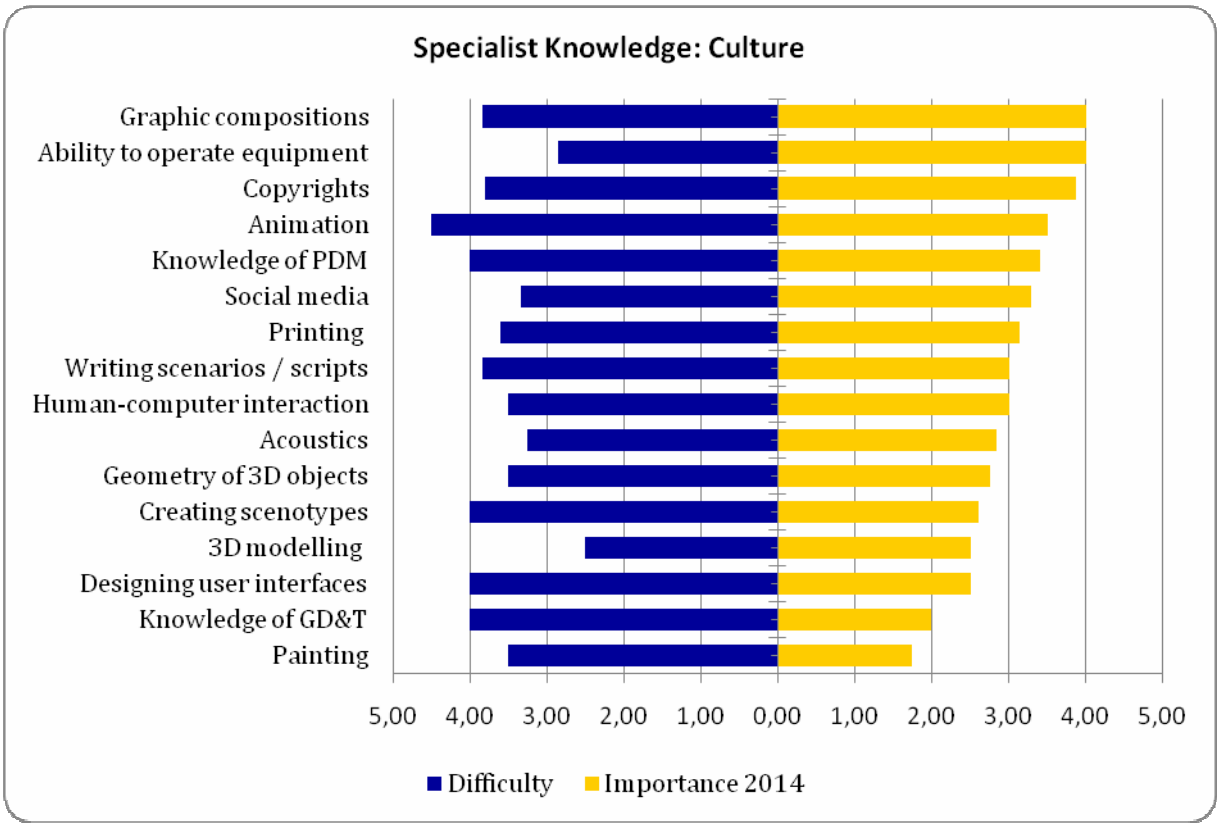

Fig. 8b. Importance of and difficulty in acquiring individual competences in the area of "Specialist Knowledge" as perceived by employers.

As regards specialist skills, the surveyed employers from the creation segment (Fig. 9a) mentioned **test-driven development, sense of aesthetics, JavaScript language programming, game designing, and game production environment** as important and at the same time difficult to acquire. **Effective work in windows environment, creating www pages, or ability to use 2D graphic design software –** although important – are the competences perceived by employers as much easier to find on the labour market.

Interestingly enough, according to the representatives of the culture segment, a key competence (a competence that is important and difficult to acquire) is also the **sense of aesthetics** (Fig. 9b). Also mentioned by employers from this segment as important and difficult to acquire are the following specialist skills: **preparing presentations** and **ability to express oneself with ease in writing**, while operating of **Windows system** is – in their opinion – a skill easy to acquire.

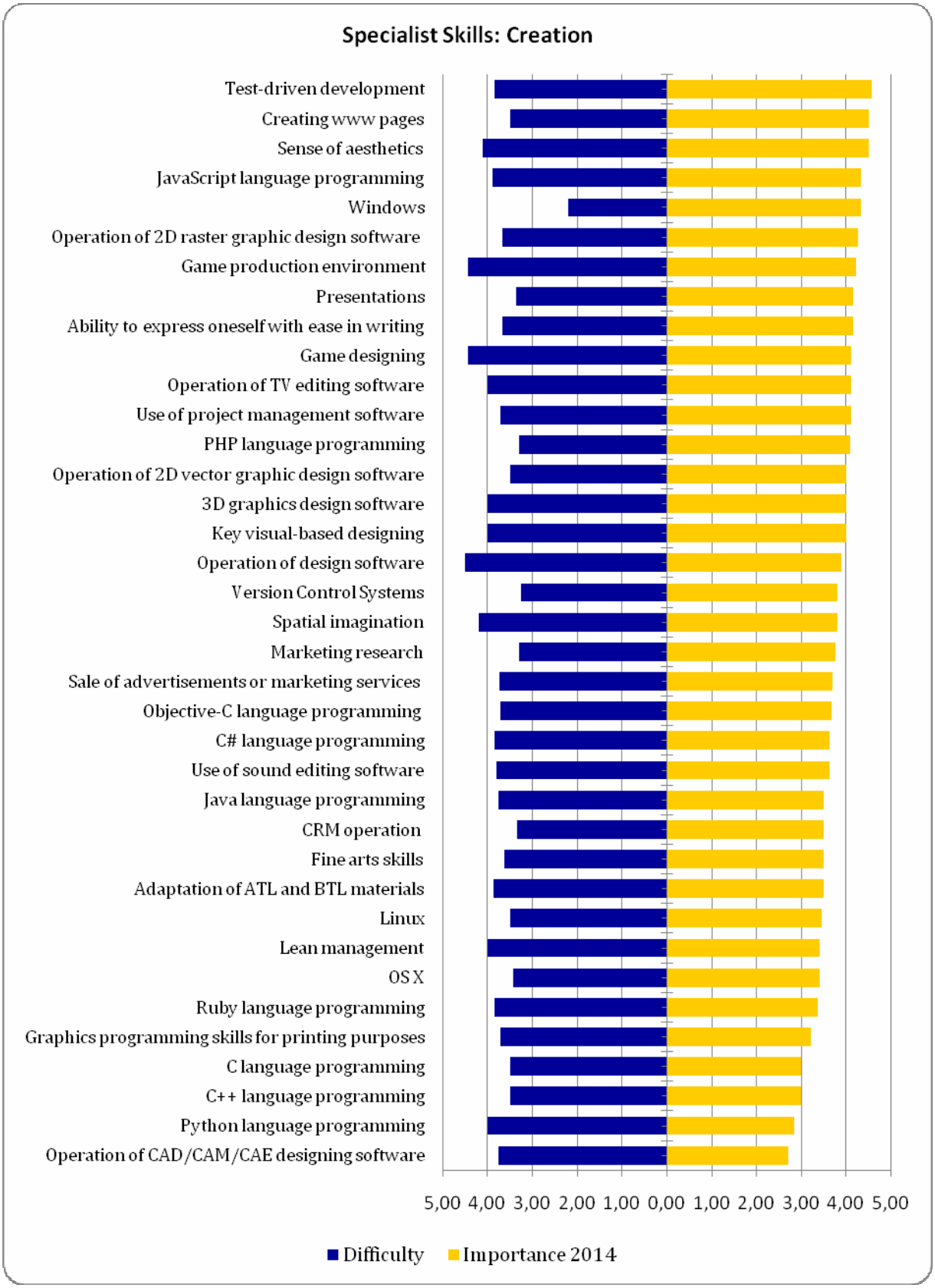

Fig. 9a. Importance of and difficulty in acquiring individual competences in the area of "Specialist Skills" as perceived by employers.

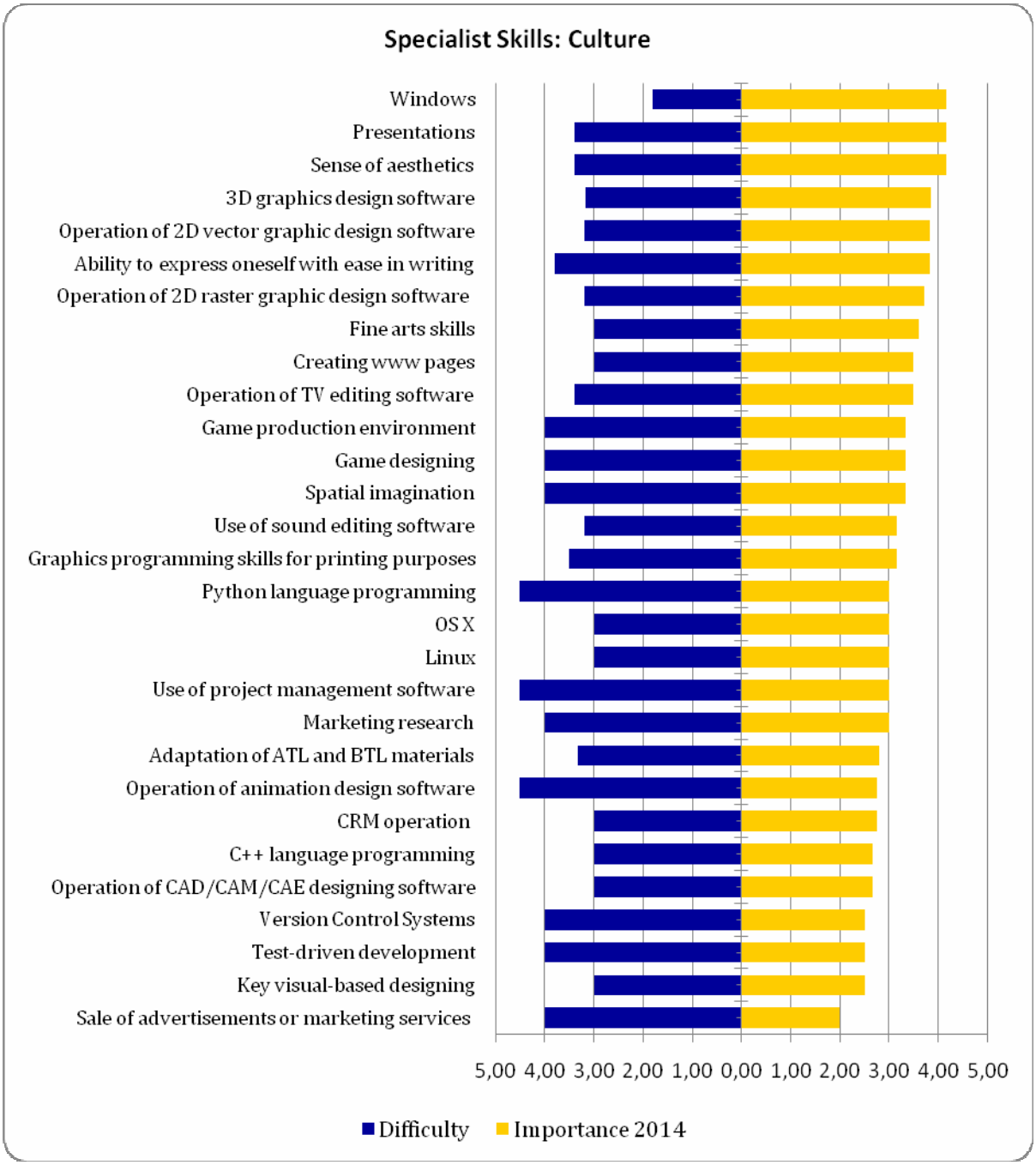

Fig. 9b. Importance of and difficulty in acquiring individual competences in the area of "Specialist Skills" as perceived by employers.

As regards the group of competences referred to in the report as "business knowledge and skills", the creation segment employers (Fig. 10a) mentioned **new trends in the sector, knowledge of the sector**, and **project management** as key competences – that is the competences which are important and difficult to acquire. What's interesting, important and relatively easy to acquire is – in their opinion – knowledge about **marketing**.

Business knowledge and skills are similarly perceived by the culture segment. Here, employers – apart from **the knowledge of the sector** – mentioned also **holistic perspective** as a competence which is very important, but hard to get.

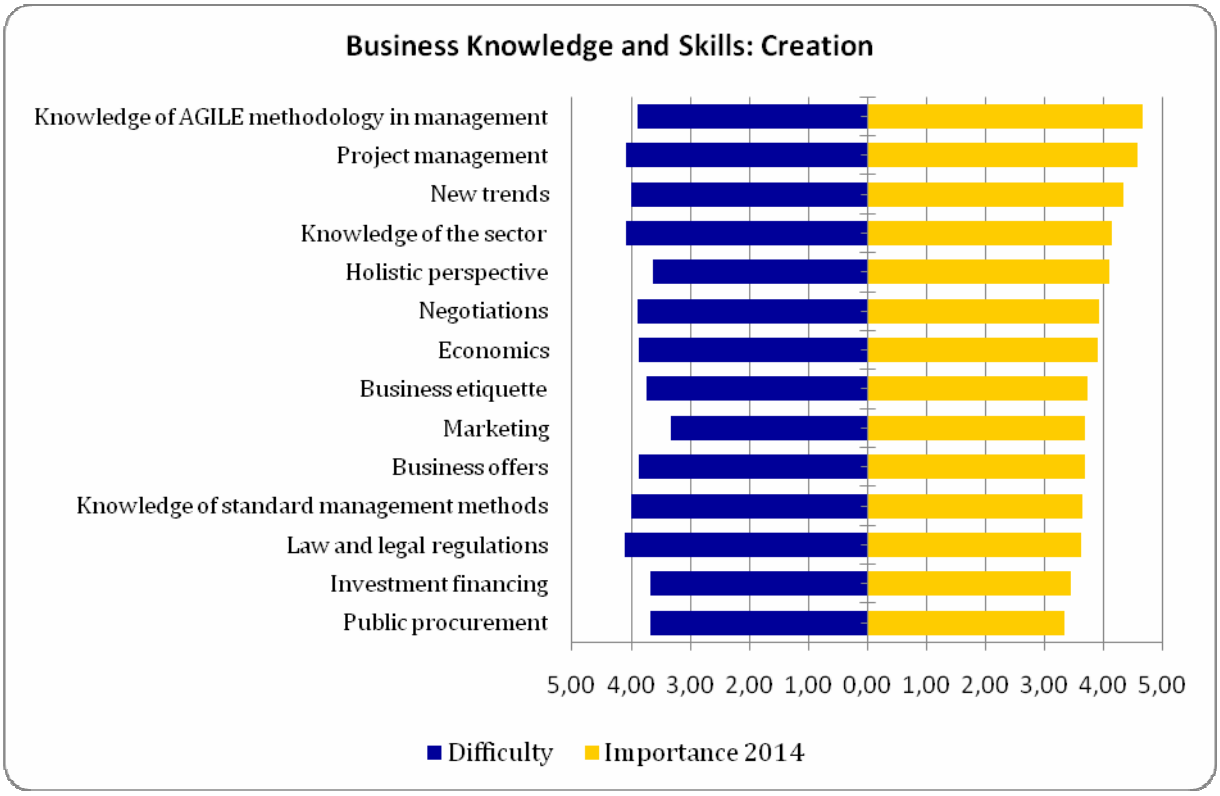

Fig. 10a. Importance of and difficulty in acquiring individual competences in the area of "Business Knowledge and Skills" as perceived by employers.

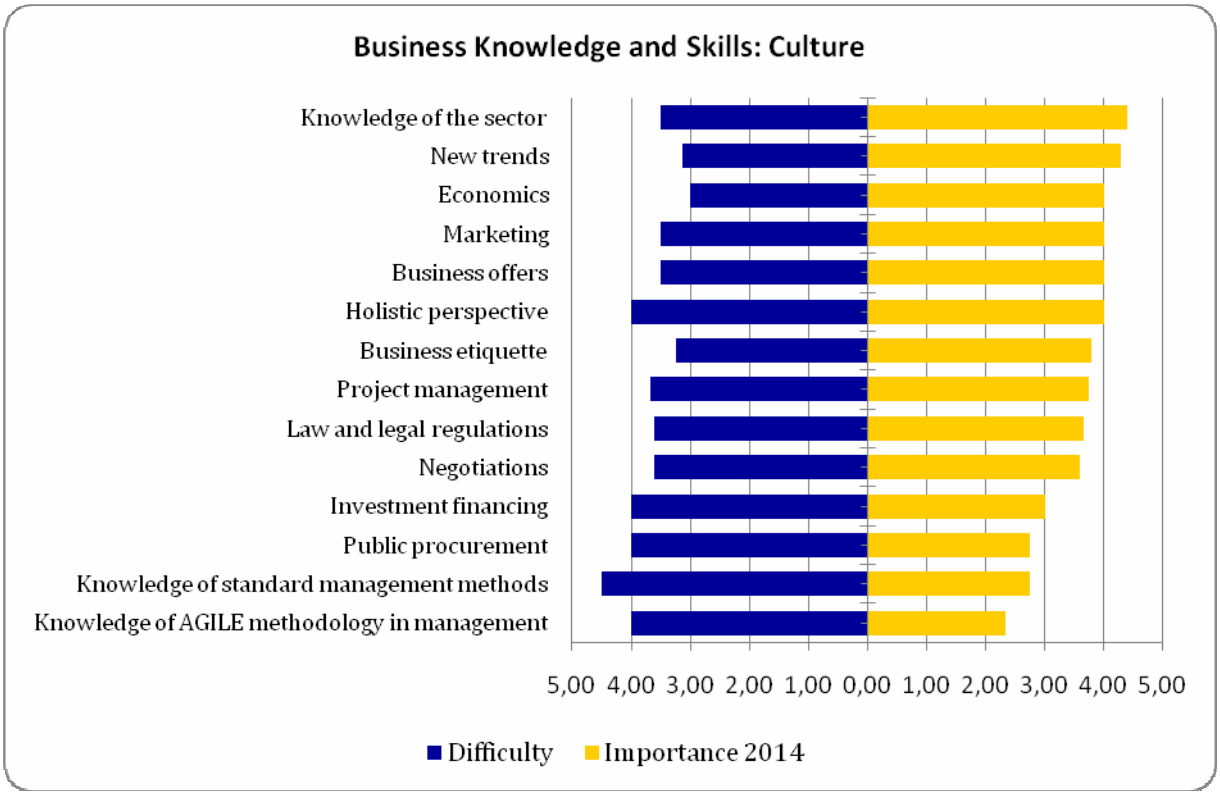

Fig. 10b. Importance of and difficulty in acquiring individual competences in the area of "Business Knowledge and Skills" as perceived by employers.

When recruiting new employees from among Kraków university graduates, employers pay great attention to soft skills which are very important to them. Key competences in the creation segment (Fig. 11a) are: **collaboration, commitment, and innovation**. Employers from the creation and culture segments generally agree that **collaboration** and **innovation** are key competences in their respective areas of activity, although **commitment** seems to be a bit easier to find on the labour market in the culture segment than in the creation segment (Fig. 11b).

As for languages, the key language (hard to acquire and important) for employers from both segments (creation and culture) is **technical English** (Fig. 12a and 12b). When it comes to other requirements, **focus on development** was reported in the surveys as relatively important and difficult to acquire**.**

Asked about additional skills and expectations of the creative business industry towards graduates, other than mentioned in the questionnaire, the surveyed companies pointed to the following: **effective sales techniques, experience, server administration, handling of data bases, business customer handling, improvisation skills, ability to act spontaneously.**

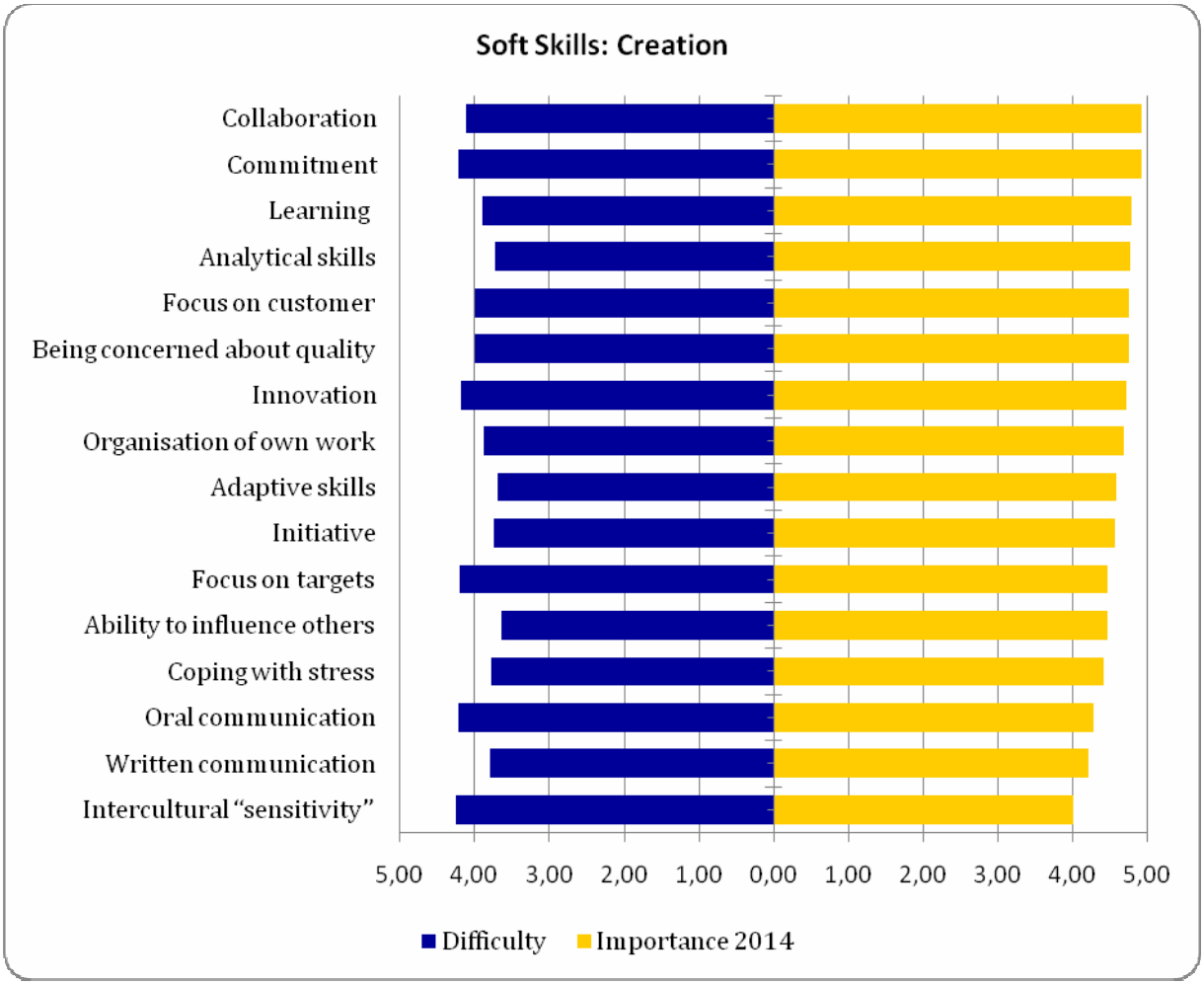

Fig. 11a. Importance of and difficulty in acquiring individual competences in the area of "Soft Skills" as perceived by employers.

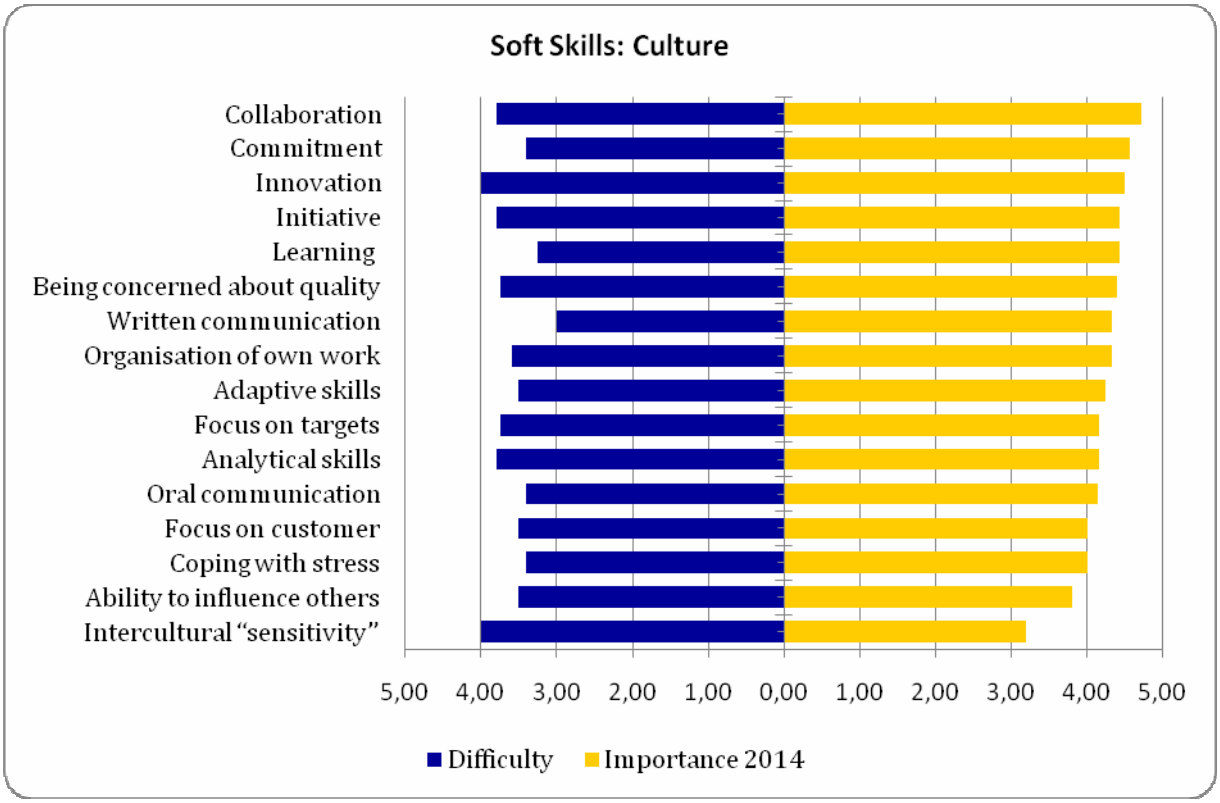

Fig. 11b. Importance of and difficulty in acquiring individual competences in the area of "Soft Skills" as perceived by employers.

