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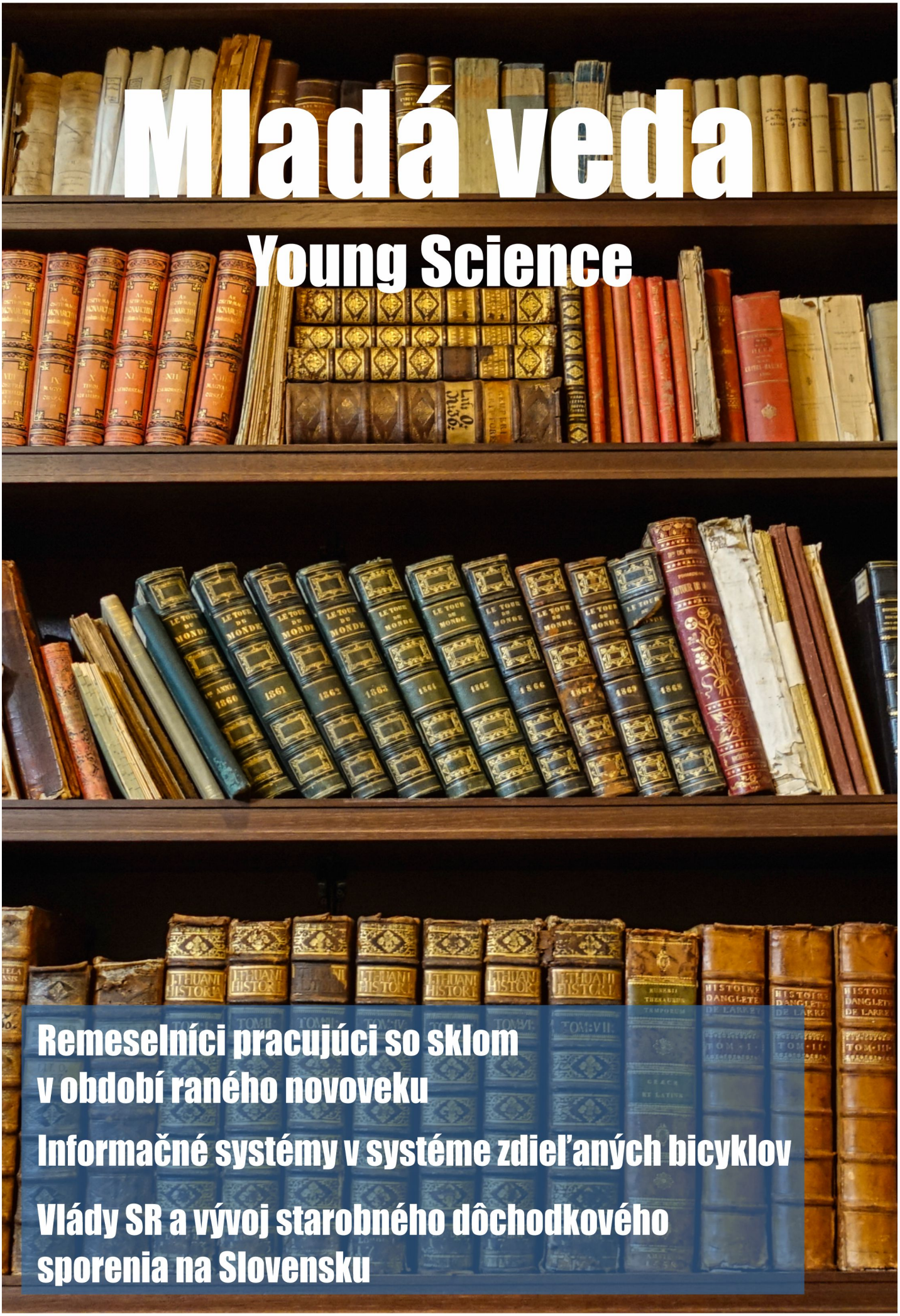

