European Journal of Contemporary Education
E-ISSN 2305-6746
2022. 11(3): 778-790
DOI: 10.13187/ejced.2022.3.778
https://ejce.cherkasgu.press

Competitiveness Experiences of Dual Training in a University of Higher Education in Economics

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Abstract

Employers' expectations are key drivers of designing and developing academic programmes and this paper would like to contribute to such processes by clarifying their expectations based on empirical research conducted during an EFOP[1] project on developing the dual International Business and Economics undergraduate programme of Budapest Business School University of Applied Sciences, Hungary (BBS). The aim of this paper is to investigate what competences employers really expect business graduates to have at the end of their studies. The paper introduces the dual higher Vocational Education and Training (VET) model, where full-time students are also full-time employees of cooperative companies. Twelve employers participated in the project and the university signed a contract with them. They agreed to employ the young people under the programme. The roots of the currently existing high VET models – as a concept and structure – can be traced back to the "Stuttgart Model", and to the first attempt at merging vocational training and theoretical knowledge in the 1970s. This model, in slightly different forms, has been adapted in many Member States of the European Union and has gained momentum in Hungary. BBS has been very successful in delivering this model since 2017. The project is purported to improve the efficiency of dual higher VET by joint education and competence-development with employers, who were interviewed about their expectations. The authors of this paper have analysed the employers' responses and have made recommendations for developing dual higher VET programs accordingly.

Keywords: VET, expectations, education, university.

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[1] State-subsidized Human Resource Development Program of Hungary, allowed BBS to design and make tailor-made lectures and training materials for the International Business and Economics Bachelor program and design and put into operation a logistics laboratory in collaboration and jointly financed by its most important dual partner-organization, Robert Bosch Electronics Ltd. to develop students' competences.

1. Introduction

The velocity and magnitude of changes in the world of work in the 21st century, especially the advent of the Fourth Industrial Revolution, are making a significant impact upon higher education. Since graduates are expected to demonstrate abilities to be successful in jobs not existing today, higher education institutions (HEI) need to adjust their programmes to prepare students for an era of uncertainty (OECD, 2015). However, employers in many countries feel that graduates are inadequately prepared for volatile labour markets (Zenner-Höffkes et al., 2021), because important skills are not appropriately fostered during academic programmes (Zlatkin-Troitschanskaia, 2021). Such skills include technical as well as creative and social skills, which are regarded as essential in the 21st century (OECD, 2015). Employers are calling for the development of a variety of abilities in graduates and demanding a competence-based approach from higher education institutions (OECD 2021; Zlatkin-Troitschanskaia, 2021).

This approach has produced a variety of forms and their respective definitions, which mostly focus on a systemic integration of knowledge, skills, and attitudes (Bratianu et al., 2020). The knowledge part of the academic programmes varies from discipline to discipline (Coonan, Pratt-Adams, 2019). The skills include 'hard' skills such as numerical skills, and 'soft' ones, such as communication, creativity, critical thinking (David et al., 2021), with special emphasis on digital skills needed for the Fourth Industrial Revolution (Coonan, Pratt-Adams, 2019). The attitudes vary from country to country, but most of them aim to support a better, more humane society (OECD, 2021).

The dual higher VET programmes that originated in Germany include internship stages and may involve a variety of active and collaborative learning elements. The next sections provide insight into the history of this academic model, its adaptation in Hungary in general, and at BBS faculty of International Business and Management (FIMB) in detail. The experience gained here is the subject of this study. During research the validity of the following hypothesis was examined:

Hypothesis 1.

The competencies determined by the dual higher VET and their development are in full compliance with the expectations of company professionals.

2. Theoretical background

2.1. The birth of dual higher VET

In a publication about the background, debates and major development fields concerning the higher VET, the authors Elsholz and Neu stated that the demand in Germany for "dual education" first appeared and started to rise in a social situation. The number of students having baccalaureate[1] significantly increased, whereas the number of available places in higher education remained the same, thus students were confronted with constraints in access to higher education. To resolve this tension between the students' desire to enter higher education, the hindrances in HEI capacities, and the enterprises' demand for qualified employees (new entrants), the legislators in Baden-Württemberg (Germany) aimed to establish a special educational system. By aligning with society's (stakeholders') expectations the newly designed system met two essential requirements. First, regarding the knowledge and competencies conveyed by it, it had to be capable of ensuring the same job opportunities for the graduate students, as the traditional high schools with their curriculums. Secondly, the constructed courses of studies had to be independent of any particular interest (such as professions, plants' needs or business operations) and must provide an attractive, broad scope and profession-neutral curriculum to a lot of students.

In the 1970s companies such as Robert Bosch GmbH[2], Daimler Benz AG and Standard Elektrik Lorenz AG in Stuttgart[3] began to operate with this model, consisting of a combination of vocational training and theoretical knowledge elements where the students participated in a 3-year educational program. "Professional Academy"[4] in 1973 in consistency with the respective initiative of Baden-Württemberg educational minister. The "Professional Academy" started to work as a semi-governmental (legally not independent) institution also providing social study programs.