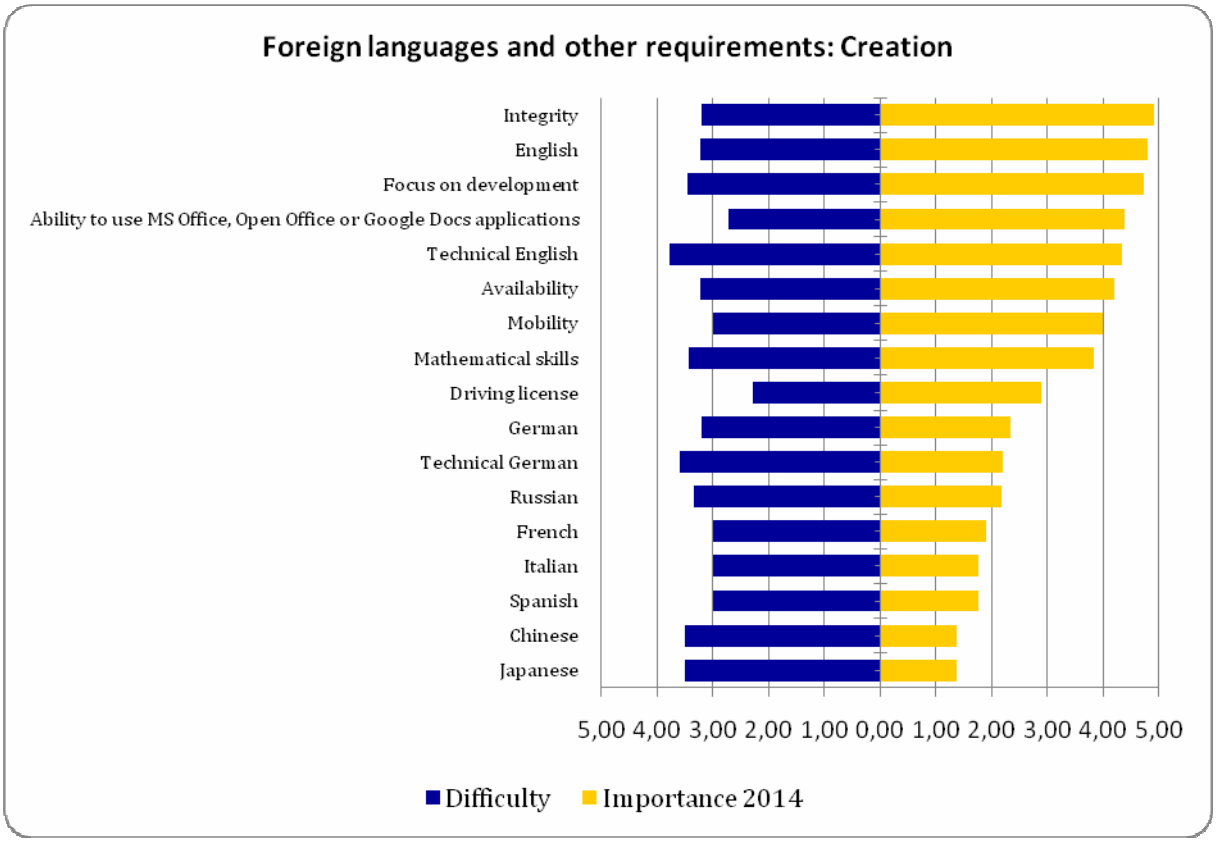

Fig. 12a. Importance of and difficulty in acquiring individual competences in the area of "Foreign Languages and Other Requirements" as perceived by employers.

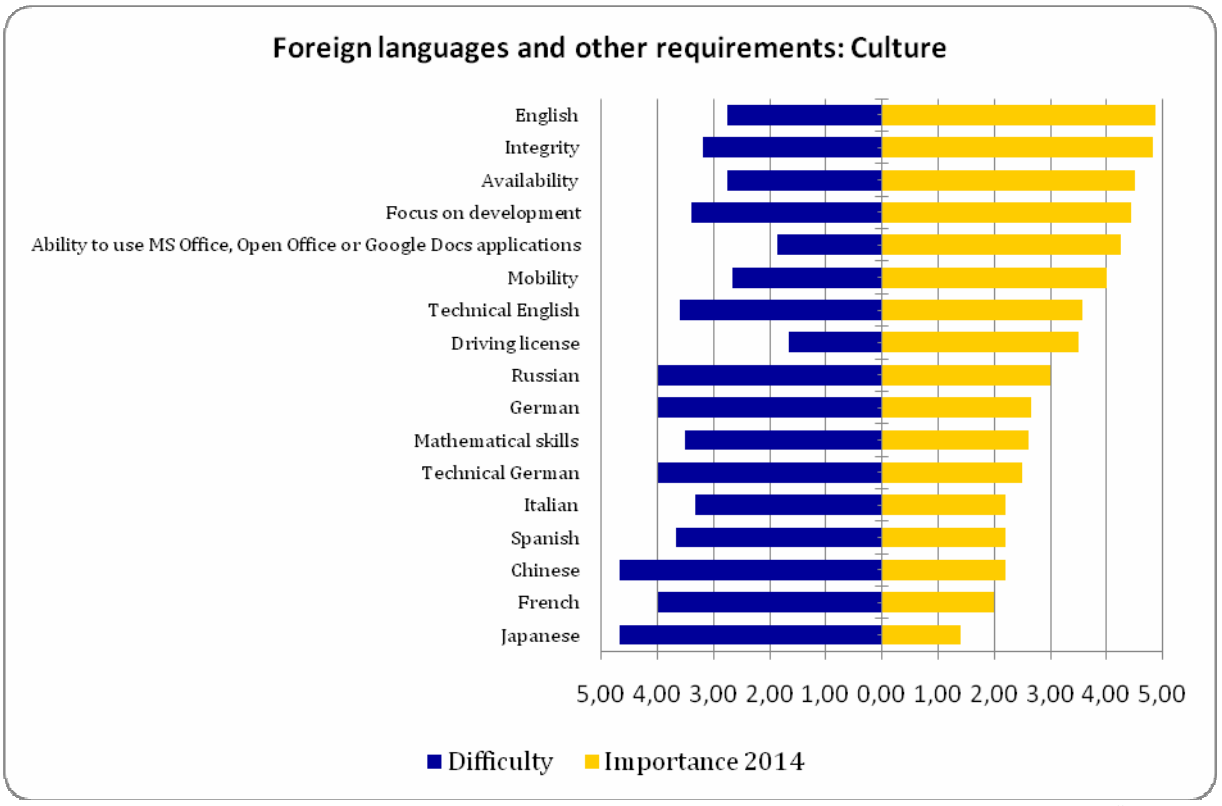

Fig. 12b. Importance of and difficulty in acquiring individual competences in the area of "Foreign Languages and Other Requirements" as perceived by employers.

SUPPLY ANALYSIS:
EDUCATIONAL RESULTS IMPORTANT FOR THE SECTOR

The analysis of educational effects achieved in fields of study related to the creative business sector has a complex nature. Educational effects, ex definition, relate to an average student, which means that amongst the graduates are those with a much higher level of professional preparation, as well those with a level of professional preparation being lower than average. In this context, replies related to education quality given by businesses and universities seem quite similar.

The table below presents the titles of university courses that were indicated by the representatives of companies as those whose profiles best fit the expectations of businesses.

Fields/specialisations/profiles[21] of study most often mentioned by sector companies as best meeting their expectations
Social and cultural animation
Architecture, Interior design
Journalism
Film Studies
Polish Philology

[21] The original names given by entrepreneurs are preserved; individual categories do not always constitute a separate area. Results supplemented by desk research analysis.

Fields/specialisations/profiles[21] of study most often mentioned by sector companies as best meeting their expectations
Industrial forms
Photography
Graphic art, Graphic art for advertising purposes
IT, applied IT, IT mathematics
Intermedia
Sound engineering
Composition, Theory of music
culture studies
Painting
Marketing, Internet marketing
Organisation of TV and film production
Computer games production
Psychology
Public Relations
Sculpture
Social Science
Literature studies
Design
Management, culture management

Table 6. List of courses, specialisations, and profiles of study most often mentioned by employers as teaching students in areas needed in the life science sector.

Educational effects achieved in each of the four competence groups will be presented in a number of charts (figures) below. Data presented in them are not the averaged replies as it was in the case of the demand for competences, but a percent of fields of study in which the educational effect is achieved at least at the average level. Such approach corresponds to the fact that, except a number of post-graduate studies and very few specialist fields of study, only rarely are most competences important for the sector being taught at a given field of study. On the other hand, there are taught competences that for a given sector are rather irrelevant. (This is likely to be a source of unfair judgements often made by business people that graduates possess a lot of useless knowledge as the knowledge they refer to may be useful in other sectors). Should we use means or weighted means, the result would be artificially lowered and would not present the full image of the supply of competences.

In the charts (figures) below we present – in the base five competence groups (specialist knowledge, specialist skills, business knowledge and skills, soft skills, languages and other requirements) broken down into two segments: **creation and culture** – the percentage of the creation-related fields of study (Figure 13a) at which a given educational effect is achieved.

The most common educational results as regards specialist knowledge, resulting from the syllabuses taught in creation-related university courses are: **graphic composition, ability to use equipment, copyrights, 3D modelling, writing scenarios/scripts, designing user interfaces and human-computer interaction**. The issues that are hardly present in university syllabuses are those concerning **GD&T Principles**.

Quite different is the list of supply of competences in the culture segment (Fig. 13b). The most common learning results in this area include: **ability to use equipment, social media, human-**

computer interaction, and painting. The rarest educational results are: **writing scenarios/scripts** and **geometry of 3D objects**.

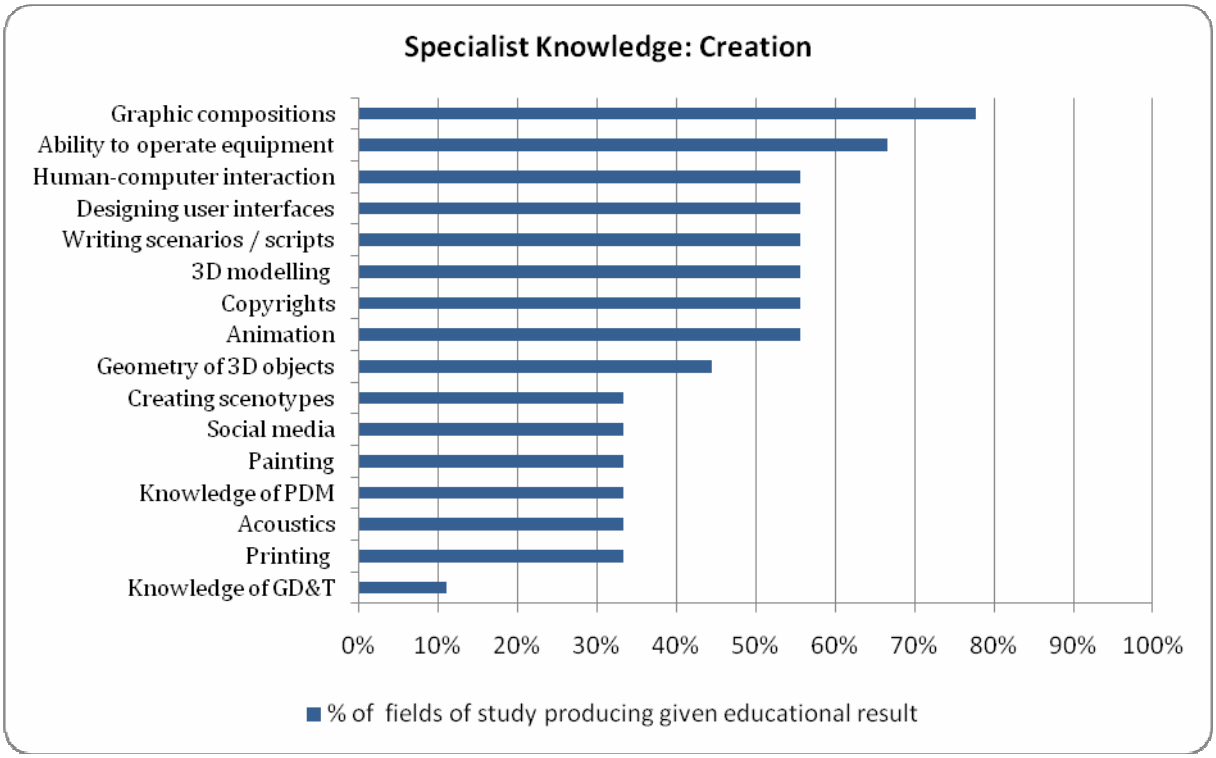

Fig. 13a. Percentage of courses and specialisations producing at least medium level educational results in the area of "Specialist Knowledge" (universities' perspective).

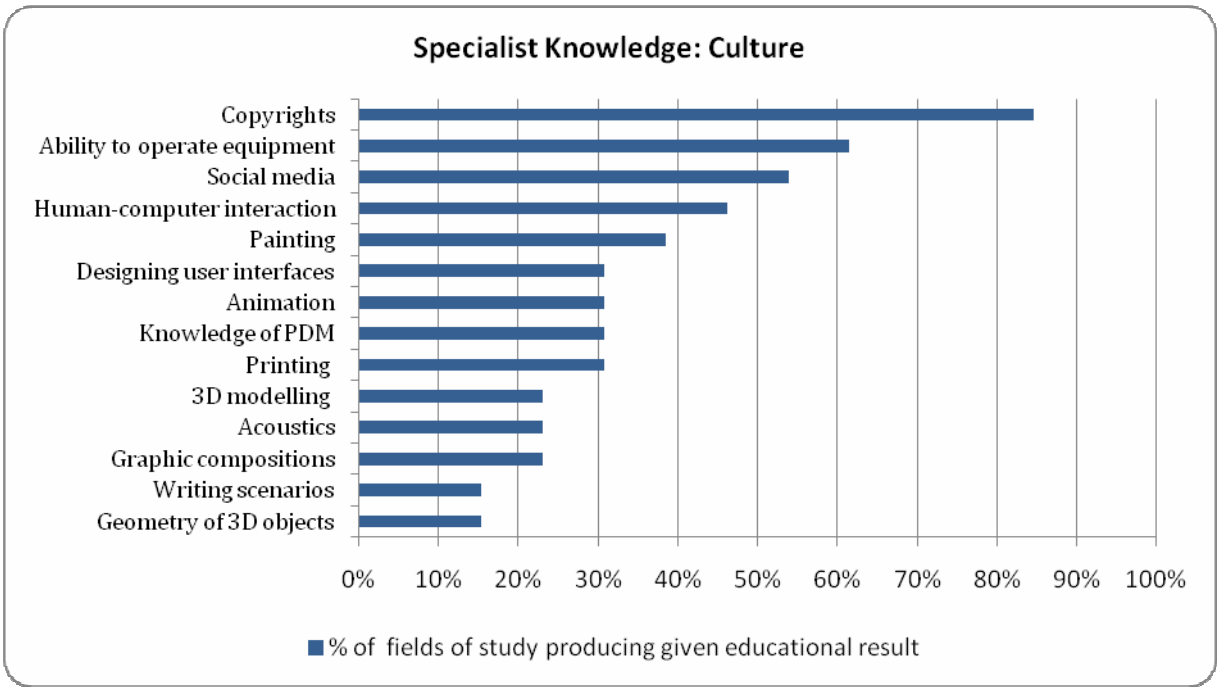

Fig. 13b. Percentage of courses and specialisations producing at least medium level educational results in the area of "Specialist Knowledge" (universities' perspective).

Kraków universities teaching students in subjects connected with creation and culture are rather pessimistic about the educational results in the area of specialist skills achieved by their graduates (Fig. 14aand 14b). Over in half of the courses (creation) the following skills are taught: **preparing presentations, working with Windows system**, **operating software for designing 2D vector graphics, writing texts, Java language programming, creating www pages, operating software for designing raster graphics, and graphic design for printing purposes**.

As for courses related to the culture segment, the most commonly achieved educational results mentioned by the representatives of universities are: **presentations, Windows, ability to express oneself with ease in writing, sense of aesthetics.**

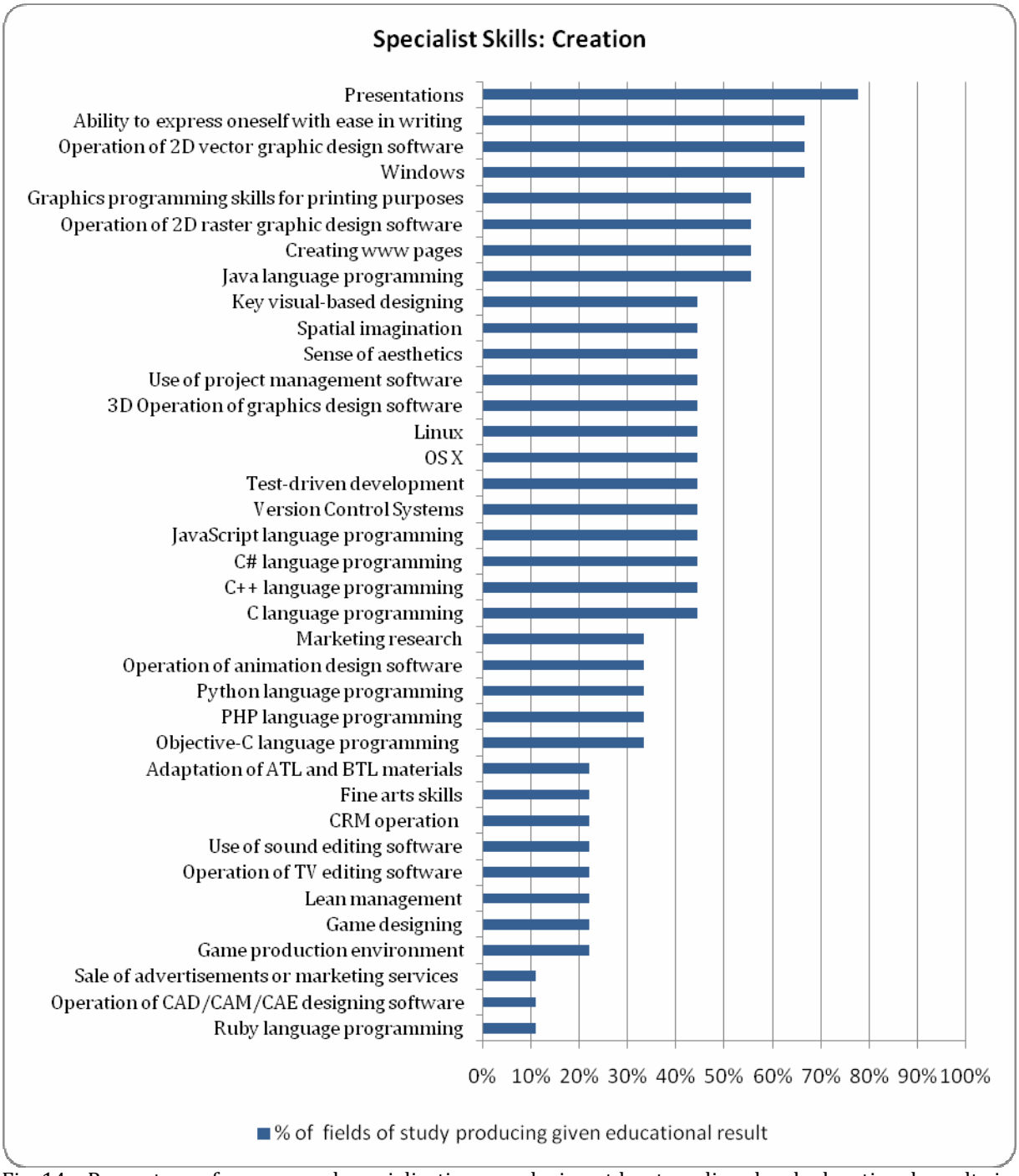

Fig. 14a. Percentage of courses and specialisations producing at least medium level educational results in the area of "Specialist Skills" (universities' perspective).

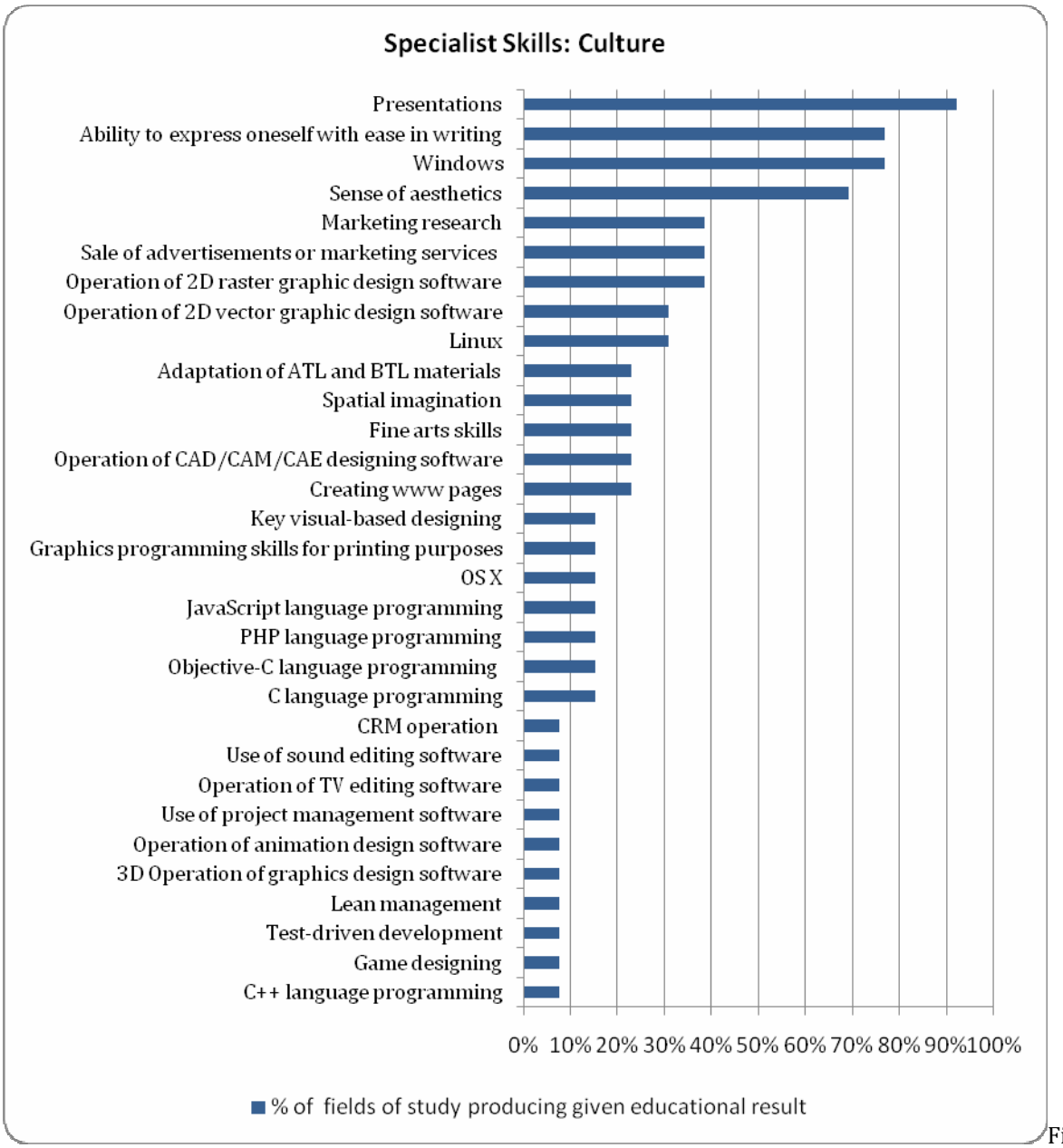

Fig. 14b. Percentage of courses and specialisations producing at least medium level educational results in the area of "Specialist Skills" (universities' perspective).

Business skills in the area significant from the creative business perspective are developed by universities to a considerable degree – more than 50% of courses and specialisations related to the creation segment, provides their graduates with the following competences: **new trends, law and legal provisions, knowledge of the sector, economics, holistic perspective, and business etiquette** (Fig. 15a).