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MAPPING NEW COMPETENCES/SKILLS FOR THE CONSTRUCTION SECTOR

MAPOVANIE NOVÝCH KOMPETENCIÍ/ZRUČNOSTÍ PRE STAVEBNÝ SEKTOR

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Eva Jankovichová pôsobí ako docentka na Katedre technológie stavieb Stavebnej fakulty na Slovenskej technickej univerzite v Bratislave. Vo svojom výskume sa venuje problematike ekonomiky a manažmentu v stavebníctve a podnikateľskej etiky. Martin Hanko pôsobí ako výskumný pracovník na Stavebnej fakulte Slovenskej technickej univerzity v Bratislave. Vo svojom výskume sa venuje problematike facility managementu v stavebníctve a ekonomike stavebníctva.

Abstract

Technological change, demographic change, and globalization among other developments, demonstrate that skills are key to the capacity of countries and people to thrive in an interconnected and rapidly changing world. People will increasingly need to upgrade their skills to perform new tasks in their existing jobs or acquire new skills for new jobs. The main goal of this article is to present the results of the international project EU ERASMUS^{+} KA2 MIND - Management-Innovation-Development and to point out the building of new skills for the construction industry as well. The subject of research was the analysis existing and suggested competencies (skills) on the two target groups and the differences between them according to the proposed methodology.

Key words: new qualification needs, build up skills to business, new skills for the construction sector, key competencies, knowledge management

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Abstrakt

Technologické zmeny, demografické zmeny a globalizácia okrem iného ukazujú, že zručnosti sú kľúčom k schopnosti krajín a ľudí prosperovať v prepojenom a rýchlo sa meniacom svete. Ľudia budú čoraz viac potrebovať zdokonaliť svoje zručnosti, aby mohli vykonávať nové úlohy v rámci svojich súčasných pracovných miest alebo získavať nové zručnosti pre nové pracovné miesta. Hlavným cieľom tohto článku je prezentovať výsledky medzinárodného projektu EU ERASMUS^{+} KA2 MIND - Management-Innovation-Development a poukázať na budovanie nových zručností aj pre stavebný priemysel. Predmetom výskumu bola analýza existujúcich a navrhovaných kompetencií (zručností) pre dve cieľové skupiny a rozdiely medzi nimi podľa navrhovanej metodiky.

Kľúčové slová: nové kvalifikačné potreby, budovanie podnikateľských schopností, nové zručnosti pre stavebný sektor, kľúčové kompetencie, manažment znalostí

Introduction

One of the most important tasks for the next period will be the creation of conditions for obtaining qualified personnel. It will be necessary to increase the efficiency and effectiveness of investment in human capital, as educated and skilled construction workers and managers will become the driving force behind the development of the whole construction industry. It should be a priority focus on quality content and process of education so that graduates of all levels of education were able to flexibly meet the quality requirements of the new building practice. (Jankovichová, 2017)

Through its BUILD UP Skills initiative, the EU aims to equip the next generation of construction sector workers – from manual laborers to design professionals and senior management – with the skills and knowledge needed to ensure building and renovation projects meet stringent energy efficiency requirements. (EU Commission, 2018)

Key competencies represent a whole package of knowledge, skills and attitudes which are necessary for each individual to be able to fulfill personal development, social inclusion, and to be able to employability. These competences should be achieved by the end of compulsory education or training and should form base for further education in the overall understanding of lifelong learning in humans.

Key competencies emerge in a wide range of education and training. (EU Commission, 2011)

The concept of competence means competence, the scope of competence, the ability to carry out an activity. It can have several meanings, forms such as ability, skill, competence, efficiency. (Kožuchová, 2012)

Changes in Qualifications Needs

The changes in the construction sector result in a broad range of qualification needs. These needs will have to be addressed in curricula of general vocational training, as well as in company-specific retraining and supplementary vocational education and training courses. Retraining and other courses address the concrete new challenges within developments in technology, the building process and the market, etc.