[1] In German system called Abitur which might equal to A-level graduation

[2] The BGE FIMB started to operate the dual high VET first with the Hungarian subsidiary of this company in 2014.

[3] This is the reason why the first model received the title "Stuttgart Model".

[4] In German language, its title is „Berufsakademie".

The next milestone in this progress was the legal act which conferred the same legal status to "Professional Academy" diplomas as high school issued and as a consequence, they gained equivalent status with high school degrees.

As a result of the developmental history of these programs, an array of dual educational programs came into being with large similarities, but also with significant deviations. The different curricula ultimately led to a lack in transparency in respect of the quality and outcomes of education (Esholz, Neu, 2021: 338).

2.2. The term of dual higher VET in the context of European union legislation

It is virtually acknowledged by all EU policymakers and education ministers, that the new technological and economic development, the future progress, and competitiveness of the European Union are highly affected and shaped by new entrants' knowledge. It is also recognized that the speed of technological development cuts education time and requires better alignment with industry needs and more effective practical trainings. Delay or hesitation to incorporate new knowledge is likely to weaken the resilience of the EU and will negatively affect the students' long-term employability. Universities must reveal the discrepancies between industry interests and academic aims and purposes, because the "skills mismatches are ongoing concerns in the EU, despite the fact that the characteristics and severity of the problem vary across members states economic activities and occupations." (European Economic..., 2018: 18). It is widely agreed that "skill mismatches" can affect the working behaviour of both employers and employees. Gamin et al. argues that employers are risk averse when they are looking to recruit, which means that they are unlikely to expand their employee base unless they are confident in the abilities of potential employees to fulfil the tasks required." (European Economic..., 2018: 20).

The legislator of the European HEI has clearly declared that the goal which the students want to attain by obtaining Bachelors and Masters' degrees, is to apply for jobs in the international labour market. Working in an international job environment, in international teams will support the future employee in teamwork and international cooperation; it will strengthen the employee's open-mindedness to innovations, and capability to advance and explore new business opportunities. To support students in acquiring these competences, universities must be aware of advancements in global enterprises and must know both the trends in HR selection processes, and in profession-profile criteria sets. Due to these reasons the EU welcomes all forms of practice-based education, but states, that "there is no consensus on defining the definition of higher Vocational Education and Training (VET) so far." (EU Final Report, 2019: 1).

2.3. White Paper on dual higher VET in Hungary

The Hungarian dual higher VET is a part of the legal frameworks for higher education.[1] The ministry in charge has also established a special body, designated the "Hungarian Council for Dual Vocational Education"[2] that defined the term of the dual higher VET. It says that academic studies are deemed dual higher VET, if the education provided by the concerned HEI is in strong liaison with a partner-organization that virtually renders practice-based trainings. At the partner-organization students gain special profession-related knowledge and working experience, thus they can enter the labour market as employees with expertise and appropriate competencies.

The "Hungarian Council for Dual Vocational Education" has determined the pivotal principles of dual higher VET. To support the statements of the recent study three of these principals are worth mentioning:

"4. At the dual practice place the partner-organization [3] must provide the proper infrastructure (equipment, machines, tools, materials) that are suitable and sufficient for the development of student competences and skills."

5. The mentors at the partner-organization must have outstanding theoretical knowledge and practical experience to be able to support the apprentice's professional development in the workplace culture.

[1] The referred „EU Analysis paper" states that there are EU Member States where such a regulatory base was created. It is the Act on National Higher Education Nr. CCIV enacted in 2011.

[2] Duális Képzési Tanács

[3] trainer organization

6. The dual partner-organization must integrate an appropriate "Educational Program" based on the study program of the HEI and which is strongly related to it. This the "Coordinated Dual Education Program" (CDEP) must contain the following four elements:

- theoretical knowledge,
- profession-related, specific practice-based tasks,
- individual project tasks,
- advancement of competences and skills in consistency with Bachelors and Master's degree programs." (White Paper...).

The Hungarian dual higher VET is featured by programs that "include 20-24 weeks work-based learning in a company per academic year. Students have a higher workload compared to their peers, who follow a standard program in the same field. After an initial 13-week period the dual students start their practical experience in the companies and prepare for the first round of exams. There are up to eight weeks of practice in the autumn-winter semester, and 16 weeks in the spring-summer semester." (OECD-EU, 2017: 26).

2.4. White Paper on dual higher VET at BBS, Faculty of International Management and Business

In compliance with the "Hungarian Council for Dual Education" standpoint, the criteria set by the German "Council of Science", and the terminology of the EU, the Budapest Business School (BBS) has set the goals of its dual higher VET, saying that: "the vocational part of high dual education is pervaded through the curriculum and is aimed at developing the students' knowledge, and to efficiently forward the applicable competences to international economic business life." (BGE, 2021). BBS is cognizant of the fact that "there has been an undisputed need to link academic education with practice-based knowledge both from the side of employers and students for a long time in the Hungarian Higher Education system. The Bachelor's degree programs introduced by the Bologna Process wanted to inspire the linkage, where the dual vocational education of HEIs creates an advanced level of education thanks to the focused attention and organized, well-designed integration and contribution of participating companies." (White Paper...).