As for the culture segment (Fig. 15b), more than a half of universities teach to their students the following knowledge and skills: **knowledge of the sector, new trends, law and legal provisions, business etiquette, investment financing, marketing, holistic perspective, and project management.**

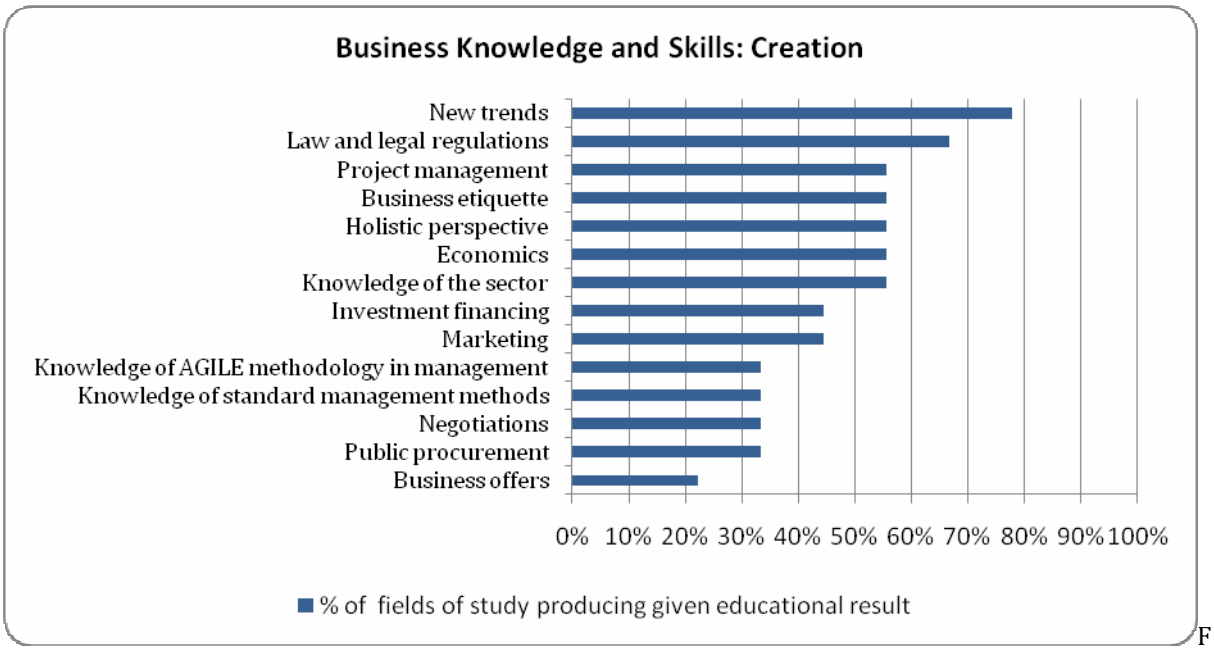

Fig. 15a. Percentage of courses and specialisations producing at least medium level educational results in the area of "Business Knowledge and Skills" (universities' perspective).

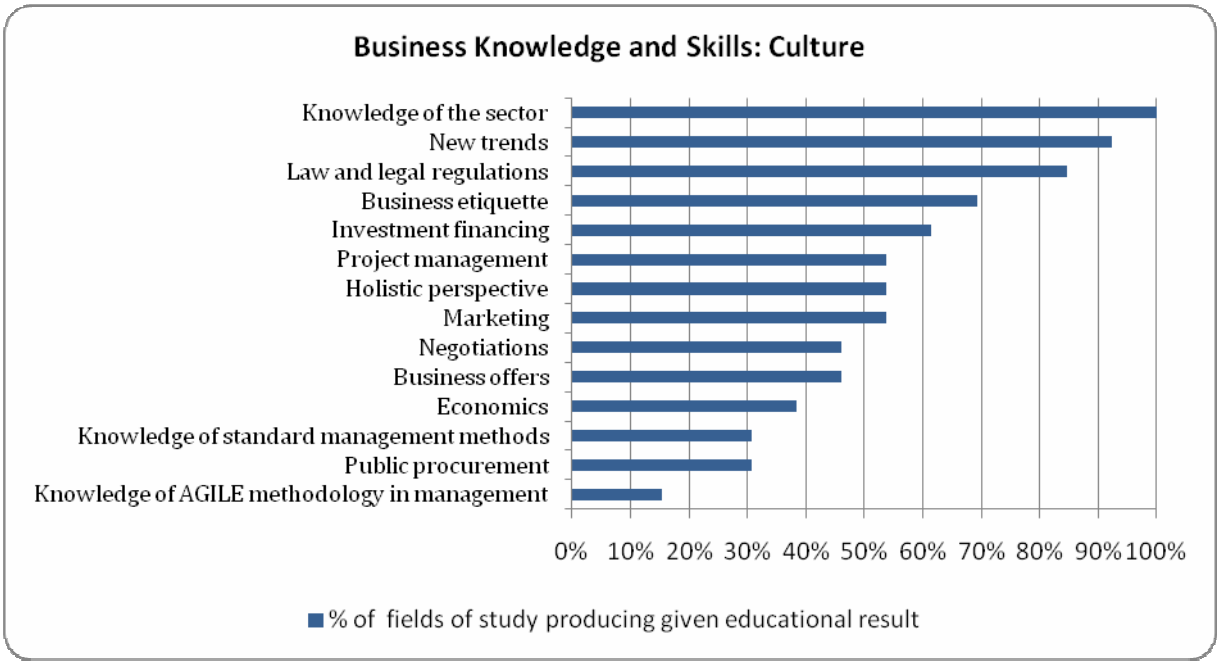

Fig. 15b. Percentage of courses and specialisations producing at least medium level educational results in the area of "Business Knowledge and Skills" (universities' perspective).

The situation concerning the development of soft skills by universities is as optimistic as in the case of business knowledge and skills, both with respect to the subjects and specialisations related to the creation segment (Fig. 16a) and the culture segment (Fig. 16b). In both segments, the representatives of over half of subjects and specialisations taught claim that their students **develop all soft skills mentioned in the survey.**

In the creation segment, the most commonly achieved educational results – as reported by universities – are: **written communication, oral communication, organisation of own work, ability to influence others, and learning**; in the case of the culture segment, the best

educational results are achieved with respect to the following soft skills: **ability to influence others, learning, and adaptive skills**.

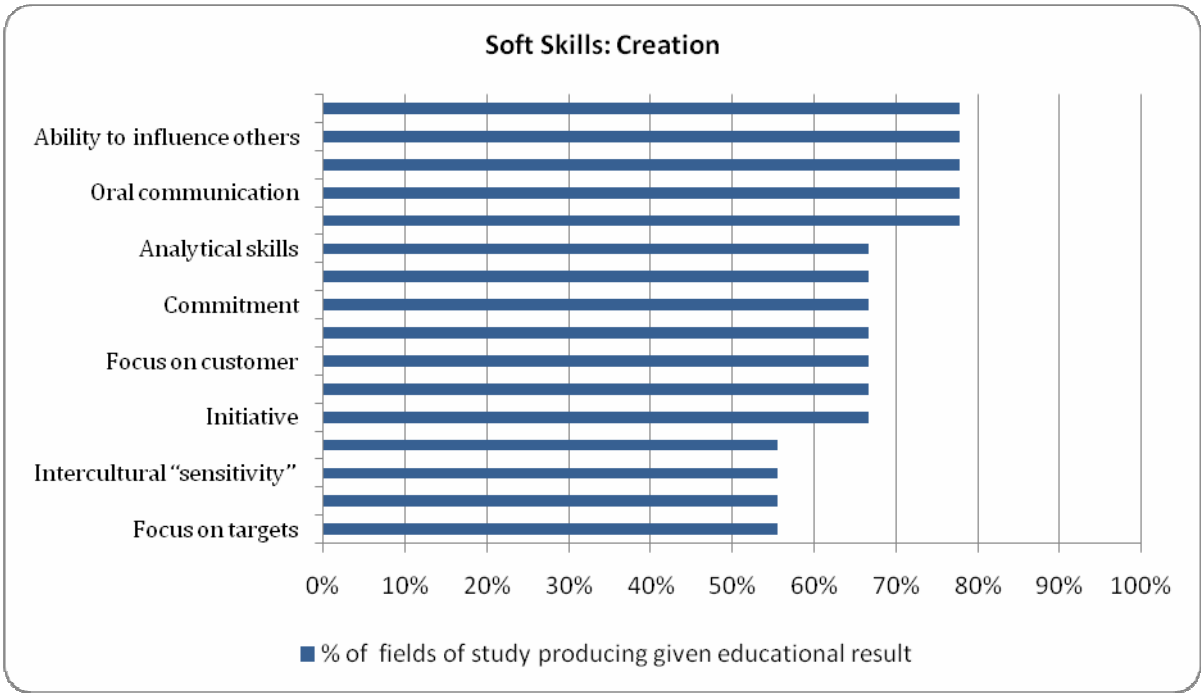

Fig. 16a. Percentage of courses and specialisations producing at least medium level educational results in the area of "Soft Skills" (universities' perspective).

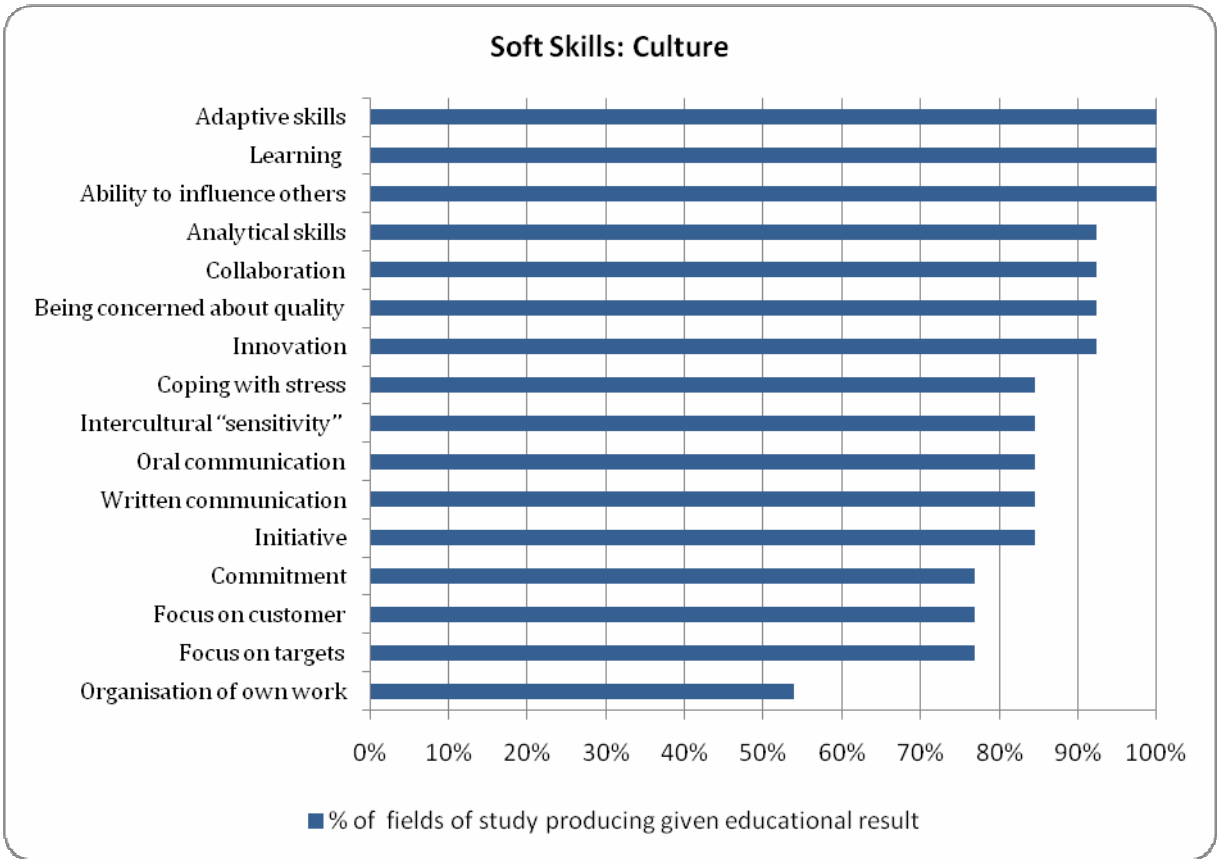

Fig. 16b. Percentage of courses and specialisations producing at least medium level educational results in the area of "Soft Skills" (universities' perspective).

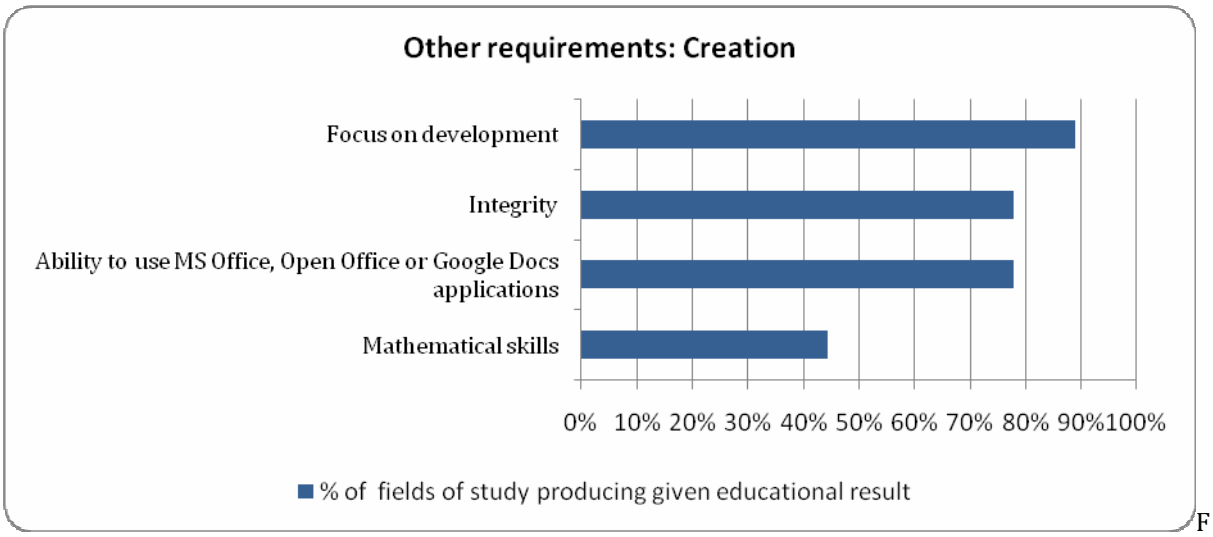

Fig. 17a. Percentage of courses and specialisations producing at least medium level educational results in the area of "Other Requirements" (universities' perspective).

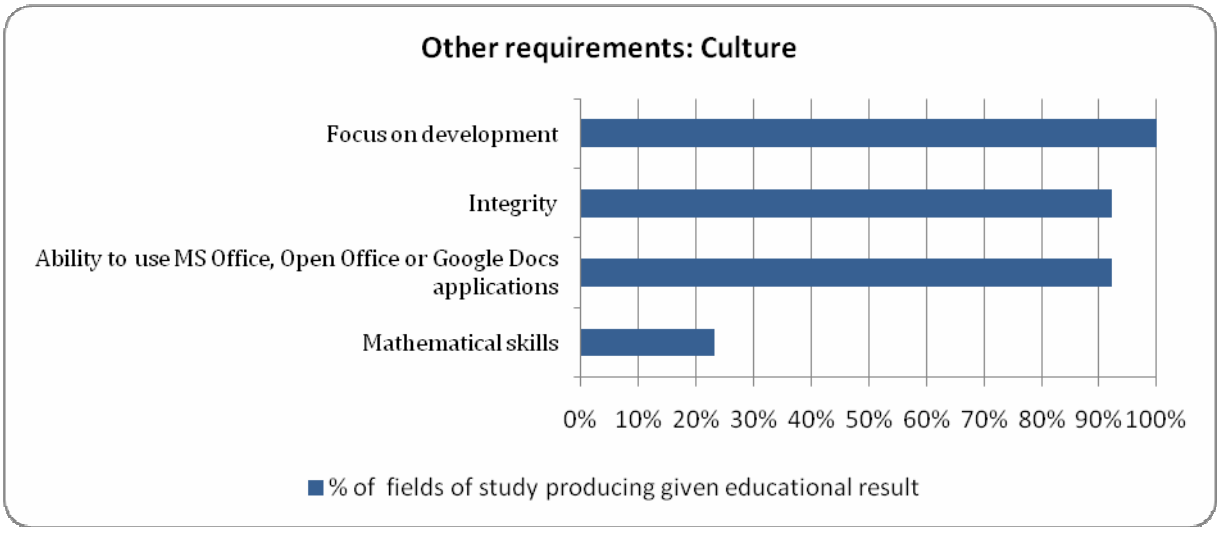

Fig. 17b. Percentage of courses and specialisations producing at least medium level educational results in the area of "Other Requirements" (universities' perspective).

Among competences which, by their nature, cannot be classified as specialist knowledge and skills, universities declare – both with respect to the creation and the culture segment (Fig. 17a and 17b) – that their graduates achieve the following educational results: **focus on development, integrity and familiarity with office software**. On the other hand, less common in syllabuses are **mathematical skills.**

As regards education in language skills, the institutions directly responsible for the quality of education are foreign language colleges of universities. The English language is a mandatory course at almost all fields of the 1st and 2nd levels of university studies. However, students may elect to attend an additional free-of-charge course in a foreign modern language. An additional value is offered in the form of lectures administered in the English language. Foreign language courses are not included in the curricula of most post-graduate studies. According to figures showing the attendance of foreign language classes, most students chose the English language (level B2), then German, French and the English language of a higher level.

According to statements by the representatives of foreign language colleges, the offer of foreign language courses is quite flexible and may be easily adapted to the requirements of the labour market and/or students' preferences. The status of foreign language courses at universities is such that students may have a decisive vote by subscribing, or refusing to subscribe to certain courses and developing their language competences at least at the basic level. (The development of language skills at higher levels is obstructed by a limited number of available classes.)

BALANCE OF COMPETENCES: TRANSFER OF COMPETENCES FROM UNIVERSITIES TO BIZNESSES

The demand analysis, carried out by us, revealed competences that are perceived by the sector as core ones, along with shifts in their importance in the future, and difficulties suffered by employers in recruiting graduates possessing actual knowledge and skills. The analysis of supply showed what educational effects are acquired at fields of study related to the sector, and how comprehensive is relevant education. **In this chapter, we juxtaposition the two perspectives, giving focus to the comparison of difficulties in acquiring competences with the average level of their being achieved at universities.** In this context, certain reservations need to be made in relation to differences we observed in the assessment of said difficulties and university education.

In the event that the views of businesses and universities views were the same, we would have a situation in which competences that employers find difficult to acquire were not taught at universities. Rather low relationship of this type in the presented results (correlation r =-0.23[22]) is observable in the area of specialist knowledge in the creation segment and in the area of specialist knowledge and skills in the culture segment (correlation –0.33 and -0.38, respectively). **This means that the offer of universities and the perception of the labour market by business coincide to a certain degree in these areas.** Concurrently, a considerable discrepancy is observable between business and universities as regards business knowledge and skills – in the case of the creation segment the correlation gives positive value (r=0.41 – the better educational results on the part of the universities, the more difficult it is to find a given competence on the market) and in the case of culture – close to 0 (no interdependencies in the perception of the supply). It should be noted here that the discrepancy in the assessment of business knowledge and skills among graduates does not means that the "blame" is attributable only to universities which inadequately assess their teaching offer. There are also other possible and equally probable interpretations here[23].

[22] Correlation (or Pearson's r) is a coefficient describing a linear relationship between two variables, varying between –1 (with -1 a perfect negative relationship – every increase in the value of one variable means proportional decrease in the value of the other), through 0 (no relationship – every increase of the value of one variable means random change in value of the other) to +1 (every increase in the value of one variable means proportional increase in the value of the other).

[23] More information can be found in Appendix 2, containing all quantitative data obtained from the surveys. The comparison of difficulties in acquiring a given competence with a percentage of university courses in which it is developed at least in a moderate degree and with the average score assigned to a given educational result, gives a better picture of the reasons for such discrepancies (e.g. significant difficulties in acquiring along with high assessment of average level of achieved educational results compared with very small percentage of university courses where such skill is being taught suggests that one of the reasons for problems with recruitment is a small number of graduates having the relevant skill or knowledge, etc.).

One of them is related to the method of educational effect defining. The educational effect refers to qualifications acquired by an average student, which means that the labour market is entered by graduates who present a level above average as well as those who present a level below average. Another reason may be sought in the fact that graduates of the fields of studies indicated as fitting the sector profile are employed in other sectors of economy, in other towns and even abroad. Although there is no data available, but it is likely that employment abroad is found by student of high language and business skills. The perception of competences by business and universities may vary because what may represent a satisfactory level to one party may be below an acceptable minimum to the other. Eventually not all competences that are sought may or should be taught at universities, which fact is confirmed by a juxtaposition presented at the end of this chapter, in which the opinions of universities concerning the tasks of universities are shown. Therefore, **the results of the study of competences should be perceived as a tool to be used by universities and businesses to establish an effective co-operation and debate about teaching curricula.**

Figures 18a and 18b present a matrix illustrating interdependencies between difficulties in acquiring certain competences and educational results achieved for the 20 competences of key importance for the sector, broken down into two segments: **creation and culture**.

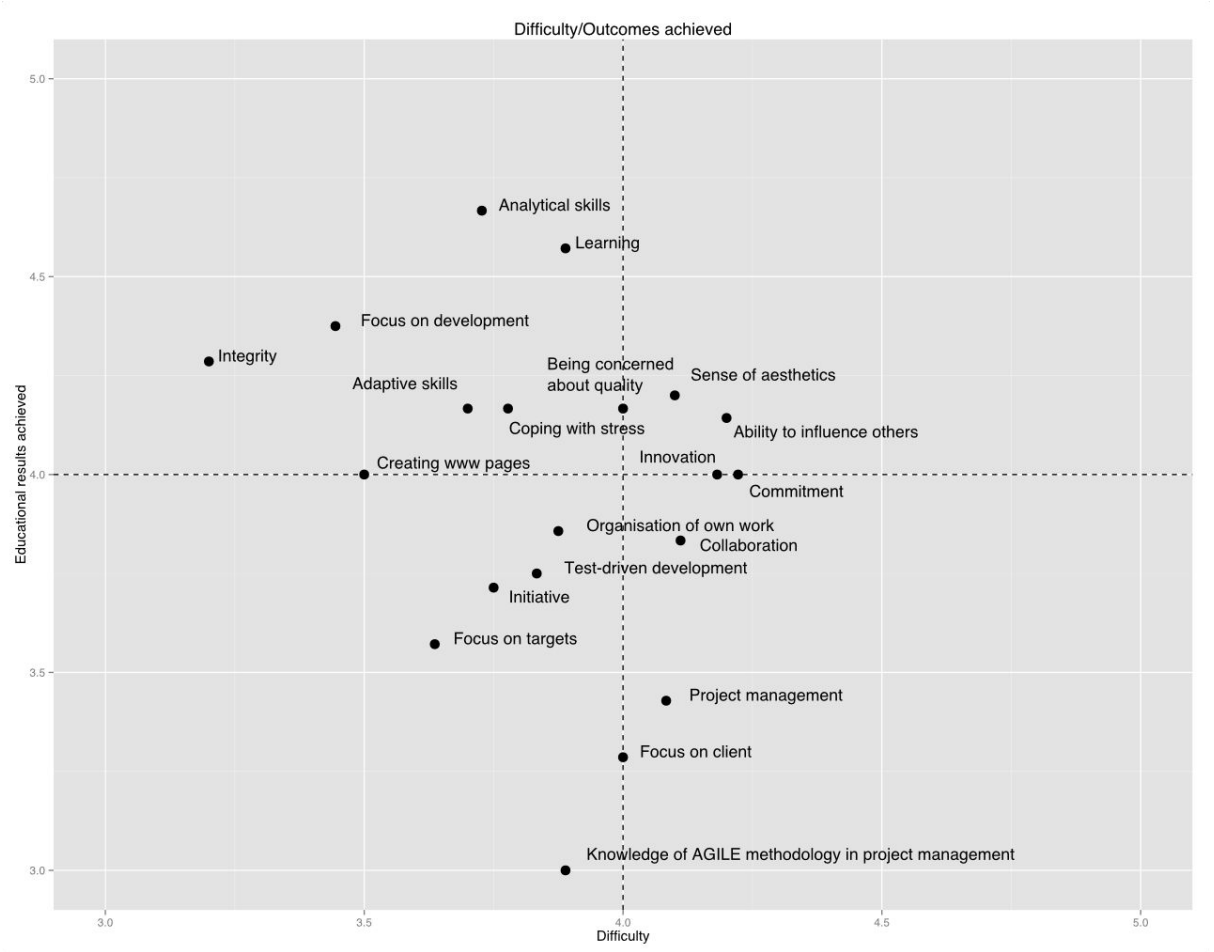

Fig. 18a. (Creation) The matrix illustrating interdependencies between difficulties in acquiring certain competences (employers' perspective) and educational results achieved (universities' perspective) for the 20 competences of key importance for the sector.

The strongest disagreement between business and universities, concerning the competences needed in the creation segment, is observed with respect to **the sense of aesthetics, being concerned about quality, and ability to influence others**. On the one hand, employers are of the view that these features are hard to find in graduates, while on the other, universities claim that these skills are being developed in the course of study. There is much more agreement among universities as regards the competences related to **collaboration** and **project management –** these skills are hard to find, both in graduates and in syllabuses of university courses teaching subject needed in the creative business sector.