● knowledge about and training in the use of new technologies – new generic technologies such as ICT, new materials, chemicals, etc.;
● health and safety issues should be emphasized, particularly in general vocational training and education, and training in relation to specific technologies, machinery and materials. This aspect should reduce accidents in the sector and further reduce the share of workers leaving the sector after a few years. The social partners are aware of this problem and address it in a joint work programme;
● communication, teamwork skills, etc. This aspect is still more important with new construction methods such as lean construction, where productivity is reached by tight time schedules, just in time, etc. (EU Commission, 2005)

People, Organization and Culture

Another serious challenge relates to the increasing sophistication of technology, which demands new and broader skill sets at all levels of a company. A final challenge is the high volatility of workforce demand and composition: staff demands become evident at short notice following a competitive tendering bid, and the execution of contracts typically requires the short-term integration of a transient workforce from multiple subcontractors.

In response to these challenges, construction managers need to engage in strategic workforce planning, this planning involves a scenario-based approach that will keep a business sustainable from a people perspective. The steps are as follows:

❶ Take a long-term view of workforce demand, by simulating the future project pipeline. This forecast should be made on a granular skill-cluster level: it should consider, for example, future skills requirements in the digital space or the need for local market experts, but also expected productivity gains through technological advances.
❷ Simulate the workforce supply accordingly based on existing staff rosters; consider, for example, shifts in age profiles and capacity losses through attrition.
❸ Identify gaps and risks, and devise, on that basis, an executable workforce plan, including interventions to address any over- or under-supply of staff and any skills gaps. Initiate measures, such as recruiting, training, transfers, in-/outsourcing or lay-offs, appropriate to the significance for the business and to the time for qualification.
Many construction firms are still characterized by a rather conservative company culture and mindset and are often hampered by organizational inertia. To support their overall business goals, companies need to drive organizational change – an iterative process, which requires careful alignment of company culture and goals, organizational design and incentive schemes. (The Boston Consulting Group, 2016)

Project MIND – MANAGEMENT-INNOVATION-DEVELOPMENT

The project's objective was to strengthen on the most important aspects of the country's strategy - the establishment and development of small and middle entrepreneurship and innovation development. The Project was foster growth and development of start-ups and private enterprises through Education - it will enhance their competitiveness and management

effectiveness by providing newly started enterprises with practical business development advice.

The consortium of the Project included HEI's that provided the necessary expertise and support in the project implementation. The Project included a well-balanced consortium (partners) of 14 HEI's; 1 consulting company.

Coordinator of the Project was University Las Palmas de Gran Canarias ULPGC, from Spain. Duration of the MIND Project was 39 months, during the period 10/2015-01/2019.

The Slovak University of Technology in Bratislava (authors of this article) - SUTBA was responsible for the Mapping competences of young entrepreneurs, has prepared the guidelines and the questionnaires of all targeted groups. SUTBA leaded the methodology development, guided partners in the data collection phase and proposed the templates for the partners' reports and the summary activity report.

Methodology

We suggested to use the following procedure and methodology for Data Collection:

1. On-line and paper-based surveys for 2 different target groups
2. Interviews to generate deeper understanding and follow up
3. Goal – to collect more than 300 respondents across 2 target groups at 10 institutions
4. The filled questionnaires, the final analysis, table and report

TARGET GROUPS

1. Higher Education Institution (HEIs)

1.1 Academics
1.2 Managers
1.3 Researchers
1.4 R&I Units staff

2. Starting entrepreneurs/managers

2.1 Local enterprises
2.2 SMEs

NUMBER OF PROPOSED RESPONDENTS

1. HEIs: 30 respondents in one institution
2. Starting entrepreneurs/managers: 5 respondents

One questionnaire was looking at the Management, Innovation and Development system – in Higher Education Institutions (HEIs).

It contained question on the following areas:

- Mapping existing and suggested competences at topics/subjects

Second questionnaire was focused on the Management, Innovation and Development system – in enterprises.

It contained questions on the following areas:

- Mapping existing competences of young entrepreneurs/managers
- Mapping the required competences of young entrepreneurs/managers

The list of competencies / skills was proposed by the coordinator and supplemented by the project partners.