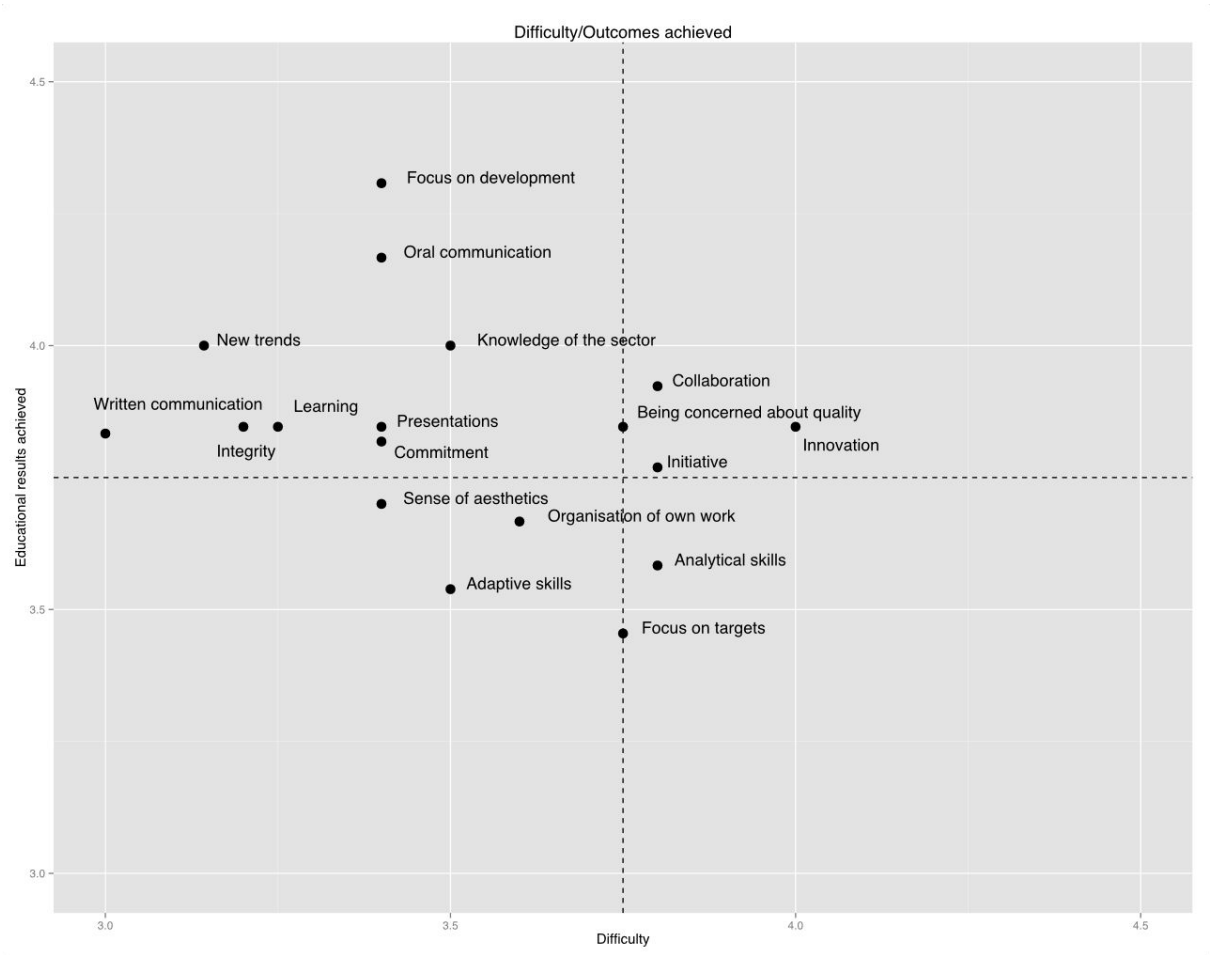

Fig. 18b. (Culture) The matrix illustrating interdependencies between difficulties in acquiring certain competences (employers' perspective) and educational results achieved (universities' perspective) for the 20 competences of key importance for the sector.

In the case of the culture segment, the opinions of universities and employers on the effectiveness of the supply of competences such as **collaboration, innovation, and initiative** may be described as divergent (universities claim that they do achieve educational results in these areas, while business perceives them as hard to find on the labour market). Universities and employers have much more similar opinions as regards **analytical skills** – they are both hard to acquire and to a relatively little degree taught at universities.

The charts below present difficulties in acquiring competences (employers' perspective) and the achieved educational results (universities' perspective) in five basic groups of competences

(specialist knowledge, specialist skills, business knowledge and skills, soft skills, languages and other requirements), broken down into two segments: **creation and culture.**

In the creation segment (Fig. 19a), there is a rather limited relationship between the perception of the level of achievement of the educational results by universities and the difficulties in acquiring specialist knowledge from the business perspective – the competences that are the most difficult to acquire (**human-computer interaction, interface designing, or animation**) in the universities' opinions are rather well taught in the course of studying.

A bit more distinct relationship is observed in the perception of supply in the culture segment (Fig. 19b). Here, the most difficult to acquire are the competences which, in the universities' opinion, are rarely taught to students (such as **animation, familiarity with PDM principles, creating scenotypes)**.

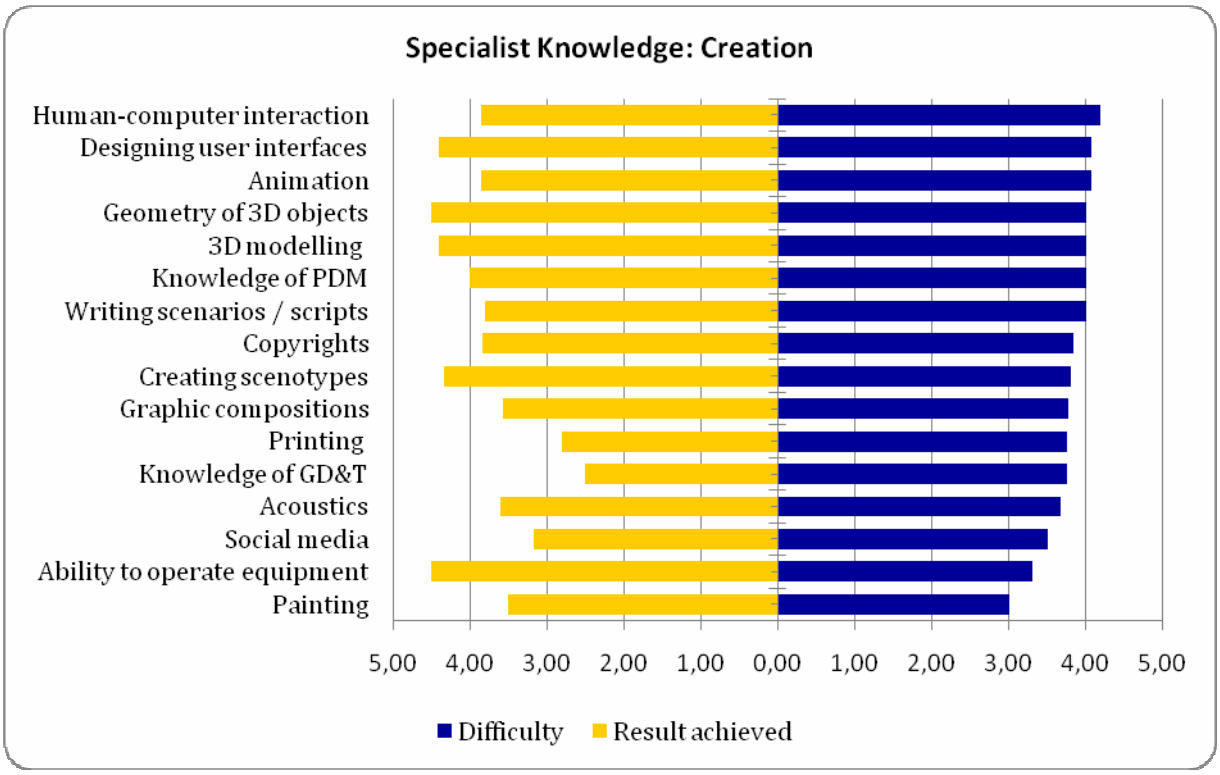

Fig. 19a. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Specialist Knowledge".

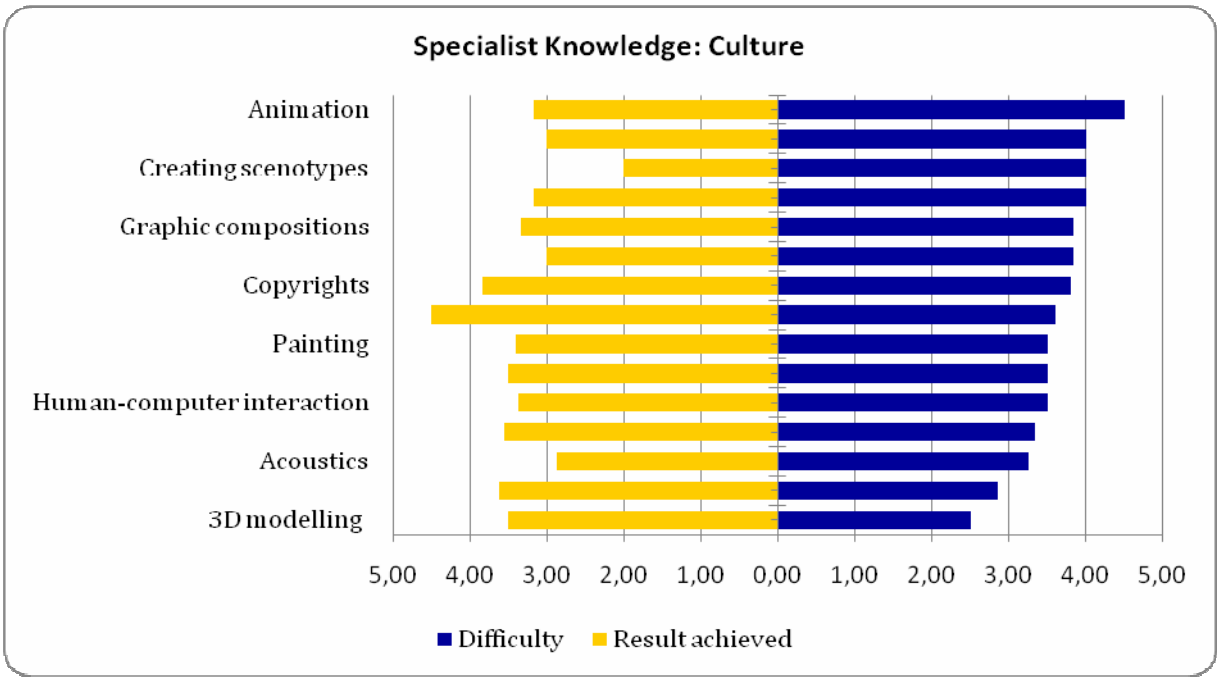

Fig. 19b. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Specialist Knowledge".

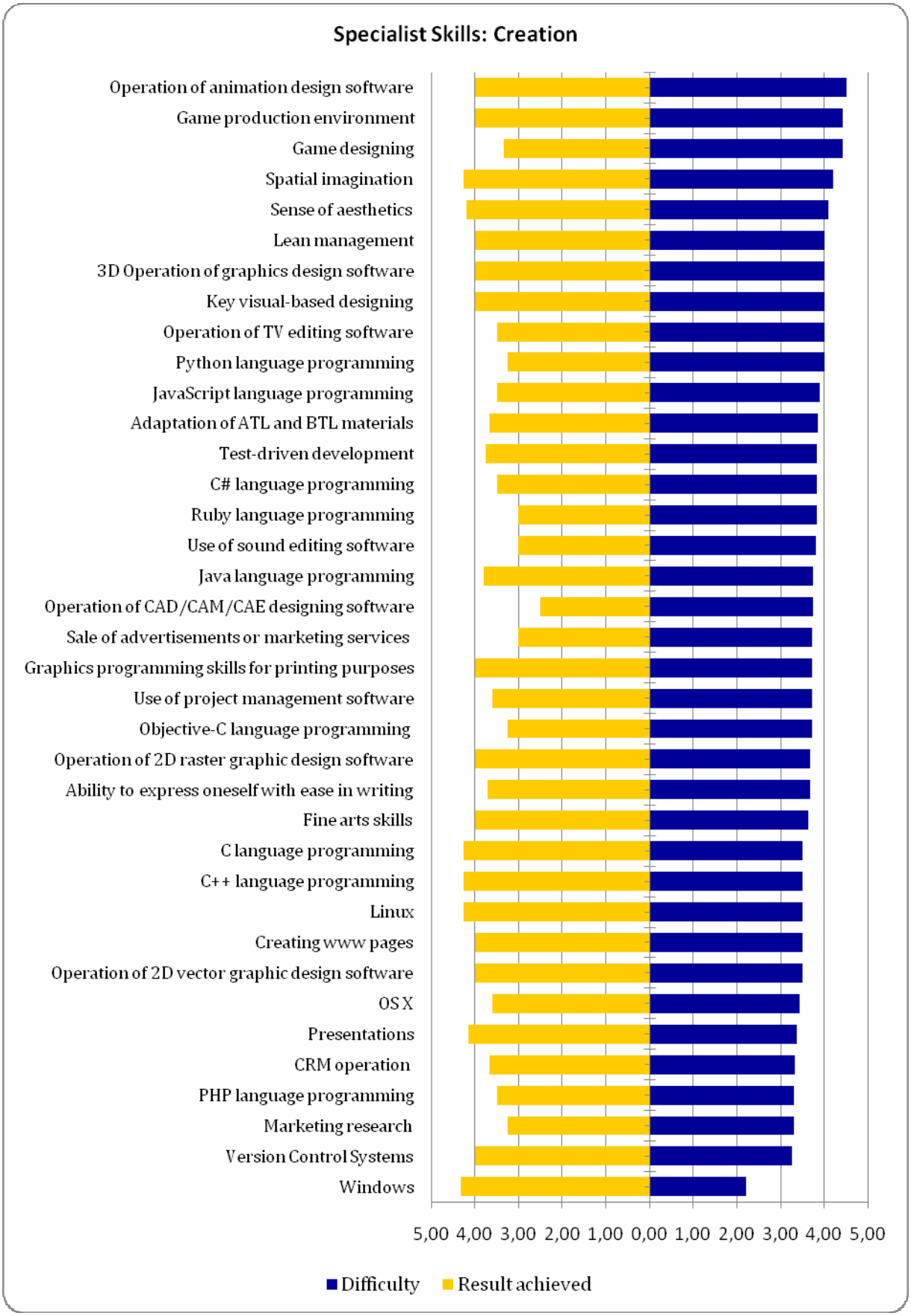

Fig. 20a. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Specialist Skills".

As regards specialist skills in the creation segment (Fig. 20a), the skills that are hard to find on the labour market but, at the same time, according to the representatives of universities, are taught to students, include: **operation of animation software, game production environment, spatial imagination, and a sense of aesthetics**; in the culture segment (Fig. 20b), these are: **operation of project management software.**

In the case of business knowledge and skills (Fig. 21 a), hard to acquire from the perspective of the creation segment, but claimed to be developed in the opinion of universities are the skills concerning **knowledge of the sector and new trends**; as for the culture segment – a discrepancy in the supply of competences is observed with respect to **standard project development methodologies**.

An interesting picture emerges from the analysis of the soft skills and other requirements that employers expect from graduates. It appears that in the case of the competences that are the most difficult to acquire, **intercultural sensitivity, oral communication, and management** (creation, Fig. 21a) as well as **innovation, intercultural sensitivity, and initiative** (culture, Fig. 21b), universities rather positively assess their performance as regards the achieved educational results.

The situation looks better in the case of other skills expected from graduates in the creative business sector (Fig. 23a and 23b) – these are perceived as relatively easy to find on the labour market and relatively well taught to students of universities.

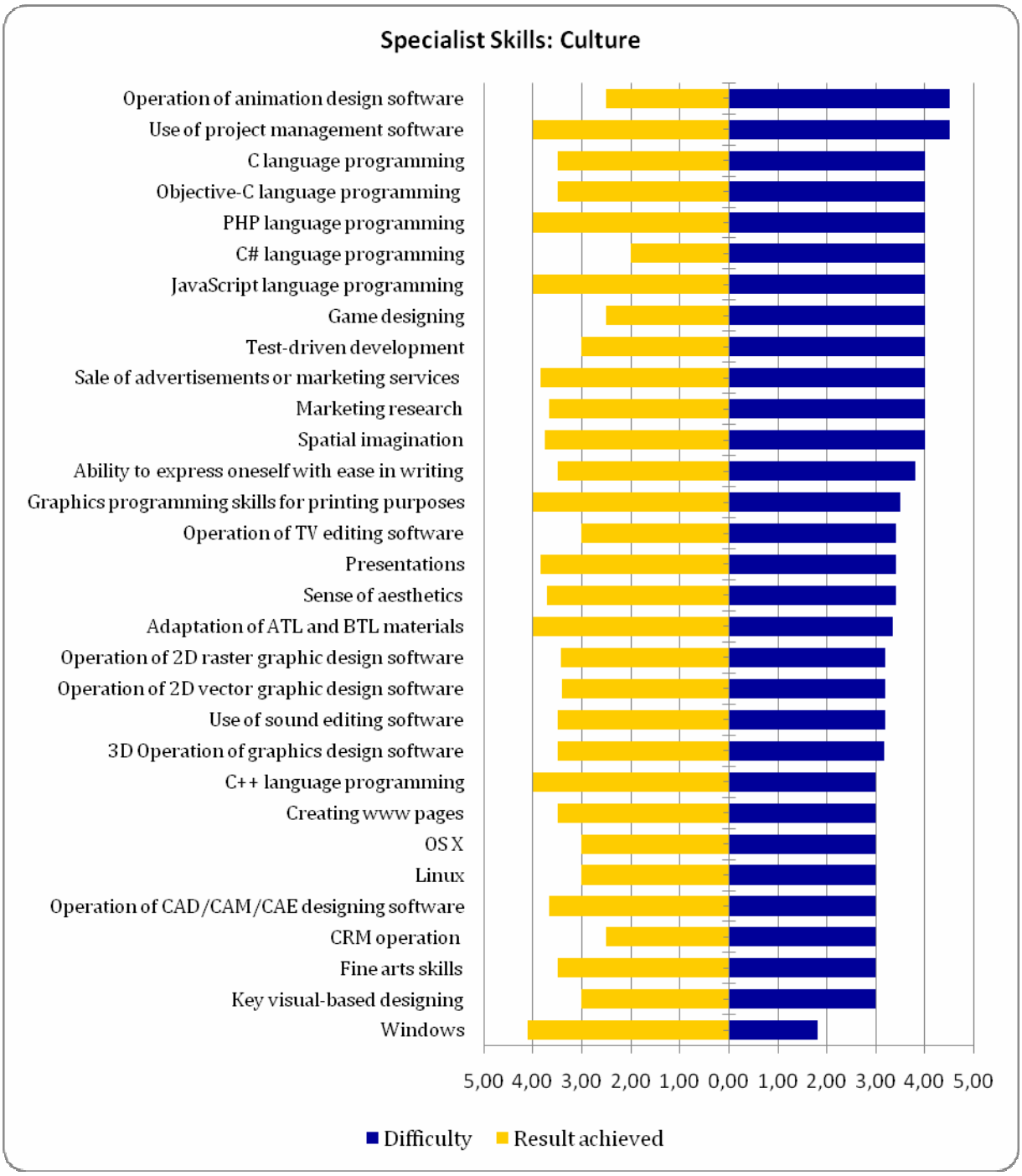

Fig. 20b. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Specialist Skills".

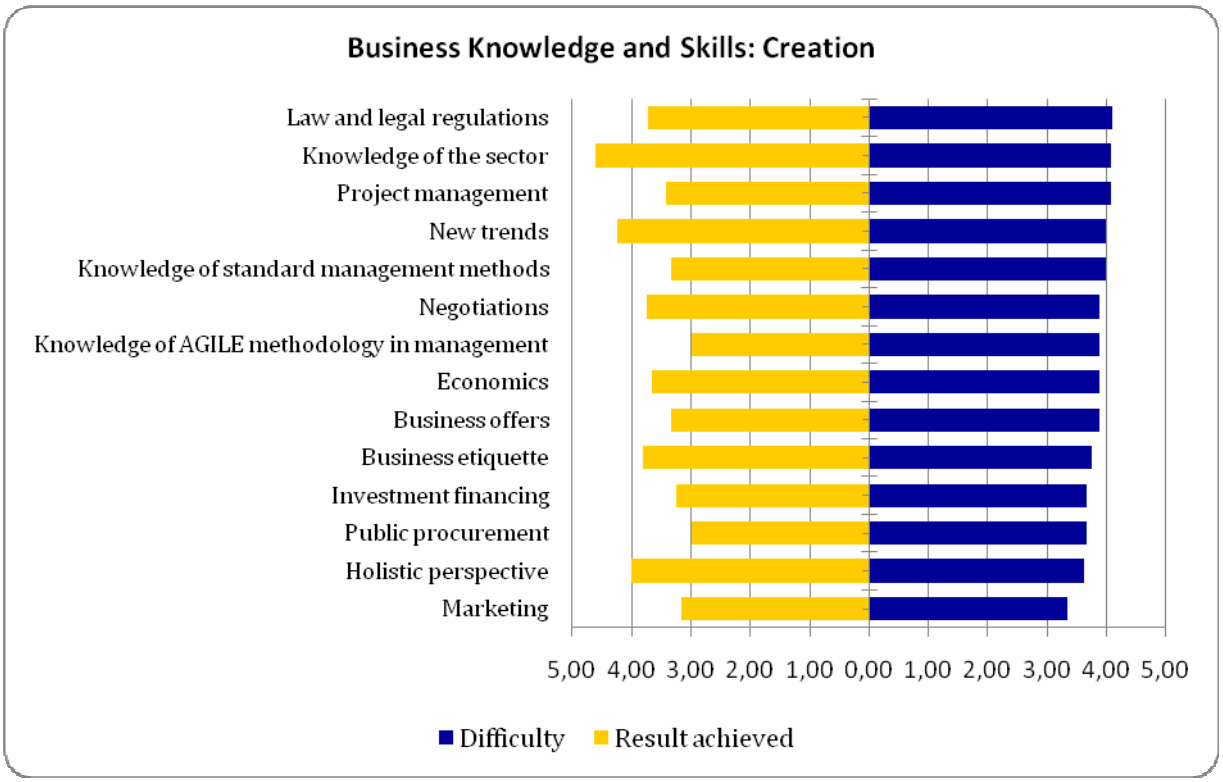

Fig. 21a. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Business Knowledge and Skills".

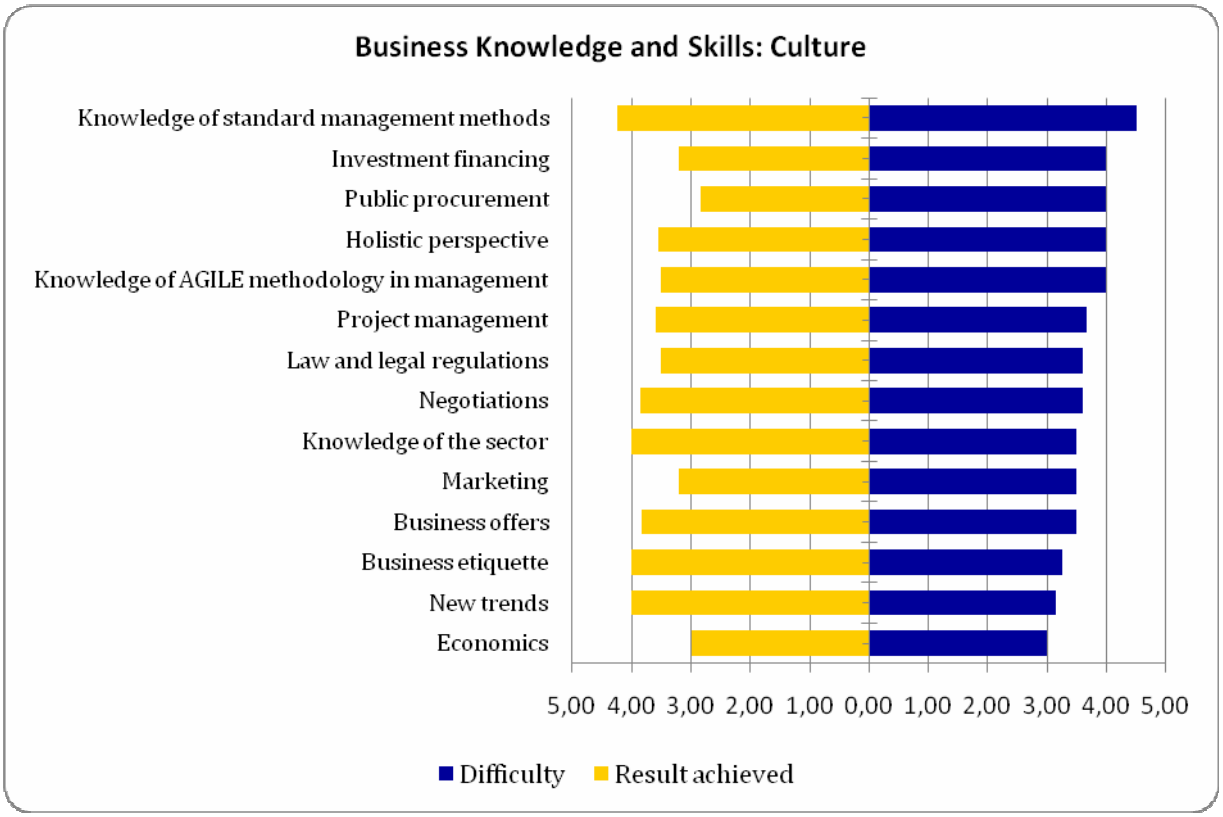

Fig. 21b. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Business Knowledge and Skills".

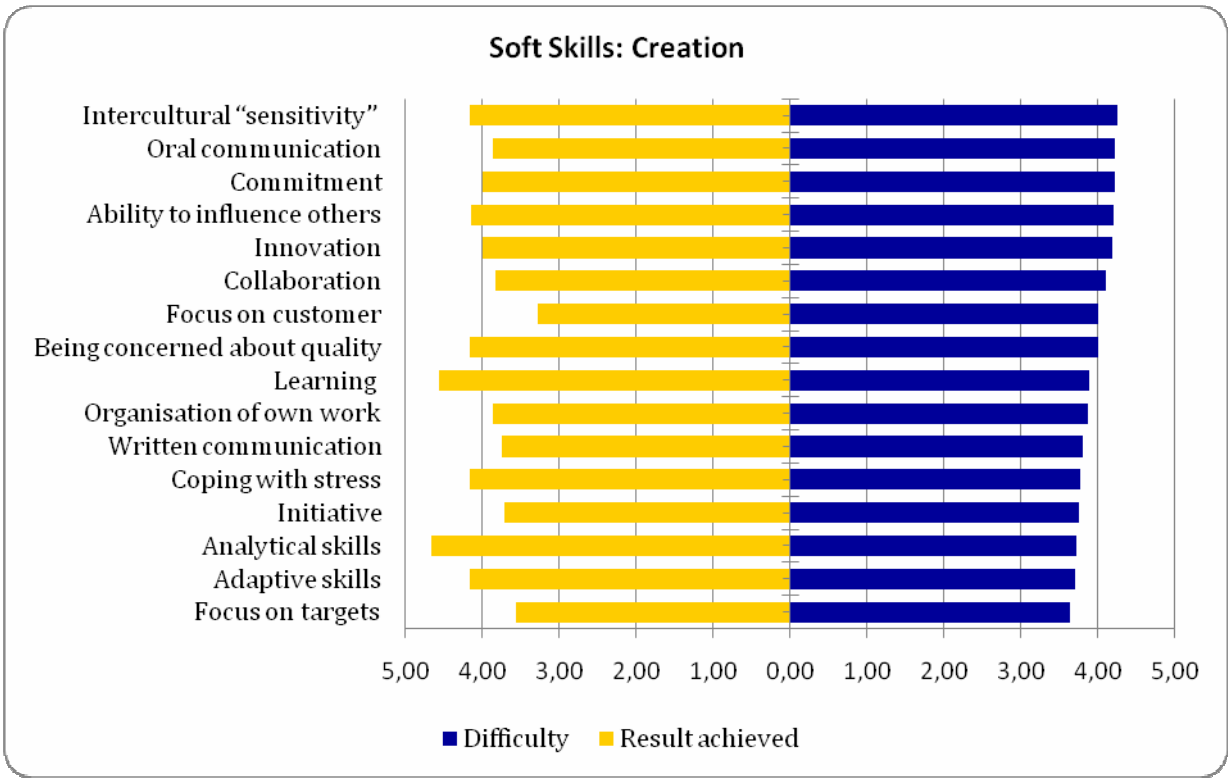

Fig. 22a. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Soft Skills".

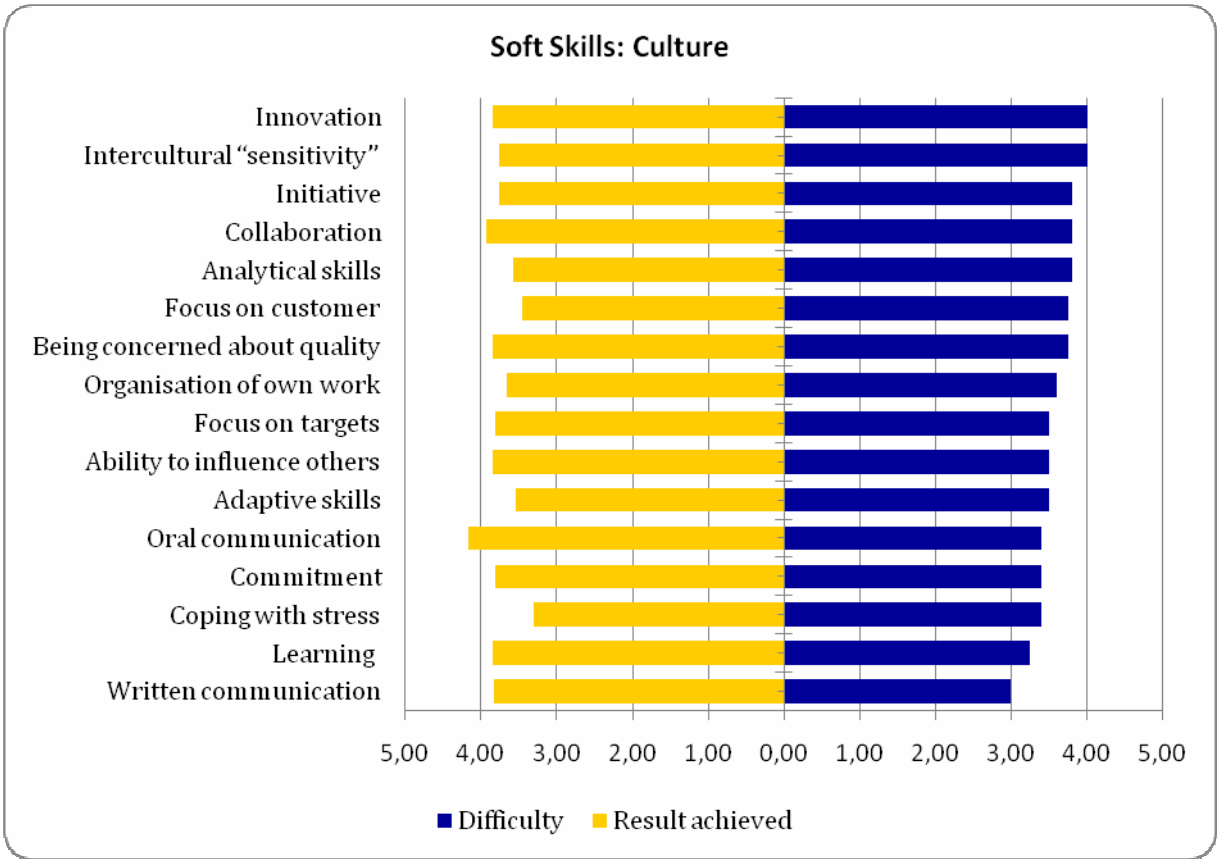

Fig. 22b. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Soft Skills".

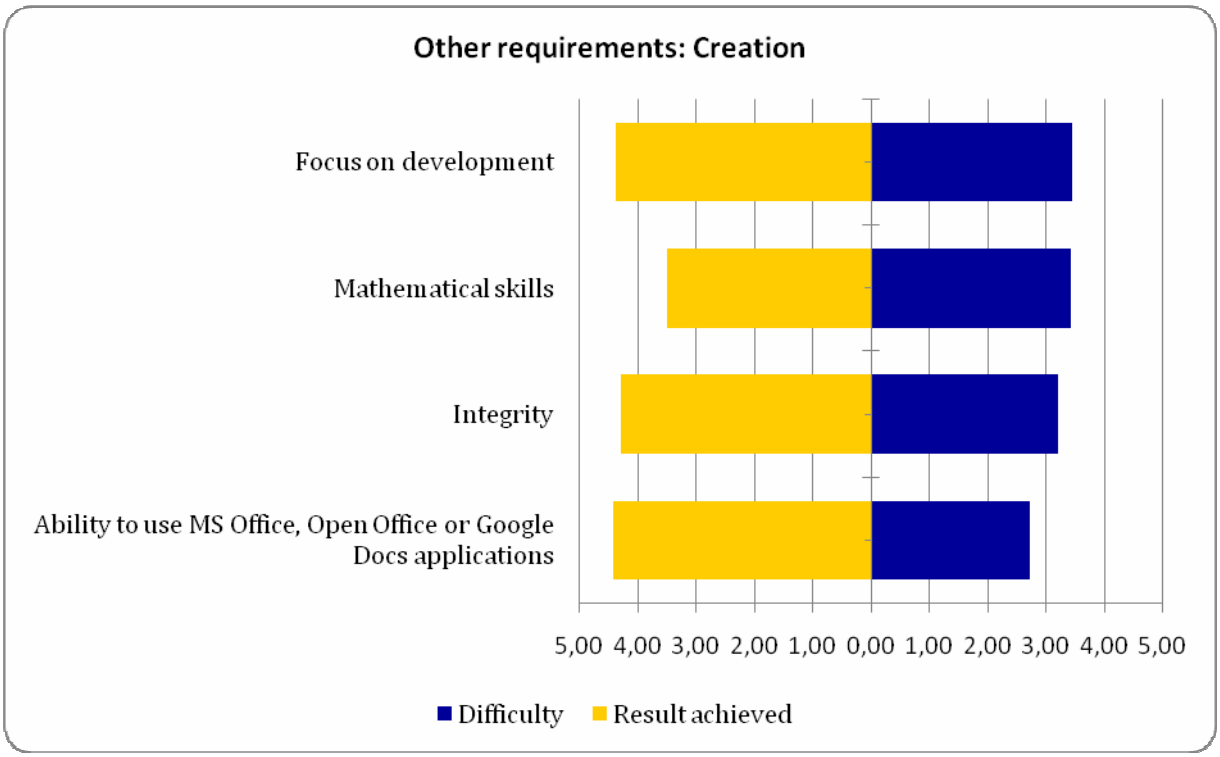

Fig. 23a. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Other Requirements".

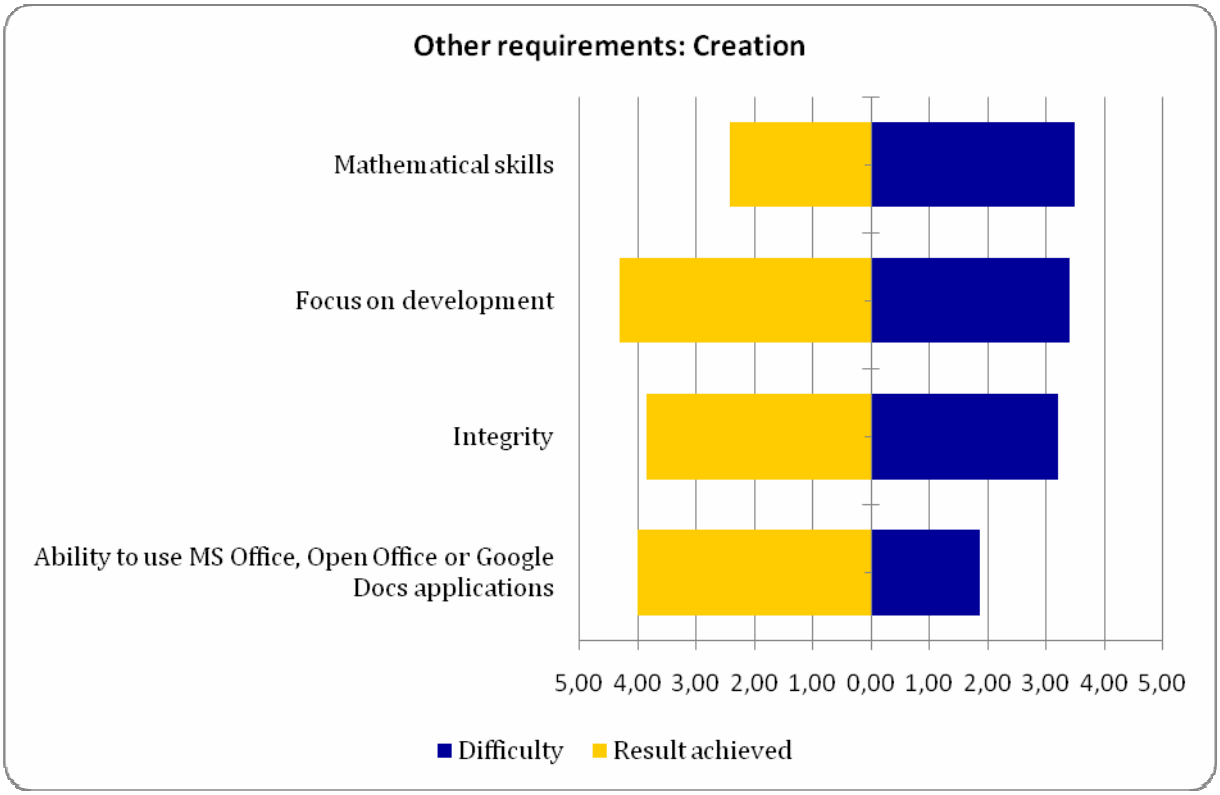

Fig. 23b. Juxtaposition of difficulties in acquiring competences (employers' perspective) with educational results achieved (universities' perspective) in the area of "Other Requirements".

TASKS OF UNIVERSITIES

One of an additional aspects subject to analysis within the framework of the study of competences was constituted by the convictions of the representatives of business and of universities as to how far the teaching of competences should be a task of universities. The inclusion of the area implied a certain risk: at the stage of consultations related to the research tool, certain doubts appeared as to whether (or not) such question may be applied in any other manner than what entrepreneurs claim, i.e. that the whole responsibility for education rests with universities. The results of research show that our fears were groundless, while the inclusion of them allowed a better understanding of the relationships between the supply of and demand for competences in the sector.

Where the opinions of employers and universities were identical as to which competences should be taught at universities, we could expect that there would be a relationship between the perception of the problem by businesses and that by the representatives of analysed fields and specialisations of study. In the presented results, moderate relationship of this type (from r=0.23 to 0.43) is observable in the creation segment with respect to all types of competences, except specialist skills (r=-0.17); in the culture segment – there is practically no relationship (for all groups of skills r ranges from -0.11 to 0.12; the only exception being specialist skills, where the relationship is moderately negative and equals 0.41). This means that there is some agreement – except for specialist skills – between universities and business as to what competences desired in creative business sector should be taught; no such agreement is observed in the culture segment.

Figures 24a and 24b present opinions of the representative of business and universities, concerning the extent to which the teaching of each of the 20 competences considered presently the most important is a task of universities. The results are broken down into two segments: **creation** and **culture**.

In the creation segment, business and universities agree on the place of some competences (learning, analytical skills, creating www pages) important for the sector in the university syllabuses taught with a view to preparing students for this particular market. As regards Focus on targets, initiative, and coping with stress, universities also agree – there is no place for these skills in their syllabuses. Much bigger challenge for the collaboration between science and business are the competences located in other fields of the matrix. As regards **adaptive skills, project management, AGILE methodology, and test-driven development,** universities perceive the development of these competences as their role less frequently than business. In the case of **organisation of own work, sense of aesthetics, focus on development, innovation, and commitment, the situation looks just the opposite – it is the universities that are more convinced about the role they have to play in teaching these skills than it would be expected from them by business.**

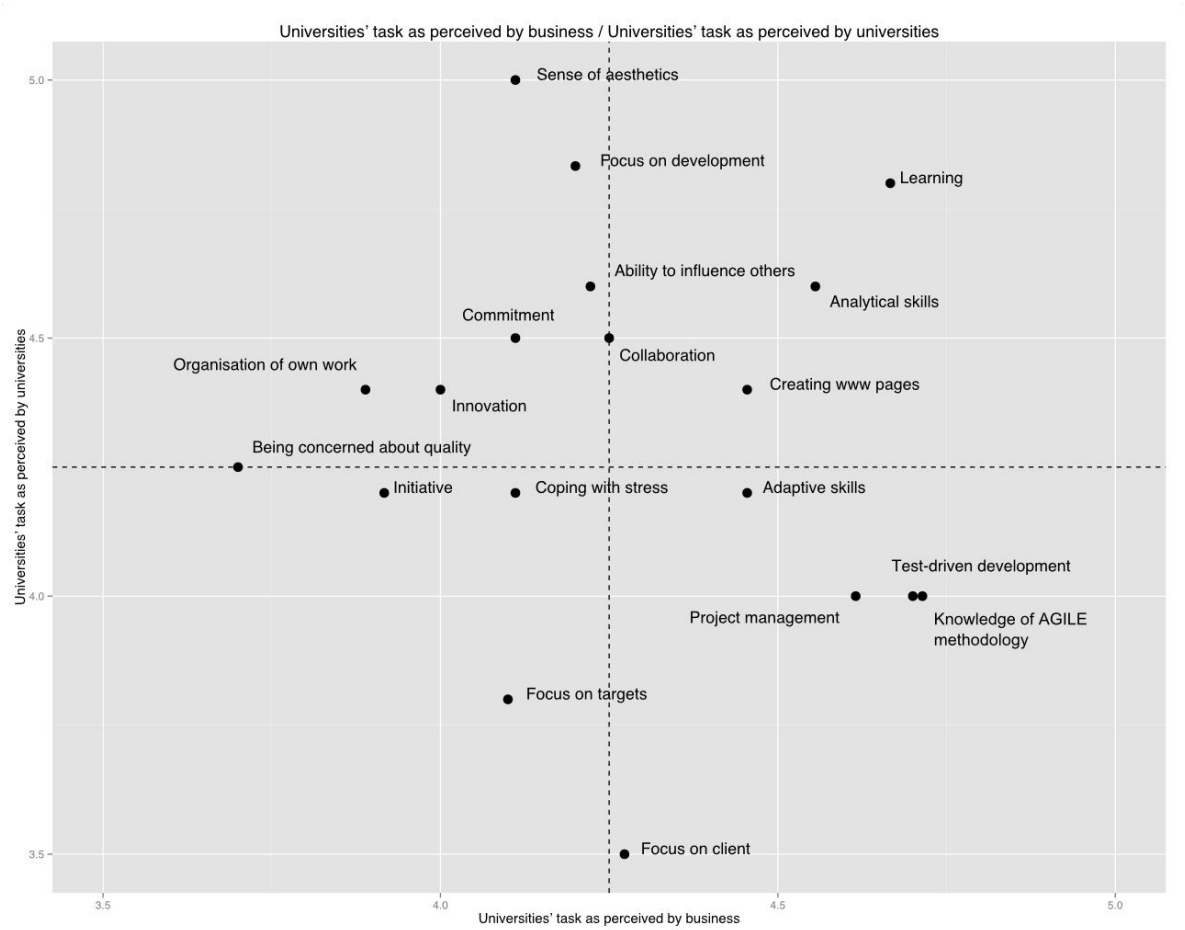

Fig. 24a. (Creation) The Matrix illustrating differences in the perception of development of certain competences as a universities' task by representatives of business and of universities for the 20 competences of key importance for the sector.

In the culture segment, the representatives of employers and universities share the same opinion as regards the place of competences such as **presentations, learning,** and **written communication** in university syllabuses. As for **knowledge of the sector, initiative, ability to use office applications and Windows system –** business and universities also agree that these skills should be developed elsewhere, not at universities. As in the case of the previous matrix, the remaining fields represent the challenge. Employers – unlike universities – are of the view that achievement of educational results as regards **Focus on targets, innovation and analytical skills** is the role of universities. On the other hand, teaching **oral communication, collaboration, organisation of own work, knowledge about sector trends and the sense of aesthetics** is perceived by universities as their task, although business does not share this view.

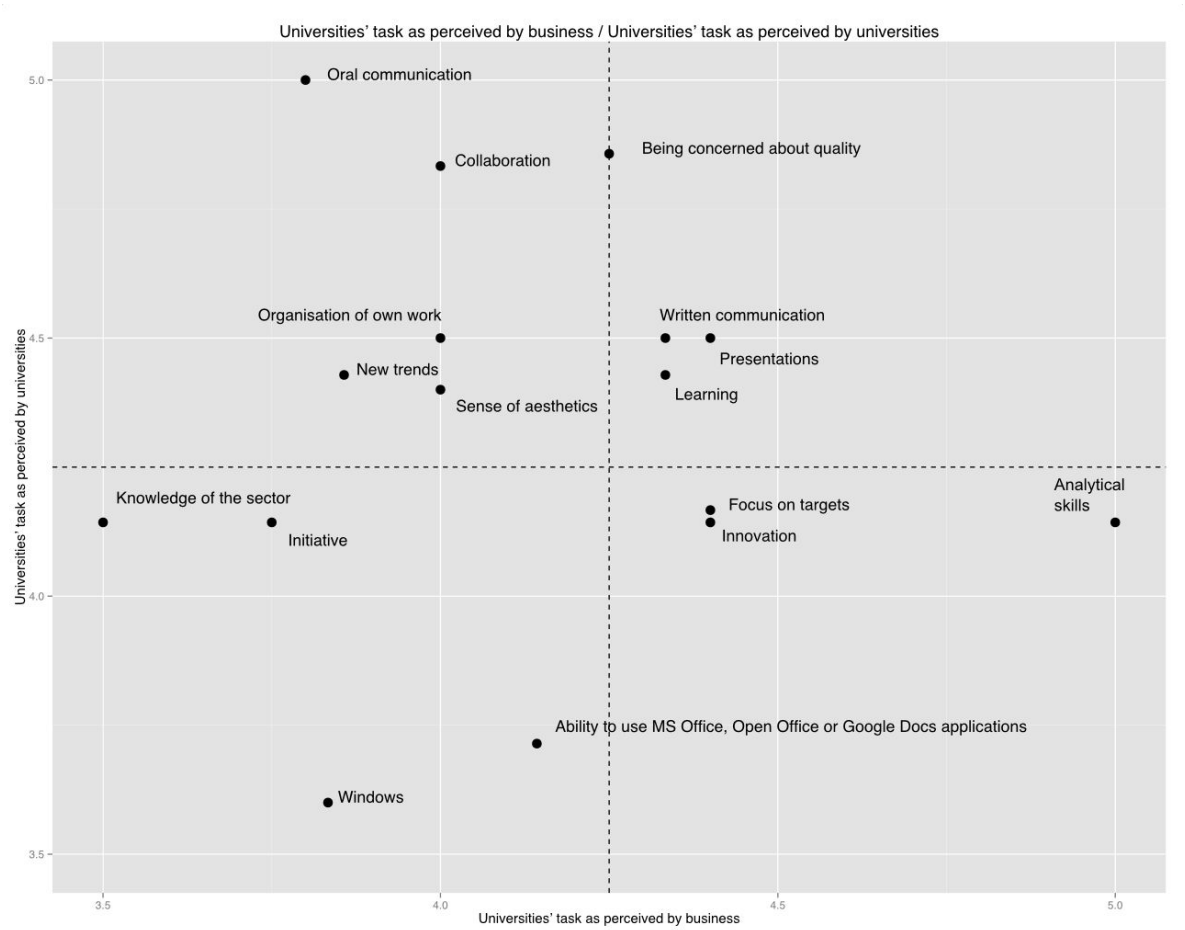

Fig. 24b. (culture) The Matrix illustrating differences in the perception of development of certain competences as a universities' task by representatives of business and of universities for the 20 competences of key importance for the sector.

Presented below are the charts concerning five basic groups of competences (specialist knowledge, specialist skills, business knowledge and skills, soft skills, languages and other requirements), broken down into two segments: **creation** and **culture**.

There is a considerable disagreement between companies and universities as regards the understanding of the role of universities in developing specialist skills, both in the creation (Fig. 25a) and culture (Fig. 25b) segment. The biggest differences in the creation segment are observed with respect to **copyrights, painting, knowledge of PDM principles, and acoustics** – here, employers' expectations towards universities are much bigger than those of the universities themselves. In the culture segment, similar differences are noticeable as regards **geometry of 3D objects, knowledge of GD&T principles, social media, 3D modelling and ability to use equipment.** Unlike universities, the representatives of employers think that the competences related to **printing** should be included in syllabuses.