Questionnaire scale was used:
1 = Most Preferable and 4 = Least Preferable
(B/C - Mapping existing/ required competences of young entrepreneurs/managers)
1 = Very Important 2 = Important 3 = Not very important 4 = Not at all important

Mapping existing and suggested competences (skills) in HEIs

Total number of respondents from HEIs and consulting company was 271. Individual Project partners contacted different number of respondents, from 20 to 50. Most of all respondents were junior teachers (30%) and senior teachers (19%).

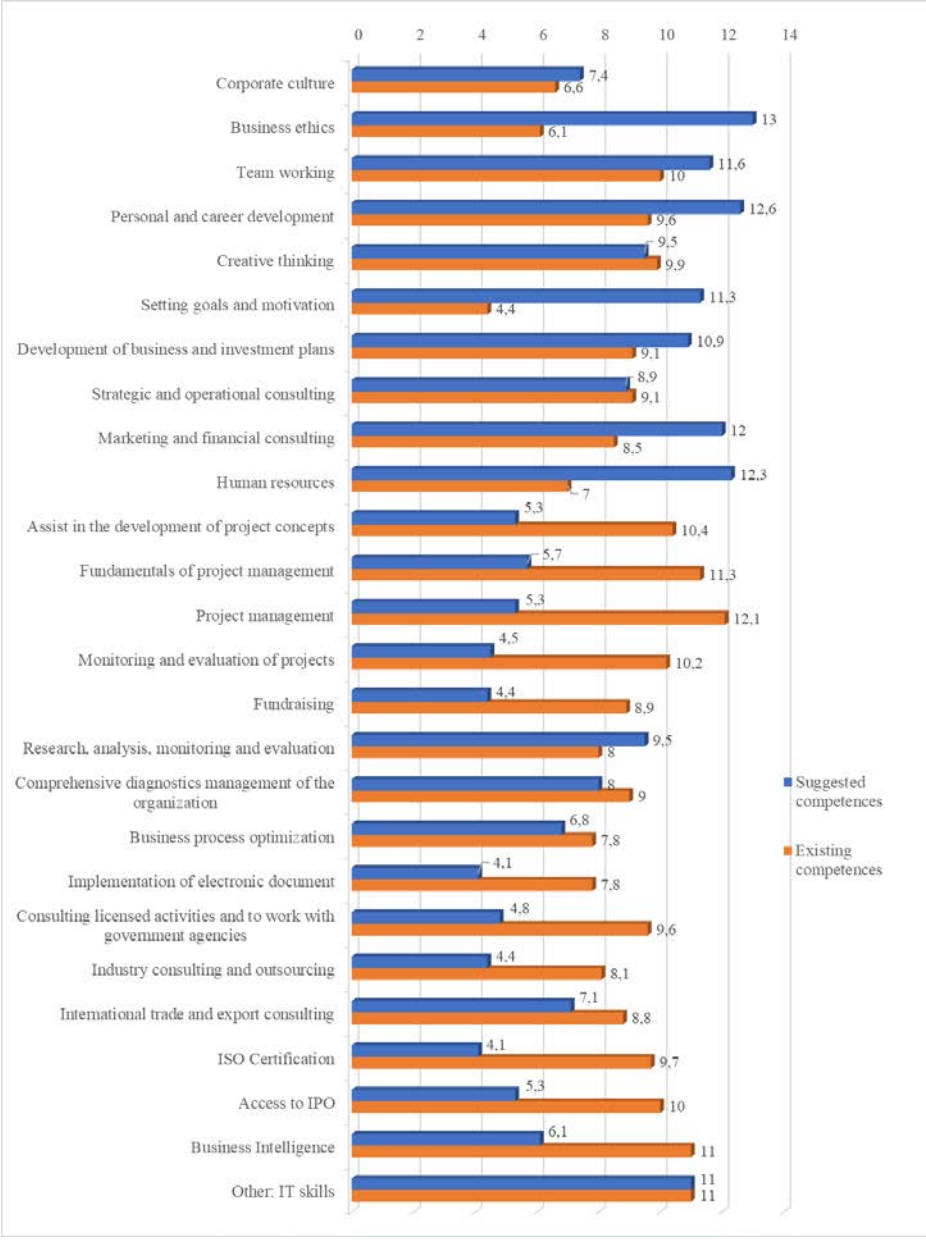

Figure 1 – Graphic representation of existing and suggested competences
Source: authors