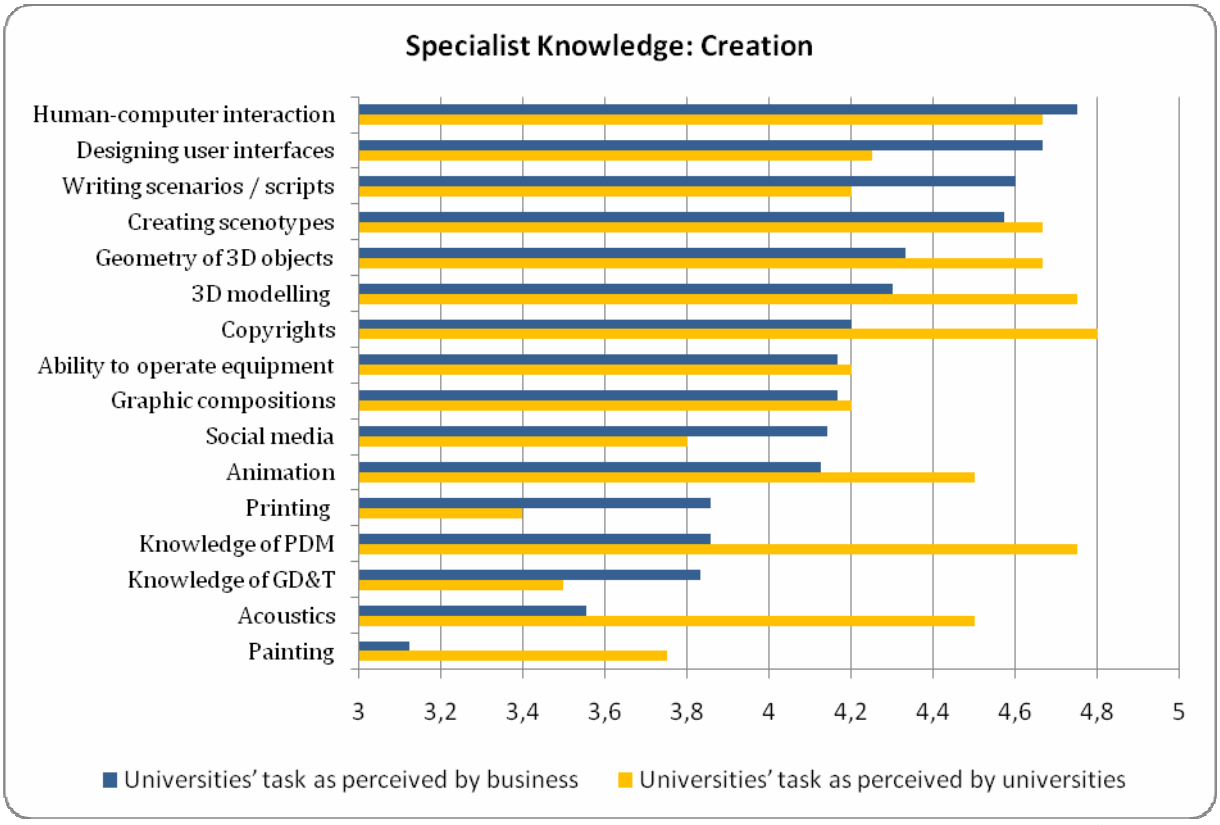

Fig. 25a. Perception of the role of universities in developing competences in the area of "Specialist Knowledge".

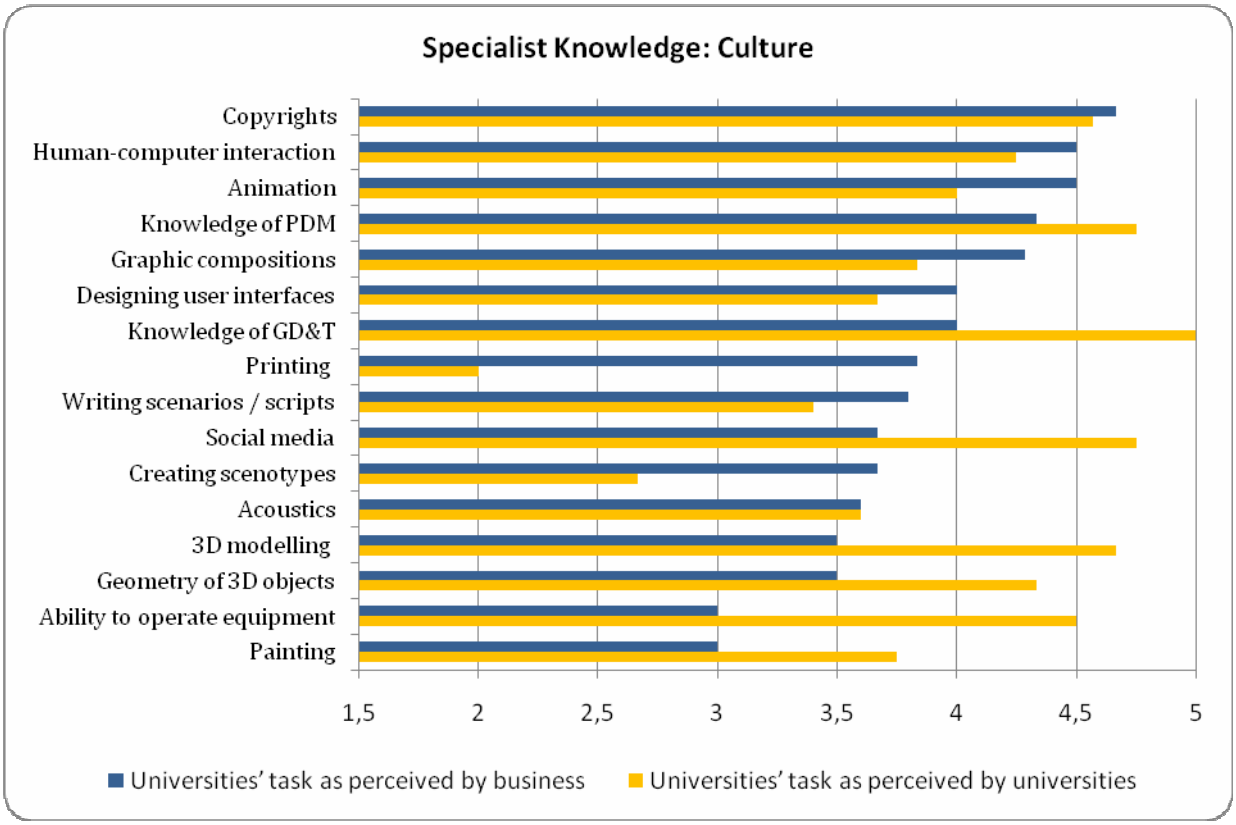

Fig. 25b. Perception of the role of universities in developing competences in the area of "Specialist Knowledge".

As regards specialist skills in creation segment (Fig. 26a), companies have more expectations towards universities as regards developing the competences in the area of **operation of TV editing software** , **sales of advertisements,** and broadly understood **programming**. The situation is just the opposite with **fine arts skills, sense of aesthetics, and operation of CRM** – here universities, to a much greater extent than business, think that this is their task to teach these skills.

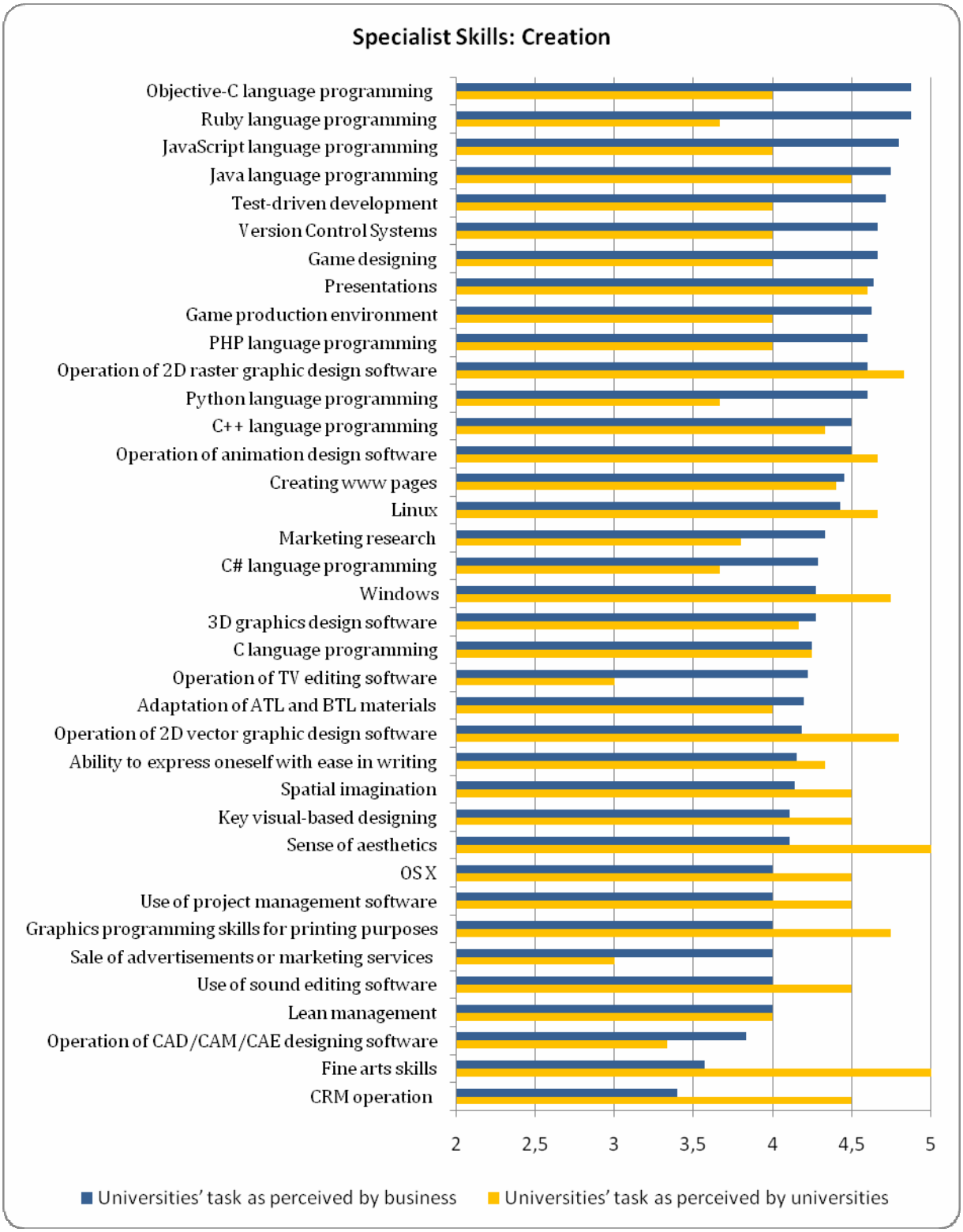

Fig. 26a. Perception of the role of universities in developing competences in the area of "Specialist Skills".

The situation in culture segment is different (Fig. 26b). Employers' representatives assign more responsibility to universities as regards **marketing research and operation of sound editing software** while in the case of **operation of TV and film editing software, working with OS X system, and graphic designing for printing purposes (DTP)** universities expect from themselves more than business does.

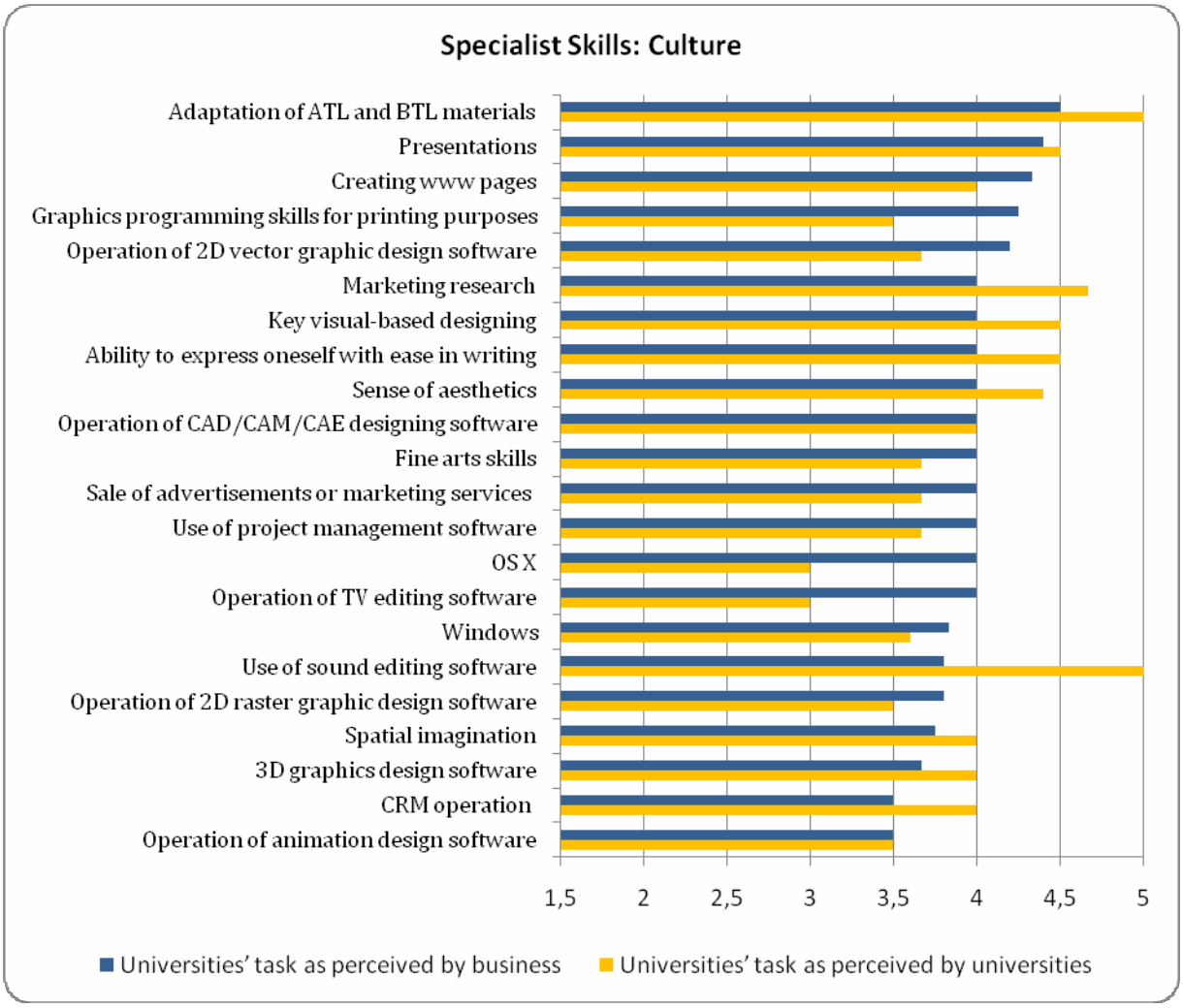

Fig. 26b. Perception of the role of universities in developing competences in the area of "Specialist Skills".

Very interesting are the results for business knowledge and skills (Fig. 27a and 27b). Companies are much more convinced than universities that universities should teach students in the area of **public procurement** (both in creation and the culture segment) as well as **business offers, marketing, and AGILE methodology** (creation sector). What's interesting, developing competences such as **knowledge of the sector or new trends in the sector** is considered a responsibility of the universities by universities themselves and not necessarily by the representatives of business. Naturally, this does not mean that total responsibility for these areas should be attributed to companies. The data gathered from the surveys rather suggest that these competences need to be developed in collaboration between companies and universities (the concept of student traineeship/internship programmes and employee exchange called for many times both by universities and firms) and be inspired by own initiative of students and graduates.

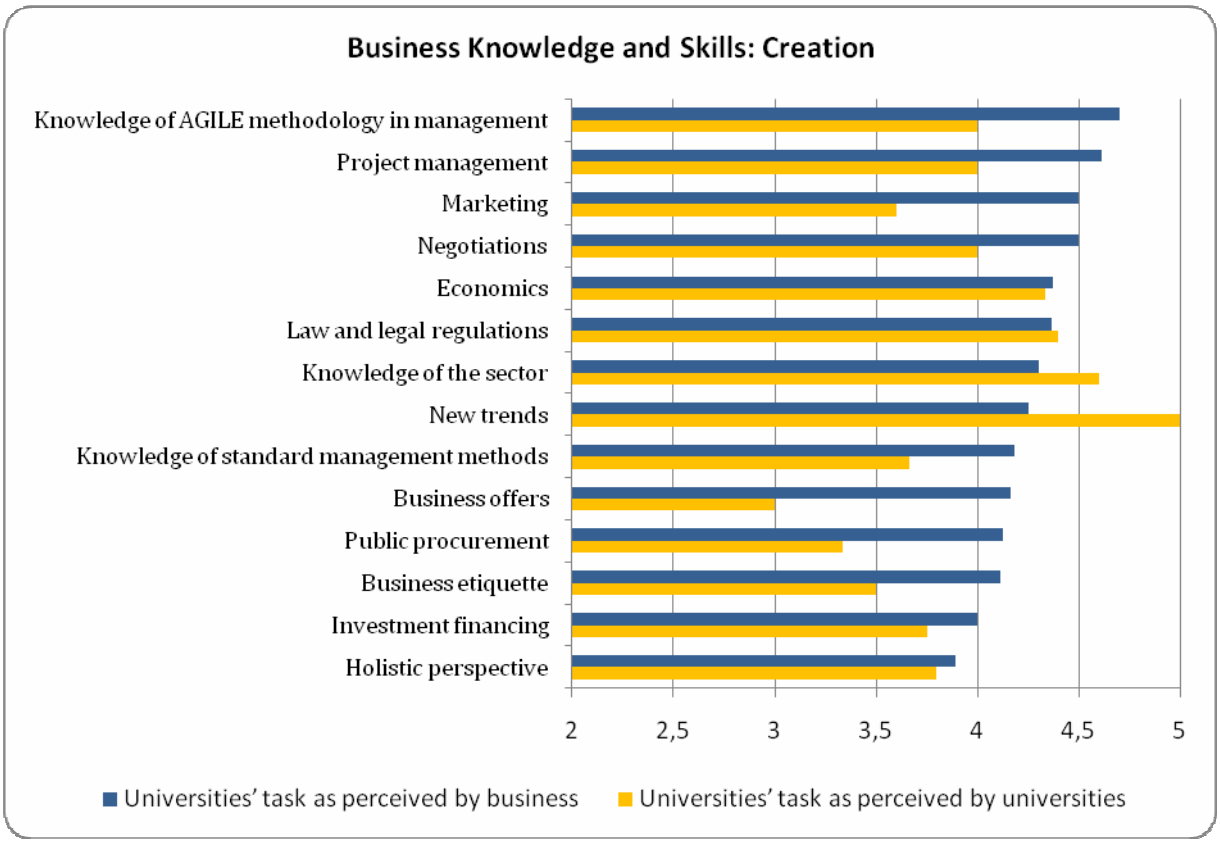

Fig. 27a. Perception of the role of universities in developing competences in the area of "Business Knowledge and Skills".

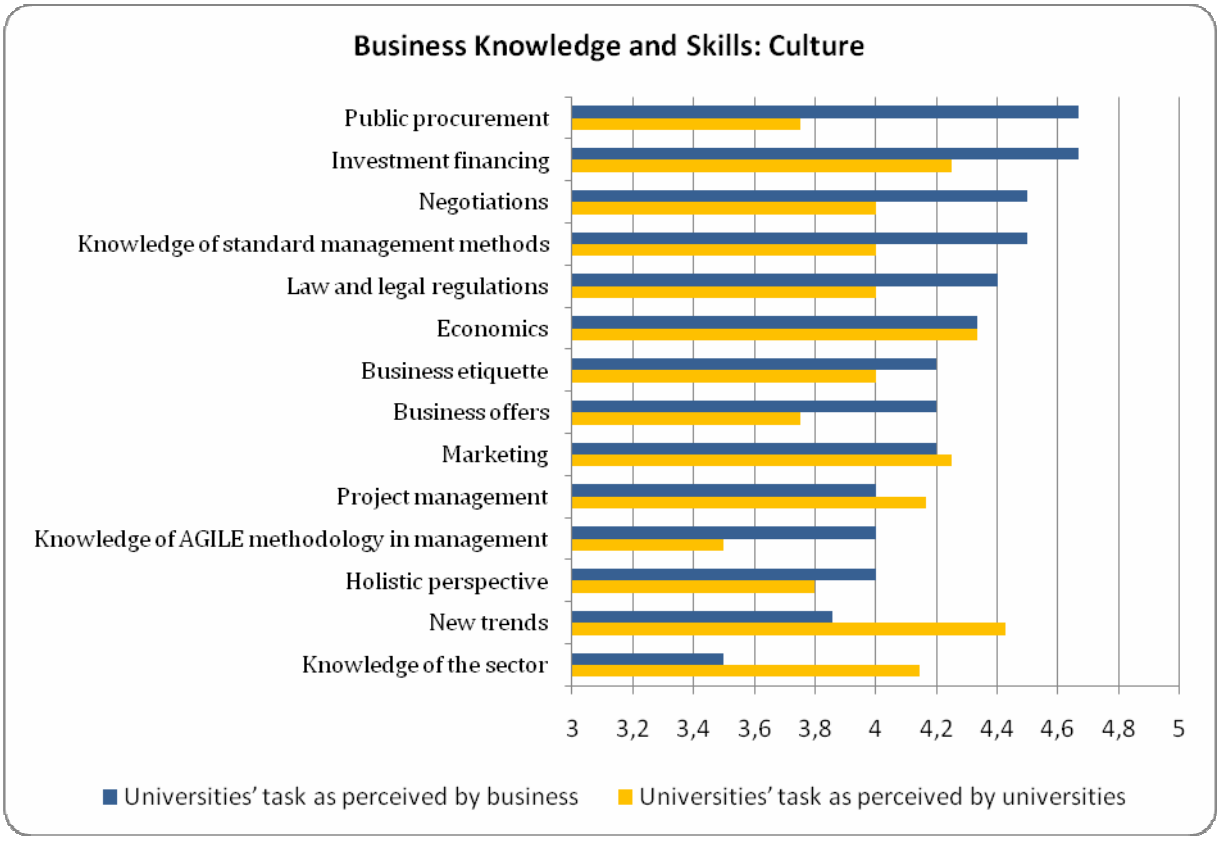

Fig. 27b. Perception of the role of universities in developing competences in the area of "Business Knowledge and Skills".

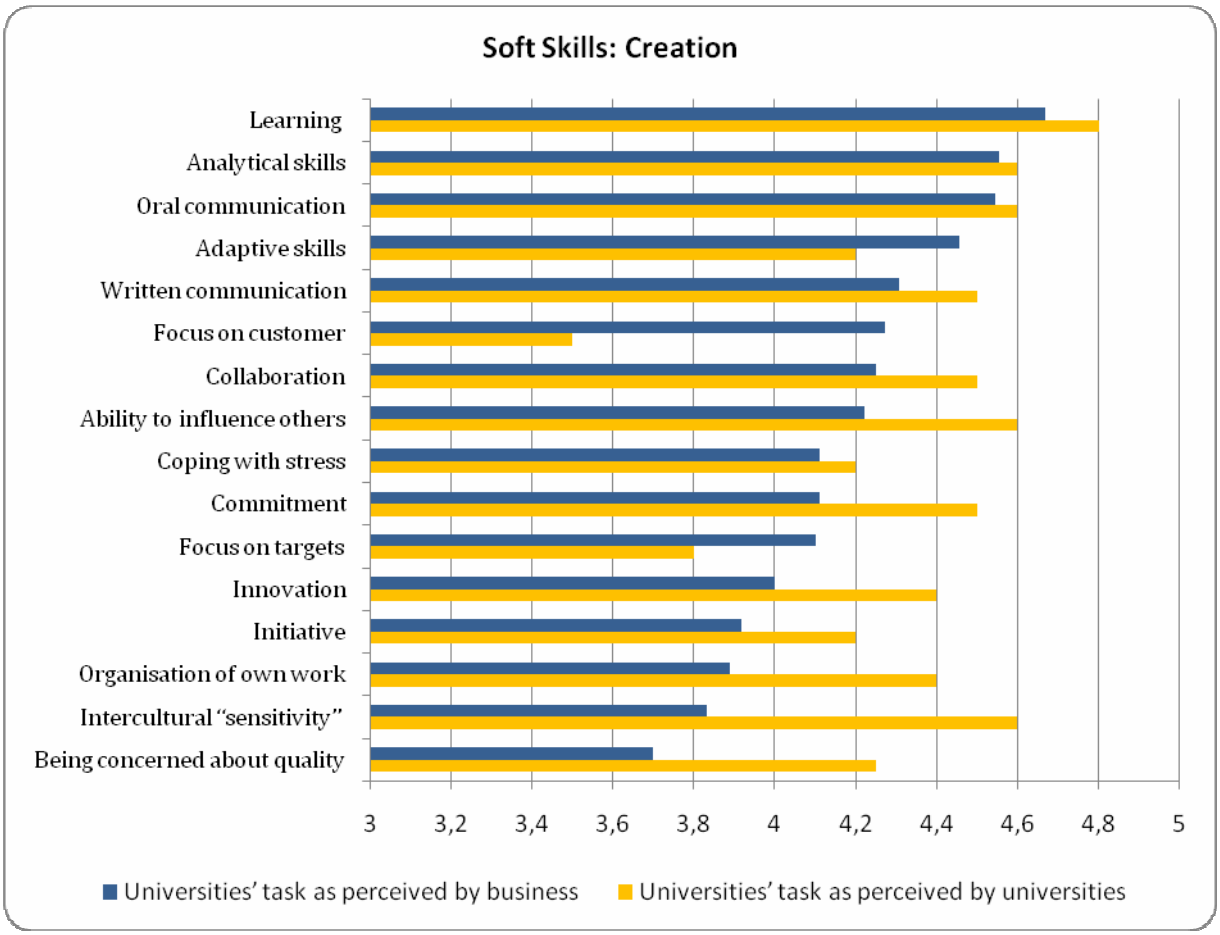

Fig. 28a. Perception of the role of universities in developing competences in the area of "Soft Skills".

Rather surprising are the results concerning the perception of the role of universities in teaching soft skills and other requirements (Fig. 28a, 28b, 29a, 29b). Only in the case of **focus on customer (or customer orientation), Focus on targets (or target orientation) and adaptive skills** (the creation segment) as well as **analytical skills, innovation, mathematical skills, ability to use office software, Focus on targets, and intercultural sensitivity** (the culture segment) companies are convinced about the role of universities in developing these competences to a greater degree than universities themselves. In other cases, although the representatives of companies think that these skills should be included in syllabuses, their expectations in this respect are much smaller. **In other words, employers expect such competences from graduates; however, they are not fully convinced that they should be taught and developed at universities.** This conviction is much stronger among representatives of universities. Such approach of universities is fully justified – soft skills are transferable and useful practically in any working (and not only working) environment where graduates may find a job. The solutions that might be adopted by universities with a view to better developing soft skills among students are discussed in a separate chapter in 2012 study of competences in BPO/SSC and IT/ITO sectors[24].

[24] Study of Competences in BPO and ITO in Kraków. http://www.krakow.pl/zalacznik/1165

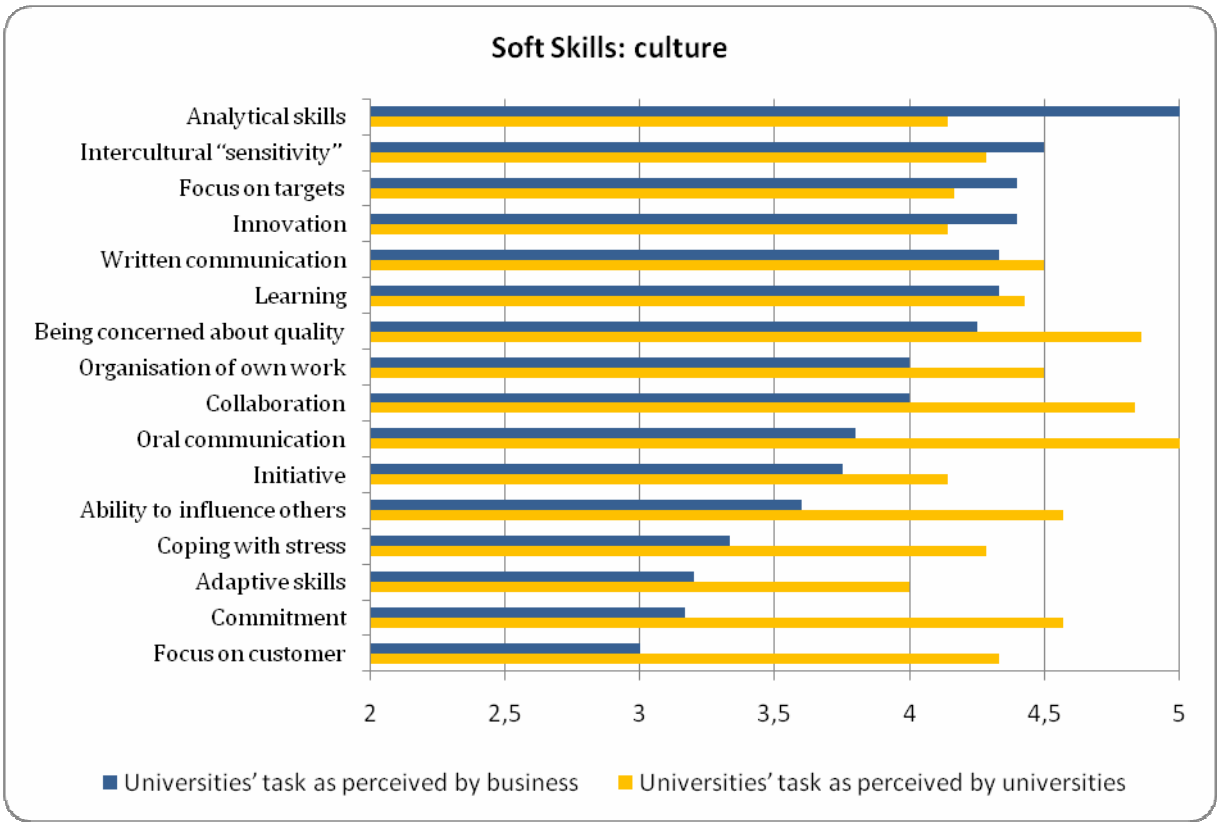

Fig. 28b. Perception of the role of universities in developing competences in the area of "Soft Skills".

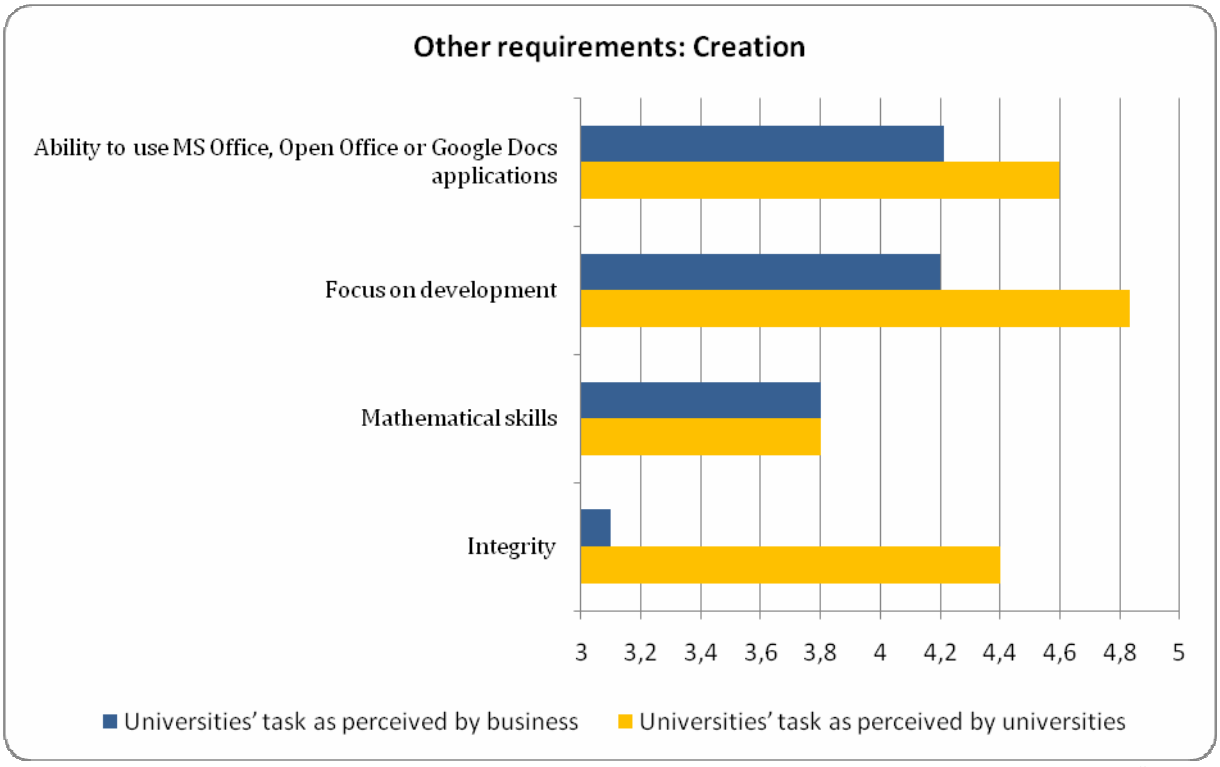

Fig. 29a. Perception of the role of universities in developing competences in the area of "Other Requirements".

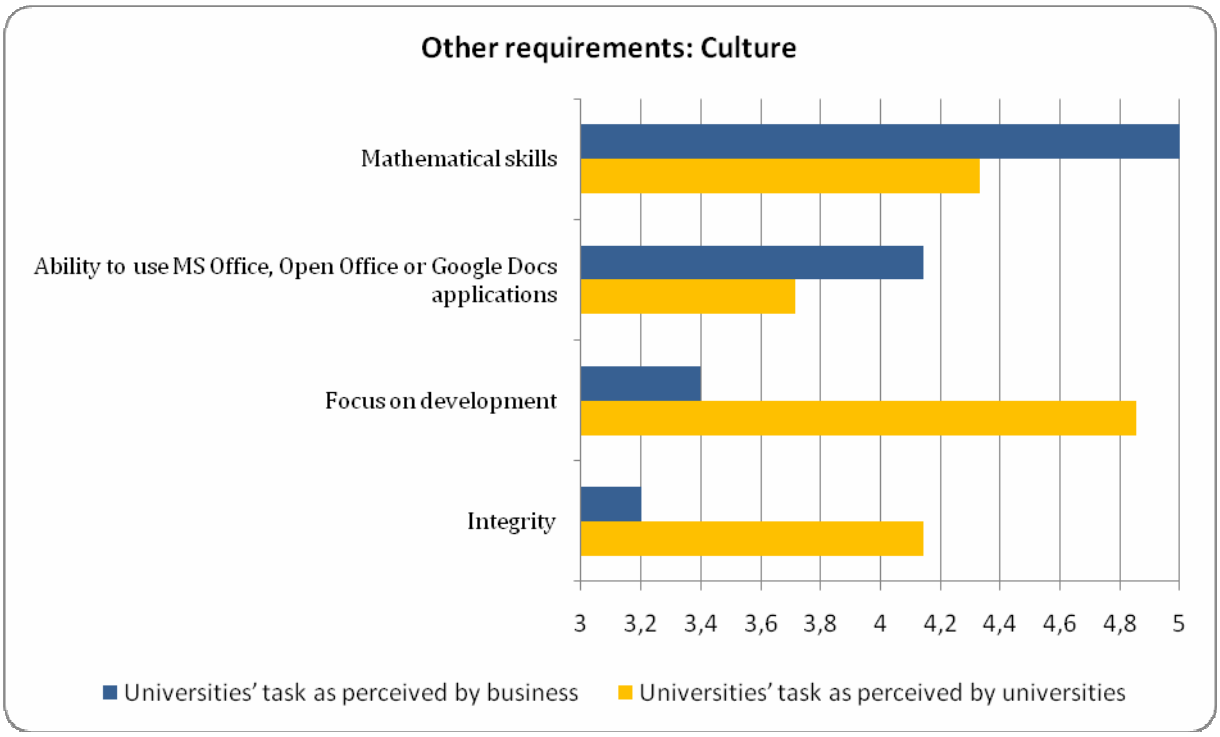

Fig. 29b. Perception of the role of universities in developing competences in the area of "Other Requirements".

FINAL CONCLUSIONS AND RECOMMENDATIONS

By its very nature, the creative business sector builds on the potential of people (creators/authors) who make it. Kraków – on the one hand traditionally enjoying the status of a cultural capital city of Poland, and on the other, having an enormous potential in the form of university graduates of various specialisations related to creative business – has the opportunity to gain a leading position in this area, both on the domestic market and abroad. All that is needed is to establish and develop effective channels for the transfer of human resources between knowledge centres (most importantly, between universities where educational results are achieved) and innovation centres (most importantly, business sector where skills are utilised to implement real projects).

In order to retain and strengthen this position, creative business has been included among the most important sectors in the Kraków development strategy. One of the objectives of the 2010-2014 Kraków Cultural Development Strategy is to make Kraków a "creative city", attracting artists and creating conditions for their development. Similar goals are set by the Małopolska Region in the 2011-2020 Małopolska Regional Development Strategy[25] where active promotion of Małopolska as a region of knowledge and creativity is proposed. **This requires support for companies offering jobs in this sector and incentives for entrepreneurs and investors looking for locations for their investment projects.** As pointed out by experts, in order to fully utilise the potential of the creative business sector in Kraków, it is necessary to intensify the collaboration between academic centres, business and local government entities, which very

[25] http://www.malopolskie.pl/Pliki/2011/strategia.pdf

rarely engage in joint initiatives. The key findings of the research on demand for and supply of competences in creative business sector are provided in the synthetic form in the Table 8 below.

Key findings of the Study of Competences for the creative business sector (summary)	
Key competences currently looked for by employers (as stated by employers)	Collaboration, Integrity, Commitment, English, Learning, and Analytical skills
The most considerable relative growth in importance of competence over 5 years (as stated by employers)	Python language programming, Ruby language programming, Objective-C language programming, game production environment, technical German
Important competences which are the least available on the labour market (as stated by employers)	Collaboration, Integrity, Innovation, Focus on targets
Important competences which are the most available on the labour market (as stated by employers)	Commitment, English, Focus on development
Tasks of universities (from business perspective)	Objective-C language programming Ruby language programming Java Script language programming Java language programming Human-computer interaction
Tasks of universities (universities' perspective)	New trends Sense of aesthetics Fine arts skills Operation of 2D raster graphics designing software Focus on development

Table 8. Synthetic summary of the Study of Competences findings for the creative business sector in Kraków

Like in other sectors and industries, there is a discrepancy between what companies need and expect from graduates and the actual knowledge and skills students acquire at universities. This refers both to inadequate teaching profile and to absence in teaching resources of the latest technical achievements and business trends.

Diversity characteristic for the creative business translates directly into the sector's expectations towards universities as regards the level of demand for particular competences. Based on the opinions of the surveyed companies, key competences for the sector can be identified, that is the competences which are very important, but difficult to acquire. These are: **collaboration, integrity, innovation, and Focus on targets**.

Employers who took part in the study of competences also indicated a number of competence shortages found in graduates from Kraków's universities educating for the creative business sector. What is of particular importance is that the results of both: quantitative analysis and qualitative analysis of universities show that the representatives of universities generally agree as to the core of such diagnosis. Employers – both from creation and the culture segments – emphasised the importance of soft skills. **Interestingly enough, they do not expect universities to teach these skills. It is the universities that see their role in development of soft skills in students rather than business representatives.** As a result of such considerable discrepancy in opinions, employers may not take advantage of the universities' willingness to teach students attitudes of key importance for business.

As for development of soft skills considered very important by creative business employers, **it is recommended that, regardless of the collaboration with business, the elements of project teaching and more group projects based on actual case studies be introduces in syllabuses, most preferably in cooperation with business.** Although it will not be an easy task, our suggestion concerning tailoring universities' educational offer to business needs is to expand the syllabuses of post-graduate courses to include technical foreign languages, particularly English mentioned by many experts.

Also important is to define the role of the city in building the region's creative potential. **Its responsibility should be, most importantly, to create favourable conditions which will make the collaboration among various entities easy and free of any extensive administrative encumbrances.** The city should serve as a bridge between universities and business, facilitating implementation of a uniform strategy and ensuring better coordination between skills being taught and market needs. In order to improve the Kraków's position in the creative business sector, some financial incentives could be used to attract larger projects (concerning film, advertising, art, computer games) from abroad, which is a common practice in this sector. There is a risk that the funds invested as public support offered for high-budget foreign productions will not be recovered; however, systematic financial incentives offered by the city could result in a greater number of projects that would not need financial support. A growing number of implemented projects could become a channel for the transfer of knowledge and skills in the sector and for the development of local enterprises.

APPENDIX 1. LIST OF COMPETENCES AND EDUCATIONAL RESULTS

Specialist Knowledge		
Name	Skill Description	Educational result
Acoustics	Knowledge in the field of acoustics and sound analysis	Student has knowledge about acoustics and sound analysis
Animation	Knowledge about 2D and 3D animation	Student has knowledge about 2D and 3D animation
Geometry of 3D objects	Knowledge about mathematical basis for geometry of 3D objects	Student has knowledge about mathematical basis for geometry of 3D objects
Human-computer interaction	Knowledge about designing human-computer interaction	Student has knowledge about designing human-computer interaction
Graphic composition	Knowledge about graphic composition	Student has knowledge about graphic composition
Painting	Knowledge about painting	Student has knowledge about painting
Social media	Knowledge on how to run a business in social media	Student has knowledge on how to run a business in social media
3D modelling	Knowledge about 3D modelling	Student has knowledge about 3D modelling
Printing	Knowledge about printing and printing technologies	Student has knowledge about printing and printing technologies
Copyrights	Knowledge about protection of industrial property and copyrights	Student has knowledge about protection of industrial property and copyrights
Designing user interfaces	Knowledge about designing user interfaces	Student has knowledge about designing user interfaces
Writing scenarios/scripts	Knowledge about writing scenarios/scripts	Student has knowledge about writing scenarios/scripts
Writing scenotypes	Knowledge about writing scenotypes	Student has knowledge about writing scenotypes
Knowledge about equipment	Knowledge about equipment used in a given position/job	Student has knowledge about equipment used in a given position/job in creative business sector
Knowledge of GD&T principles	Knowledge about GD&T standards and principles (Geometric Dimensioning and Tolerancing)	Student has knowledge about GD&T standards and principles (Geometric Dimensioning and Tolerancing)
Knowledge of PDM principles	Knowledge about Product Development Management (PDM) principles	Student has knowledge about Product Development Management (PDM) principles

Specialist Skills		
Name	Competence description	Educational effect
Adaptation of ATL and BTL materials	Ability to develop advertising materials for traditional mass media (ATL Above the Line) and adaptation of the same to specific customer groups (BTL – Below the Line)	The student is able to develop advertising materials for traditional mass media (ATL Above the Line) and adaptation of the same to specific customer groups (BTL – Below the Line)

Specialist Skills		
Name	Competence description	Educational effect
Marketing research	Ability to design and conduct marketing research	The student is able to design and conduct marketing research
Lean management	Ability to apply the principles of Lean manufacturing in management	The student is able to apply the principles of Lean manufacturing in management
Ability to express oneself with ease in writing	Ability to develop comprehensive, brief and attractive written texts	The student is able to develop comprehensive, brief and attractive written texts
Linux	Ability to work in the Linux operating system	The student is able to work in the Linux operating system
CRM operation	Ability to operate popular systems for customer relations (CRM)	The student is able to operate popular systems for customer relations (CRM)
Operation of software for editing sound	Ability to operate software for editing sound (e.g. Sound Forge, Pro Tools)	The student is able to operate software for editing sound (e.g. Sound Forge, Pro Tools)
Operation of software for editing, cutting and montage of TV programmes and movies	Ability to operate software for editing, cutting and montage of TV programmes and movies	The student is able to operate software for editing, cutting and montage of TV programmes and movies (e.g. Edius)
Operation of animation design software	Ability to operate animation design software	The student is able to operate animation design software (e.g. 3DS Character Studio, MotionBuilder)
Operation of CAD / CAM / CAE designing software	Ability to operate CAD / CAM / CAE designing software	The student is able to operate CAD / CAM / CAE designing software (e.g. CATIA, Auto CAD, Unigraphics)
Operation of 3D graphics design software	Ability to operate 3D graphics design software	The student is able to operate 3D graphics design software (e.g. 3D Studio Max, Maya)
Operation of 2D raster graphic design software	Ability to operate 2D raster graphic software	The student is able to operate 2D raster graphic software (e.g. Adobe Photoshop, GIMP)
Operation of 2D vector graphic design software	Ability to operate 2D vector graphic design software	The student is able to operate 2D vector graphic design software (e.g. Corel Draw, Adobe Illustrator, Inkscape)
Use of project management software	Ability to use project management software	The student is able to use project management software (e.g. MS Project)
OS X	Ability to work in the OS X operating system	The student is able to work in the OS X operating system
Sense of aesthetics	Ability to asses products based on the principles of aesthetics	The student is able to asses products based on the principles of aesthetics
Presentations	Ability to create and present attractive multimedia presentations	The student is able to create and present attractive multimedia presentations
C language programming	Ability to programme in C language	A student is able to use C language programming in a practical manner to solve problems typical for the sector corresponding to his/her education.

Specialist Skills		
Name	Competence description	Educational effect
C## language programming	Ability to programme in C## language	A student is able to use C## language programming in a practical manner to solve problems typical for the sector corresponding to his/her education.
C++ language programming	Ability to programme in C++ language	A student is able to use C++ language programming in a practical manner to solve problems typical for the sector corresponding to his/her education.
Java language programming	Ability to programme in Java language	A student is able to use C language programming in a practical manner to solve problems typical for the work in the sector corresponding to his/her profile of education.
Java Script language programming	Ability to programme in Java Script language	A student is able to use Java Script language programming in a practical manner to solve problems typical for the work in the sector corresponding to his/her profile of education.
Objective-C language programming	Ability to programme in Objective-C language	A student is able to use Objective-C language programming in a practical manner to solve problems typical for the work in the sector corresponding to his/her profile of education.
PHP language programming	Ability to programme in PHP language	A student is able to use PHP language programming in a practical manner to solve problems typical for the work in the sector corresponding to his/her profile of education.
Python langugage programming	Ability to programme in Python language	A student is able to use Python language programming in a practical manner to solve problems typical for the work in the sector corresponding to his/her profile of education.
Ruby language programming	Ability to programme in Ruby language	A student is able to use Ruby language programming in a practical manner to solve problems typical for the work in the sector corresponding to his/her profile of education.
Game programming	Ability to design games in compliance with GDD (Game Development Design) rules	The student is able to design games in compliance with GDD (Game Development Design) rules
Designing based on key visual	Ability to design graphics on the basis of the visual identification and key visual, provided by the customer	The student is able to design graphics on the basis of the visual identification and key visual, provided by the customer
Sale of advertisements or marketing services	Ability to actively sell advertisements s or marketing services	The student is able to actively sell advertisements or marketing services
Version Control Systems (tracking)	Ability to use popular version control systems (e.g. SVN, GIT)	The student is able to popular version control systems (e.g. SVN, GIT)
Game production environment	Ability of programming in game production environment (e.g. Unity SDK, Marmalade SDK, Unreal DK)	The student is able to programme in game production environment (e.g. Unity SDK, Marmalade SDK, Unreal DK)

Specialist Skills		
Name	Competence description	Educational effect
Test-driven development	Ability to apply programming principles based on tests	The student is able to apply programming principles based on tests
Creating www pages	Ability to create www pages, using HTML and CSS	The student is able to create www pages, using HTML and CSS
Graphics programming skills for printing purposes (DTP)	Ability to design and develop graphic material for print	The student is able to design and develop graphic material for print (DTP – Desktop Publishing)
Windows	Ability to work in the Windows operating system	The student is able to work in the Windows operating system
Spatial imagination	Sense of proper orientation in space and ability to visualise 3D-space	The student possesses the sense of proper orientation in space and ability to visualise 3D-space
Fine art skills	Ability to create fine art works of high artistic quality	The student is able to create fine art works of high artistic quality

Business knowledge and skills		
Name	Competence description	Educational effect
Economics	Ability to analyse, calculate and practically apply key profitability parameters concerning the application of various solutions (for instance, investment profitability, return form investment, depreciation/amortisation, etc.)	The student is able to apply knowledge on the profitability of various solutions, using the analysis and calculations of important parameters/indices (for instance, return from investment, depreciation/amortisation, etc.)
Business etiquette	Knowledge and practical application of business savoir-vivre rules. Ability to behave according to standards, and to select proper dressing and adequate language register, also in the context of customer relations and international cooperation.	The student possesses knowledge about business savoir-vivre. He/she is able to behave according to standards (including the selection of proper dressing, use of a language register adequate to situation etc.)
Investment financing	Knowledge about various forms and methods for the financing of investments and other performed projects	The student possesses knowledge about various forms and methods for the financing of investments and other sector projects.
Marketing	Knowledge about marketing methods and techniques	The student possesses general knowledge about marketing.
Negotiations	Ability to conduct business negotiations and knowledge of their rules	The student is able to conduct trade negotiations according to art.
New trends	Knowledge about new trends in the sector, development directions and technical novelties specific to a given sector.	The student possesses knowledge about technical novelties, development directions and about development trends in the sector related to his/her profile of education.

Business knowledge and skills		
Name	Competence description	Educational effect
Business offers	Ability to prepare and analyse commercial and business offers, including the diagnostics of customer needs and expectations. Ability to develop optional solutions, etc.	The student is able to analyse and prepare commercial offers and optional solutions with regard to customer needs and expectations.
Holistic perspective	Knowledge and understanding of social and professional roles which are present in the project execution process (for instance, investor, customer, external customer, user, designer, contractor, maintenance worker, etc.) Application of own actions and co-ordination of own tasks with regard to differences related to the specific features of the aforementioned roles.	The student possesses knowledge on various social and professional roles present in the process of the execution of projects related to the sector (for instance, investor, external and internal customer, user, contractor, etc.) He/she is able to adjust and coordinate his/her own actions with regard to differences related to the specific features of the aforementioned roles.
Law and legal regulations	Knowledge about and understanding of laws, regulations, parliamentary acts and standards specific to the sector.	The student possesses knowledge about laws and regulations specific to the sector related to his/her profile of education. He/She knows and understands certain laws, regulations and standards.
Knowledge about the sector	Knowledge about entities operating in the sector, and of their environment; understanding of specific aspects and context related to behaviour in the sector; acquaintance with key opinion leaders.	The student knows specific features of the sector related to his/her profile of education. He/She knows and understand the role of entities operating on the market as well as their business and organisational environment.
Public procurement	Knowledge about procurement laws and regulations in force.	The student possesses knowledge about procurement laws and regulations.
Project management	Ability to effectively manage the activities of project teams	The student is able to effectively manage the activities of project teams.
Knowledge of AGILE methods in project management	Ability to work effectively in groups using soft project management methods (AGILE, SCRUM, etc.)	The student is able to work effectively in project groups managed by the rules of soft management methods (for instance, AGILE, SCRUM).
Knowledge of standard management methods	Ability to work effectively in groups using standard ("hard") project management methods (for instance, PMBok, PRINCE2)	The student is able to work effectively in project groups managed by the rules of standard management methods (for instance, PMBok, PRINCE2).

Soft Skills		
Name	Competence description	Educational effect
Adaptive skills	Easy and quick adaptation to changing conditions	The student is able to adjust his/her own habits and behaviours to changing conditions.
Initiative	Initiating new activities and assuming responsibility related thereto	The student is able to initiate, at his/her own, a new action (initiative) in a certain organisational and social context, and to assume responsibility for the performance of the initiative.