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Mapping existing/required competences of young entrepreneurs/managers
Scale was: **1 = Most Preferable and 4 = Least Preferable**

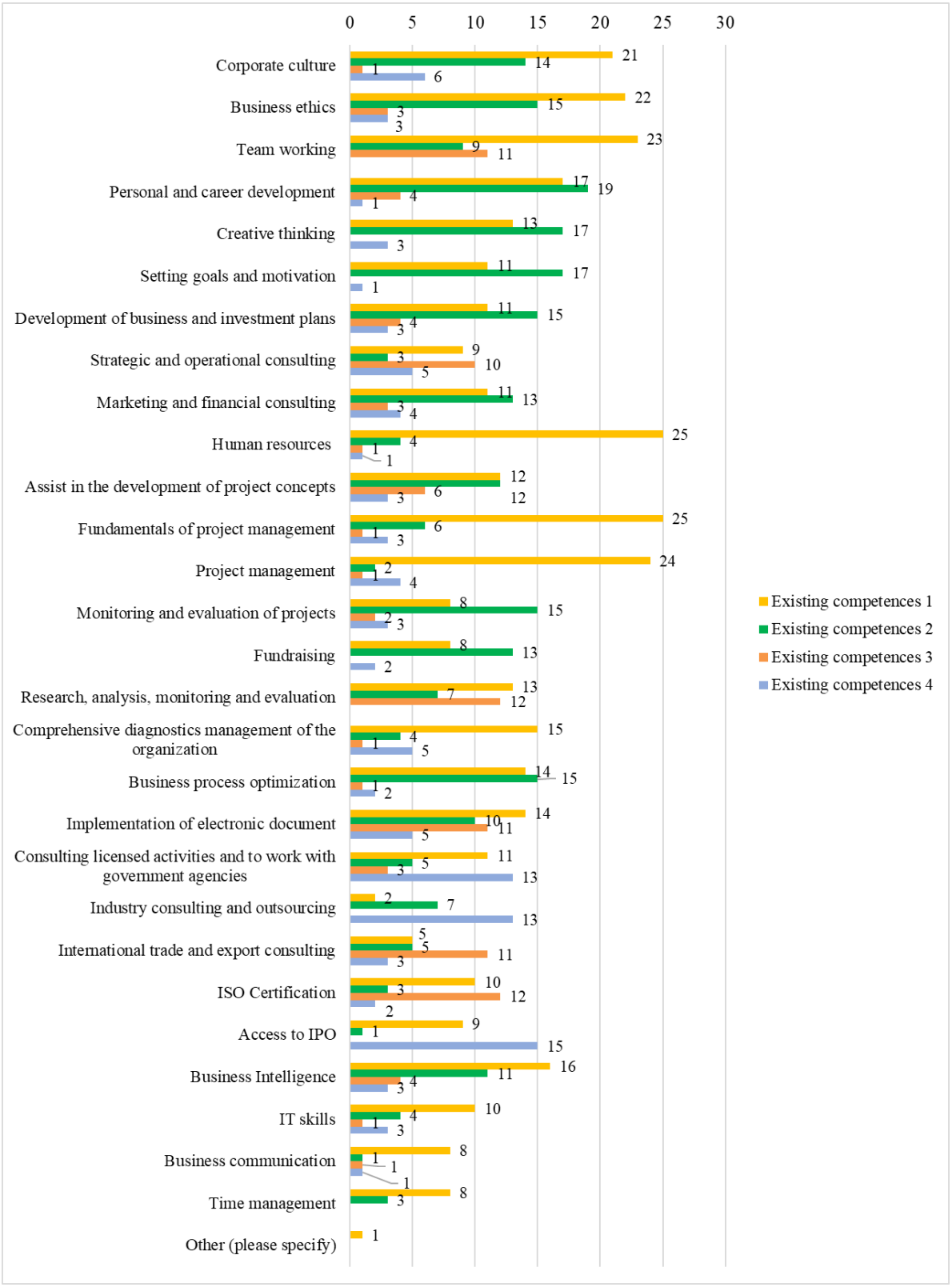

Figure 2 – Existing competences of young entrepreneurs
Source: authors

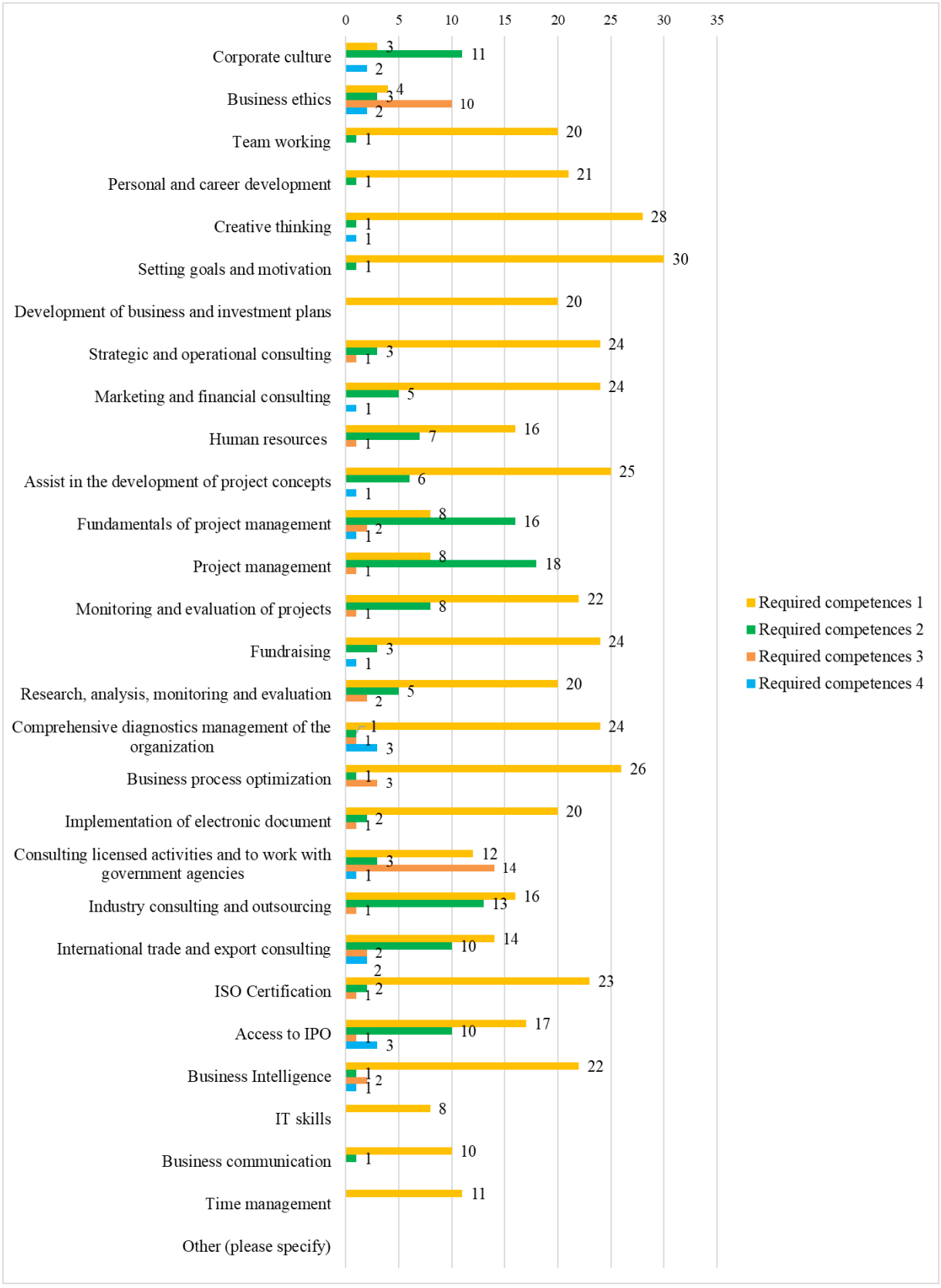

Figure 3 – Required competences of young entrepreneurs
Source: authors

Comparison between academic and private sector

Academic sector

Existing competences	***Suggested competences***
● *Business ethics*	● *Project management*
● *Personal and career development*	● *Fundamentals of project management*
● *Human resources*	● *Business Intelligence, IT skills*
● *Marketing and financial consulting*	● *Assist in the development of project concepts*
● *Team working*	● *Monitoring and evaluation of projects*

Private sector

Existing competences:	***Required competences:***
●*Human resources, Fundamentals of project*	●*Setting goals and of motivation management*
● *Project management*	● *Creative thinking*
● *Team working*	● *Business process optimization*
● *Business ethics, Team working*	● *Assist in the development of project concepts*
●*Corporate culture*	● *Strategic and operational consulting, Marketing and financial consulting, Fundraising, Comprehensive diagnostics management of the organization*

Conclusion

When comparing the academic and private sectors, we can see that we do not find the same skills. This fact points to the differences arising from the content of education and the needs of current practice.

It is important evaluate the degree to which company culture and the working environment are conducive to individual and team performance, innovation and improvement, collaboration and knowledge sharing, ethical principles (for instance, related to safety, the environment or transparency), diversity and inclusion, and openness and trust. These values underline the company's focus on ethics, responsibility and sustainability.