Soft Skills		
Name	Competence description	Educational effect
Innovation	Generating of ideas, creating and implementing new solutions streamlining working processes.	The student is able to generate his own new ideas (innovations), in a certain organisational and social environment, as well as to develop and implement the same in an innovative manner in order to solve problems.
Written communication	Development and presentation of messages in writing, development of clear written reports.	The student is able to develop and present messages, professional documents and reports in a written form, using an adequate language register and form comprehensible for the recipient/commissioning party.
Oral communication	Presentation and delivery of information in the verbal form,; ability to speak smoothly and fluently	The student is able to communicate smoothly with other people, and to develop and present information in the verbal form, using the language and form comprehensible to the recipients.
Organisation of own work	Scheduling of own work and organising actions purported to carry out plans; assigning priorities to tasks	The student is able to organise his own actions and time in a reasonable manner, as well as to assign priorities and optimise their performance. He/she is able to assign clear and challenging targets in his/her work on a specified task.
Goal-oriented (or focus on targets)	Attainment of long- and short-term targets assigned to the position.	The student is able to understand and accept short- and long-term targets of the organisation in which he/she operates, and then undertake actions in order to perform them in a timely manner.
Customer-focused (or focus on customer)	Satisfying customer needs and expectation, consideration of customer's perspective when offering solutions.	The student is able to identify needs and expectation of the recipients of his actions (customers or beneficiaries) in the organisation in which he/she operates, and then to apply knowledge to undertake actions purported to satisfy them.
Coping with stress	Acting effectively and with ease in stressing situations	The student is able to act under pressure, using effective strategies to cope with stress.
Being concerned about quality	Actions compliant with the organisation's rules, regulations and procedures, diligence and accuracy in the performance of tasks	The student is able to identify quality criteria applicable to his/her own work (perceived as the fulfilment of the expectations of the customer or the beneficiary of his/her actions). He/She is able to identify the manner in which his/her actions are translated into the result of the organisation, and then to undertake actions compliant with the spirit and letter of rules in force, in a specific organisational context; he/she is diligent and accurate in performing the same. He/she cares of quality and diligence of the performance of his/her tasks.
Learning	Easy and quick learning new knowledge	The student is able to effectively and quickly assimilate new knowledge.

Soft Skills		
Name	Competence description	Educational effect
Ability to influence others	Influence on others, persuasion with the use of real arguments and other means of influence, assertiveness in presenting own views	The student is able to conduct substantive discussions, and use arguments to convince others, and to defend his/her own view in a given organisational milieu without giving rise to antagonising relations.
Intercultural "sensitivity"	Practical use of knowledge concerning inter-cultural differences, adjusting own behaviour to different cultural patterns	The student is able to adjust his/her behaviour in the organisation to different cultural patterns. He/She is able to identify cultural determinants of various human behaviours in the organisation. He/she is able to respect differences in viewpoints and cultural differences of co-workers and customers.
Collaboration	Effective work in a group, focus on the performance of group targets	The student is open to co-operation and is able to work with others in the group, assuming a role in the group, which helps to achieve group targets.
Commitment	Enthusiasm and passion for work, "Can do" approach, care of the company's image	The student is able to engage into actions and demonstrate enthusiastic approach and passion for the performance of tasks. He/she acknowledges that the care of the company's image is important in a given organisational context.
Analytical skills	Collecting and processing of information with ease, quickly and reliably	Regardless of conditions, he/she is able to quickly and reliably search, analyse and process information required in order to perform a task.

Foreign languages and other requirements		
Name	Competence description	Educational effect
Availability	Flexibility as to working hours, taking overtime jobs with an option to get leave in return of the overtime worked	N/A
English	Ability to use the foreign language in a degree allowing effective and smooth oral and written communication. (B2 level)	The student is able to communicate verbally and in writing in a given language at least at the B2 level of the Common European Framework of Reference for Languages (CEFRL or CEF). (He/She is able to understand the key aspects of real or abstract problems presented in complex texts, including specialist discussion related to his/her professional matters. He/She is able to communicate smoothly and spontaneously so that a conversation with a native speaker is free from stresses on either party to the conversation. He/She is able to express himself/herself in many topics in a clear and detailed manner; he/she is able to express his/her opinion on a given subject showing positive and negative sides of various (proposed) options.
German		
Russian		
French		
Italian		
Spanish		
Chinese		
Japanese		

Foreign languages and other requirements		
Name	Competence description	Educational effect
Mobility	Acceptance of requests to take travels related to business responsibilities and learning (conferences, training sessions) outside the location of his/her employment.	N/A
Focus on development	Willingness to broaden his/her knowledge and skills at his/her own, also in new fields and areas.	The student acknowledges the need of constant development of his knowledge and skills, also in new fields and areas.
Ability to use MS Office, Open Office or Google Docs applications	Effective use of key office software packets	The student is able to use and apply office software (MS Office, OpenOffice, Google Docs) in his/her work .
Driving license	Possession of the category B driving licence	N/A
Technical English	Ability to use foreign specialist language so that maintenance, comprehension and creation of technical documents, as well as oral and written communication with other representatives of the sector are possible.	The student is able to use foreign specialist language so that maintenance, comprehension and creation of technical documents, as well as oral and written communication with other representatives of the sector are possible.
Technical English		
Integrity	Observance of commonly accepted moral standards.	The student accepts the need of ethic behaviour standards and integrity as well as he/she follows them in his/her actions.
Mathematical skills	Ability to perform advance mathematical operations	The student is able to perform various mathematical operations in order to solve problems and generate knowledge.

APPENDIX 2. SUMMARY OF QUANTITATIVE DATA

THE CREATION SEGMENT

Specialist Knowledge							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Designing user interfaces	4.41	4.38	4.07	56%	4.40	4.67	4.25
Graphic composition	4.37	4.32	3.78	78%	3.57	4.17	4.20
Human-computer interaction	4.33	4.57	4.18	56%	3.86	4.75	4.67
Social media	4.25	4.19	3.50	33%	3.17	4.14	3.80
Knowledge about equipment	4.19	3.94	3.31	67%	4.50	4.17	4.20
Copyrights	3.95	3.58	3.83	56%	3.83	4.20	4.80
3D modelling	3.93	4.30	4.00	56%	4.40	4.30	4.75
Animation	3.78	4.11	4.07	56%	3.86	4.13	4.50
Writing scenotypes	3.78	3.50	3.80	33%	4.33	4.57	4.67
Knowledge of PDM principles	3.71	3.82	4.00	33%	4.00	3.86	4.75
Writing scenarios /screenplays	3.67	3.73	4.00	56%	3.80	4.60	4.20
Geometry of 3D objects	3.27	3.56	4.00	44%	4.50	4.33	4.67
Printing	2.88	2.73	3.75	33%	2.80	3.86	3.40
Acoustics	2.44	2.50	3.67	33%	3.60	3.56	4.50
Painting	2.07	2.08	3.00	33%	3.50	3.13	3.75
Knowledge of GD&T principles	1.90	2.25	3.75	11%	2.50	3.83	3.50

Specialist Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Test-driven development	4.57	4.43	3.83	44%	3.75	4.71	4.00
Creating www pages	4.50	4.17	3.50	56%	4.00	4.45	4.40
Sense of aesthetics	4.50	4.17	4.10	44%	4.20	4.11	5.00
Java Script language programming	4.33	4.18	3.89	44%	3.50	4.80	4.00
Windows	4.33	4.00	2.20	67%	4.33	4.27	4.75
Operation of software for 2D raster graphics designing	4.27	4.18	3.67	56%	4.00	4.60	4.83
Game production environment	4.22	4.75	4.43	22%	4.00	4.63	4.00
Presentations	4.15	3.92	3.36	78%	4.14	4.64	4.60

Specialist Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Ability to express oneself easily in writing	4.14	3.71	3.67	67%	3.71	4.15	4.33
Game designing	4.11	4.50	4.43	22%	3.33	4.67	4.00
Operation of TV and film editing software	4.11	3.89	4.00	22%	3.50	4.22	3.00
Operation of project management software	4.10	3.70	3.71	44%	3.60	4.00	4.50
PHP language programming	4.09	4.18	3.30	33%	3.50	4.60	4.00
Operation of software for 2D vector graphics designing	4.00	4.00	3.50	67%	4.00	4.18	4.80
Operation of software for 3D graphics designing	4.00	4.18	4.00	44%	4.00	4.27	4.17
Key-visual based designing	4.00	3.90	4.00	44%	4.00	4.11	4.50
Operation of animation design software	3.90	4.22	4.50	33%	4.00	4.50	4.67
Version control systems	3.80	4.00	3.25	44%	4.00	4.67	4.00
Spatial imagination	3.80	4.00	4.20	44%	4.25	4.14	4.50
Marketing research	3.75	3.67	3.30	33%	3.25	4.33	3.80
Sale of advertisements or marketing services	3.69	3.54	3.73	11%	3.00	4.00	3.00
Objective-C language programming	3.67	4.25	3.71	33%	3.25	4.88	4.00
C# language programming	3.63	4.00	3.83	44%	3.50	4.29	3.67
Operation of sound edition software	3.63	3.57	3.80	22%	3.00	4.00	4.50
Java language programming	3.50	3.67	3.75	56%	3.80	4.75	4.50
Operation of CRM	3.50	3.73	3.33	22%	3.67	3.40	4.50
Fine arts skills	3.50	3.20	3.63	22%	4.00	3.57	5.00
Adaptation of ATL and BTL materials	3.50	3.50	3.86	22%	3.67	4.20	4.00
Linux	3.44	3.71	3.50	44%	4.25	4.43	4.67
Lean management	3.40	3.00	4.00	22%	4.00	4.00	4.00
OS X	3.40	3.78	3.43	44%	3.60	4.00	4.50
Ruby language programming	3.38	4.00	3.83	11%	3.00	4.88	3.67
Graphic designing for printing purposes (DTP)	3.22	3.00	3.71	56%	4.00	4.00	4.75

Specialist Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
C language programming	3.00	3.25	3.50	44%	4.25	4.25	4.25
C++ language programming	3,00	3,30	3,50	44%	4,25	4,50	4,33
Python language programming	2,83	4,20	4,00	33%	3,25	4,60	3,67
Operation of CAD / CAM / CAE designing software	2,70	2,75	3,75	11%	2,50	3,83	3,33

Business Knowledge and Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Knowledge of AGILE methodology in management	4.67	4.57	3.89	33%	3.00	4.70	4.00
Project management	4.57	4.42	4.08	56%	3.43	4.62	4.00
New trends	4.33	4.50	4.00	78%	4.25	4.25	5.00
Knowledge of the sector	4.13	4.38	4.08	56%	4.60	4.30	4.60
Holistic perspective	4.10	3.63	3.63	56%	4.00	3.89	3.80
Negotiations	3.92	3.82	3.89	33%	3.75	4.50	4.00
Economics	3.90	3.70	3.88	56%	3.67	4.38	4.33
Business etiquette	3.73	3.70	3.75	56%	3.80	4.11	3.50
Marketing	3.69	4.08	3.33	44%	3.17	4.50	3.60
Business offers	3.69	3.75	3.88	22%	3.33	4.17	3.00
Knowledge of standard project development methodologies	3.64	3.89	4.00	33%	3.33	4.18	3.67
Law and legal provisions	3.62	3.69	4.10	67%	3.71	4.36	4.40
Investment financing	3.44	3.43	3.67	44%	3.25	4.00	3.75
Public procurement	3.33	3.33	3.67	33%	3.00	4.13	3.33

Soft Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Collaboration	4.92	4.33	4.11	56%	3.83	4.25	4.50
Commitment	4.92	4.25	4.22	67%	4.00	4.11	4.50
Learning	4.79	4.55	3.89	78%	4.57	4.67	4.80
Analytical skills	4.77	4.55	3.73	67%	4.67	4.56	4.60
Focus on customer	4.75	4.27	4.00	67%	3.29	4.27	3.50
Being concerned about quality	4.75	4.45	4.00	67%	4.17	3.70	4.25
Innovation	4.71	4.33	4.18	67%	4.00	4.00	4.40

Soft Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Organisation of own work	4.69	4.17	3.88	78%	3.86	3.89	4.40
Adaptive skills	4.58	4.42	3.70	67%	4.17	4.45	4.20
Initiative	4.57	4.43	3.75	67%	3.71	3.92	4.20
Focus on targets	4.46	4.08	3.64	56%	3.57	4.10	3.80
Ability to influence others	4.46	4.33	4.20	78%	4.14	4.22	4.60
Coping with stress	4.42	4.27	3.78	56%	4.17	4.11	4.20
Oral communication	4.29	4.25	4.22	78%	3.86	4.55	4.60
Written communication	4.21	4.33	3.80	78%	3.75	4.31	4.50
Intercultural sensitivity	4.00	3.89	4.25	56%	4.17	3.83	4.60

Foreign Languages and Other Requirements							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
English	4.80	4.36	3.21	-	-	5.00	-
Integrity	4.33	4.92	3.20	78%	4.29	3.10	4.40
Technical English	4.33	4.36	3.77	-	-	4.86	-
Focus on development	4.30	4.73	3.44	89%	4.38	4.20	4.83
Ability to use MS Office, OpenOffice or Google Docs	4.07	4.40	2.73	78%	4.43	4.21	4.60
Mathematical skills	3.45	3.83	3.43	44%	3.50	3.80	3.80
German	2.33	2.75	3.20	-	-	4.20	-
Technical German	2.20	2.71	3.60	-	-	4.00	-
Russian	2.18	2.44	3.33	-	-	3.50	-
French	1.90	1.71	3.00	-	-	2.67	-
Italian	1.78	1.50	3.00	-	-	2.67	-
Spanish	1.78	1.50	3.00	-	-	2.67	-
Chinese	1.38	1.67	3.50	-	-	2.50	-
Japanese	1.38	1.67	3.50	-	-	2.50	-

THE CULTURE SEGMENT

Specialist Knowledge							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Graphic composition	4.00	4.29	3.83	23%	3.33	4.29	3.83
Knowledge about equipment	4.00	3.43	2.86	62%	3.63	3.00	4.50
Copyrights	3.88	3.38	3.80	85%	3.83	4.67	4.57

Specialist Knowledge							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Animation	3.50	3.83	4.50	31%	3.17	4.50	4.00
Knowledge of PDM principles	3.40	4.50	4.00	31%	3.00	4.33	4.75
Social media	3.29	3.57	3.33	54%	3.56	3.67	4.75
Printing	3.14	3.17	3.60	31%	4.50	3.83	2.00
Writing scenarios/screenplays	3.00	3.00	3.83	15%	3.00	3.80	3.40
Human-computer interaction	3.00	3.00	3.50	46%	3.38	4.50	4.25
Acoustics	2.83	2.83	3.25	23%	2.88	3.60	3.60
Geometry of 3D objects	2.75	2.25	3.50	15%	3.50	3.50	4.33
Writing scenotypes	2.60	2.60	4.00	0%	2.00	3.67	2.67
3D modelling	2.50	2.25	2.50	23%	3.50	3.50	4.67
Designing user interfaces	2.50	2.25	4.00	31%	3.17	4.00	3.67
Knowledge of GD&T principles	2.00	2.00	4.00	0%	-	4.00	5.00
Painting	1.75	2.00	3.50	38%	3.40	3.00	3.75

Specialist Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Windows	4.17	3.33	1.80	77%	4.10	3.83	3.60
Presentations	4.17	3.83	3.40	92%	3.85	4.40	4.50
Sense of aesthetics	4.17	3.67	3.40	69%	3.70	4.00	4.40
Operation of software for 3D graphics designing	3.86	3.57	3.17	8%	3.50	3.67	4.00
Operation of software for 2D vector graphics designing	3.83	3.67	3.20	31%	3.40	4.20	3.67
Ability to express oneself easily in writing	3.83	4.00	3.80	77%	3.50	4.00	4.50
Operation of software for 2D raster graphics designing	3.71	3.57	3.20	38%	3.43	3.80	3.50
Fine arts skills	3.60	3.20	3.00	23%	3.50	4.00	3.67
Creating www pages	3.50	3.50	3.00	23%	3.50	4.33	4.00
Operation of TV and film editing software	3.50	3.50	3.40	8%	3.00	4.00	3.00
Game production environment	3.33	3.33	4.00	0%	-	5.00	-
Game designing	3.33	3.33	4.00	8%	2.50	5.00	-

Specialist Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Spatial imagination	3.33	3.40	4.00	23%	3.75	3.75	4.00
Operation of sound edition software	3.17	3.33	3.20	8%	3.50	3.80	5.00
Graphic designing for printing purposes (DTP)	3.17	3.00	3.50	15%	4.00	4.25	3.50
Python language programming	3.00	3.33	4.50	0%	-	5.00	3.00
OS X	3.00	2.33	3.00	15%	3.00	4.00	3.00
Linux	3.00	3.00	3.00	31%	3.00	4.67	3.00
Operation of project management software	3.00	2.75	4.50	8%	4.00	4.00	3.67
Marketing research	3.00	2.67	4.00	38%	3.67	4.00	4.67
Adaptation of ATL and BTL materials	2.80	3.50	3.33	23%	4.00	4.50	5.00
Operation of animation design software	2.75	2.25	4.50	8%	2.50	3.50	3.50
Operation of CRM	2.75	2.75	3.00	8%	2.50	3.50	4.00
C++ language programming	2.67	2.67	3.00	8%	4.00	5.00	4.00
Operation of CAD / CAM / CAE designing software	2.67	2.67	3.00	23%	3.67	4.00	4.00
Version control systems	2.50	2.50	4.00	0%	-	4.00	-
Test-driven development	2.50	2.50	4.00	8%	3.00	4.00	-
Key-visual based designing	2.50	2.67	3.00	15%	3.00	4.00	4.50
C language programming	2.00	2.50	4.00	15%	3.50	5.00	4.33
Java language programming	2.00	2.50	4.00	0%	-	5.00	3.00
Objective-C language programming	2.00	2.50	4.00	15%	3.50	5.00	3.00
PHP language programming	2.00	2.50	4.00	15%	4.00	5.00	3.00
C# language programming	2.00	2.50	4.00	0%	2.00	5.00	3.00
Java Script language programming	2.00	2.50	4.00	15%	4.00	5.00	3.00
Ruby language programming	2.00	2.50	4.00	0%	-	5.00	3.00
Sale of advertisements or marketing services	2.00	2.67	4.00	38%	3.83	4.00	3.67
Lean management	1.00	1.00	-	8%	5.00	-	5.00

Business Knowledge and Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Knowledge of the sector	4.40	4.20	3.50	100%	4.00	3.50	4.14
New trends	4.29	4.14	3.14	92%	4.00	3.86	4.43
Economics	4.00	4.20	3.00	38%	3.00	4.33	4.33
Marketing	4.00	3.80	3.50	54%	3.20	4.20	4.25
Business offers	4.00	3.80	3.50	46%	3.83	4.20	3.75
Holistic perspective	4.00	3.75	4.00	54%	3.56	4.00	3.80
Business etiquette	3.80	3.60	3.25	69%	4.00	4.20	4.00
Project management	3.75	3.50	3.67	54%	3.60	4.00	4.17
Law and legal provisions	3.67	3.17	3.60	85%	3.50	4.40	4.00
Negotiations	3.60	4.20	3.60	46%	3.86	4.50	4.00
Public procurement	3.00	2.80	4.00	31%	2.83	4.67	3.75
Investment financing	2.75	2.50	4.00	62%	3.20	4.67	4.25
Knowledge of standard project development methodologies	2.75	2.25	4.50	31%	4.25	4.50	4.00
Knowledge of AGILE methodology in management	2.33	2.00	4.00	15%	3.50	4.00	3.50

Soft Skills							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
Collaboration	4.71	4.50	3.80	92%	3.92	4.00	4.83
Commitment	4.57	4.33	3.40	77%	3.82	3.17	4.57
Innovation	4.50	4.38	4.00	92%	3.85	4.40	4.14
Initiative	4.43	4.00	3.80	85%	3.77	3.75	4.14
Learning	4.43	3.67	3.25	100%	3.85	4.33	4.43
Being concerned about quality	4.40	3.80	3.75	92%	3.85	4.25	4.86
Written communication	4.33	4.20	3.00	85%	3.83	4.33	4.50
Organisation of own work	4.33	4.17	3.60	54%	3.67	4.00	4.50
Adaptive skills	4.25	4.40	3.50	100%	3.54	3.20	4.00
Focus on targets	4.17	3.67	3.75	77%	3.45	4.40	4.17
Analytical skills	4.17	4.17	3.80	92%	3.58	5.00	4.14
Oral communication	4.14	4.17	3.40	85%	4.17	3.80	5.00
Focus on customer	4.00	4.00	3.50	77%	3.82	3.00	4.33
Coping with stress	4.00	4.00	3.40	85%	3.31	3.33	4.29
Ability to influence others	3.80	3.60	3.50	100%	3.85	3.60	4.57
Intercultural sensitivity	3.20	2.80	4.00	85%	3.77	4.50	4.29

Foreign Languages and Other Requirements							
Name	Importance 2014	Importance 2019	Difficulties in acquiring	% of university courses achieving the educational result	Evaluation of achieving the educational result	Tasks of universities – business's perspective	Tasks of universities – universities' perspective
English	5.00	4.88	2.75	-	-	4.63	-
Integrity	4.83	4.50	3.20	92%	3.85	3.20	4.14
Focus on development	4.43	4.33	3.40	100%	4.31	3.40	4.86
Ability to use MS Office, OpenOffice or Google Docs	4.25	3.88	1.86	92%	4.00	4.14	3.71
Technical English	3.50	3.57	3.60	-	-	4.17	-
Russian	3.40	3.00	4.00	-	-	3.75	-
German	3.00	2.67	4.00	-	-	4.20	-
Technical German	2.83	2.50	4.00	-	-	3.60	-
Mathematical skills	2.60	2.40	3.50	23%	2.43	5.00	4.33
Chinese	2.40	2.20	4.67	-	-	2.50	-
Spanish	2.20	2.20	3.67	-	-	3.00	-
French	2.00	2.00	4.00	-	-	3.00	-
Italian	2.00	2.20	3.33	-	-	3.25	-
Japanese	1.60	1.40	4.67	-	-	2.00	-

APPENDIX 3: OVERVIEW OF THE TOOLS USED

DEMAND QUESTIONNAIRE

The tool for competence demand survey applied in two formats: the electronic on-line form (using Limesurvey software) and MS Excel sheet (where a given company preferred direct contact with the pollster).

The tool consisted of 3 main parts

1. **Company particulars and plans**

– company's name

– number of employees employed under a labour contract by the company or its Kraków's branch

– number of employees under a civil law contract or self-employed entrepreneurs employed by the company or its Kraków's branch

– names of positions to which the company recruits employees most frequently (maximum: 5 positions) and the assessment of difficulties in recruiting candidates who meet expectations (currently and in 2019)

– plans concerning the employment of graduates (who graduated within the last 12 months) under a labour contract (in 2014 and 2019).

– plans concerning the employment of graduates (who graduated within the last 12 months) under civil law contracts or as self-employed entrepreneurs (in 2014 and 2019).

2. **Assessment of competences by 5 thematic groups (in sequence: specialist knowledge, specialist sills, business knowledge and skills, soft skills, foreign languages and other requirements – list available in Appendix 1, this based on four criteria:**

– importance today (How important it is for your company, that students or graduates possess a given competence, where 1 means: "definitely irrelevant" while 5 means "definitely important")

– importance in 5 years (How important it is for your company, that students or graduates will possess a given competence in 5 years, where 1 means: "definitely irrelevant" while 5 means "definitely important")

– difficulties in acquiring the competence (How difficult it is today to recruit a person whose competence level meets requirements, where 1 means "very easily", while 5 means "very difficult to acquire".

– university task (Is, in your opinion, the teaching of a given competence a task of universities?) Please use scores from 1 to 5 where 1 means "teaching of a given competence definitely should

not be a task of universities", while 5 means "teaching of a given competence should be definitely a task of universities")

– using the same criteria, provide and asses maximum 10 additional competences that have not been put on lists previously presented.

3. **Additional information**

– indication of 5 fields of study that meet best the needs of the company (maximum 5 fields of study; if necessary, also indicate the name of a university)

– indication of maximum 5 competences that are of vital importance in the context of the promotion of a graduate employed by your company

– additional comments

SUPPLY QUESTIONNAIRE

The tool for competence supply survey applied per analogy to the demand questionnaire, in two formats: the electronic on-line form (using Limesurvey software) and MS Excel sheet (where a representative of a field of study subject to survey preferred direct contact with the pollster).

The supply questionnaire consisted in 3 parts

1. **Particulars**

– name of the university , department, chair, institute and the field of study

– available forms of studying of the given field of study (full-course studies, other)

– available levels of studies offered in the given field of study (Level I, level II, post-graduate studies, other)

– indication of specialisation paths/profiles/specialisations which, in the view of the sector, obtain similar educational effects

– anticipated number of students graduating from each of the aforementioned paths (in 2014 and in 2019)

2. **Assessment of competences by 5 thematic groups (in sequence: specialist knowledge, specialist sills, business knowledge and skills, soft skills, other requirements – list available in Appendix 1, based on two criteria:**

– achieved educational effects (To what degree, in your opinion, educational effects referred to in this questionnaire are achieved at the field of study, where 1 means "not achieved at all", while 5 means "achieved at a very high level".)

– tasks of the university (Is, in your opinion, education for a specific educational effect a task of the university, where 1 means: "definitely not", while 5 means: "definitely yes".)

3. Additional information

– indication of additional educational results which are achieved at a given field of study, but have not been put on the list, and are potentially important from the point of view of the sector

– indication of mandatory courses in foreign modern languages and opportunities to learn other languages free-of charges

– additional comments