There is a shift from formal education to a broader perspective that includes a range of hard and soft skills people need to acquire over their lifetime in order to succeed in the labour market. Workers, students, parents, employers, education providers and government agencies now need reliable information on how supply and demand for skills evolve.

Based on research a comparison of the academic and private sectors shows that there are not many common intrusions as a result of poor orientation of the academic sector to the needs of actual practice. It is important to provide solutions to minimize the gap between needs of practice and teaching – which has led to a waste of resources and limited the training quality in universities. Strengthen institutional research capability through close connections with the private sector and provide more motivation for research activities of HEIs. Organize

and help to organize training on better understanding of strategy for foundation of start ups and technological incubators in order to create a link between academic and private sector. (ERASMUS+ KA2, 2017)

The transformation of the economy and society into advances in technology and rapid digitization is the onset of the so called 4th Industrial Revolution. This process is presented as a great opportunity for all economic actors, but it also points to certain risks associated with changing employment trends, increasing income inequality and increasing dependence on IT. (Pauhofová and Staněk, 2016) The Fourth Industrial Revolution will bring about system changes that require engagement; we will have to think about new ways of cooperation across the public and private sectors. As the rate of change will continue to accelerate, we must maintain transparency for all stakeholders to consider the risks and benefits of each new shift. Communities and individuals need to be educated and equipped with the ability to use technology to contribute to a better world. We must not only focus on technological progress and economic prosperity, but also on the impact they have on people, society and the environment. (Schwab, 2016) The global era of knowledge society even shortened the life cycle and usability of knowledge. In the 21st century we do not appreciate the creation of knowledge, but its real utilization in practice. (Kassay, 2014)

The changing nature of construction means that a wider set of skills, including those from different disciplines, are increasingly in demand. Some of the new and emerging job roles such as robotics engineer, assembly technician, 3D visualizer and drones pilot are using more innovative methods to train: from 'Virtual Reality' headsets which allow you to perform simulated tasks in low-risk environments to game-based courses that provide more engaging and flexible ways to learn and gain relevant skills and qualifications. (Go Construct, 2020)

The Ministry of Education of Slovak Republic, together with experts from the OECD, were working on the National Skills Strategy, which was focus on four key areas: strengthening young people's skills, increasing the adult participation rate in learning, reducing inequalities between acquired skills in formal education and skills demanded in the labor market and strengthening the use of acquired skills in the labor market. Based on in-depth desktop analysis, stakeholder workshops and discussion groups, the OECD has selected opportunities and developed recommendations for the Slovak Republic in each of the priority areas. (OECD, 2020)

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