The concept of BBS dual higher VET focuses on the academic yields and project tasks to enable the delivery of value-added performance.

The philosophy of BBS dual higher VET was recapitulated in the "SMART Concept" where each component makes an intrinsic fundament of the vocational training carried out by partner-organizations.

- "S" refers to specific, profession-related, accurately defined tasks to be solved by the student.
- "M" refers to the "measurable results" both in the achievable competences and the outcomes.
- "A" says that the tasks to solve, must be attainable, attractive, interesting, and encouraging to facilitate the advancement in knowledge.
- "R" holds that students must do relevant work which means that they must be involved in real, necessary, and important operational processes.
- "T" holds that the vocational training tasks must be timely properly structured and scheduled to enable eligible encumbrance of students during their learning time.

The White Paper of BBS laid down the outcomes in the curriculum of International Business and Economics, which were split into four major categories such as

- "Professional competences, knowledge and understanding" including general and specific items such as being familiar with the main tendencies of the global economy (in general) or knowing on how to establish new trade relations.
- "Cognitive competences" therein analytical competences such as being capable of conducting analysis with proper measures and synthetizing competences where the capability for tasks re-designing or re-structuring is worthy of mention.
- "Key, profession-related competences" where self-management, tolerance, proactive ways of thinking or respectful behavior were listed, and finally
- "Key profession-profile skills" point to the capability of using IT apps, ERP systems or Business Intelligence solutions.

3. Research objective, methodology and data

In awareness of the necessity to adjust the academic content of curriculum to the new trends and employers' requirements, the BBS FIMB conducted primary research in 2020 to reveal the hidden, tacitly existing demand and the expressed needs of labour market actors concerning the students' competences and knowledge. The primary research and the subsequent analysis purported to identify the undisclosed conflicts in the required knowledge and intended to clarify their reconciliation, pointing to the drivers and rules, such as company strategies and effective HE legislation.

The research made by BBS FIMB aimed to have insight into business tendencies in logistics, finance, trade, and commerce and shed light on the gaps between the industry needs and university requisites. During the interviews, interviewers visited the companies in person and interviews lasted one to two hours.

Twelve companies were involved in the research, and they actively participated in dual higher VET. Participation was voluntary. The particulars of the companies are presented in Table 1.

Table 1. Specification of the companies. Source: own research

Specification	N
Company size	8 large companies (more than 250 employees) 3 medium-sized companies (between 50-249 employees) 1 small company (9 employees)
Turnover	2 companies (under 5 billion) 10 companies over 5 billion
Company form	1 limited partnership 4 Limited liability company 7 Limited company

The researchers used in-depth interviews as a quantitative research method, because this method offers a good opportunity to scrutinize the compliance of competencies, since in this way the company leaders could reason and explore their requirements more clearly and express themselves. This method enabled the interviewee to phrase the personal experience gained during the dual higher education processes. The questions of the in-depth interview were structured as follows.

Table 2. The structure of in-depth interview

Questions for specification	Skills and competencies for dual higher VET	Competence requirements
The size of the company. Activity field of the company. Ownership structure of the company.	Clarification of competence terms based on project works and White Paper of BGE;	What do we expect the students to know? Do the terms and definitions of the course description conform with company needs? Are the university and company phrases and usages in harmony with each other?

Source: own research

The interviewees were neither informed about the course content, the set of skills and competences that the university wanted to ensure, nor the literature used.

A further aim of the in-depth interviews, was to obtain a direct impression and information on how the company would construct the respective course. The asked company professionals had absolute freedom to determine knowledge elements held as important for teaching. The responses

were elaborated on, systematized by the academic course leaders, and were considered in regular revision (refreshment) of the course materials.

During the scrutiny, each course taught in the dual higher VET included the syllabus describing the project tasks where the lecturers defined the required competences of the courses. The interview subjects were asked about the company needs and the efficiency of education with respect to these competences. The aim that the researchers wanted to achieve by the analysis, was to point out how frequently the competencies defined by lecturers show up in the interviews conducted with company professionals. The researchers wanted to figure out how the "educational supply" conformed with the true company needs, and to what extent the expected competencies of the labor market comply with the competencies which the dual higher VET intends to develop.

The researchers split their tasks into different parts. To analyse the competencies defined by the project tasks syllabus, a general program language and therein one specifically suitable for text analysis was applied. A software program was needed that was able to search for the competences as key words and examine their incidence, thus the researchers opted for the Python program language and its regex module.

The researchers' choice was based on the following reasons:

1. The design philosophy of the Python language prefers readability and ease of programming against the running time.

2. The Python program features simple syntax, thus concise, easy-to-read programs can be written in Python. Among others Python supports functional, object-oriented, imperative, and procedural programming paradigms.

3. Python uses dynamic types and automatic memory management and has a strict typology system. Python is an "interpreter language", which means that source and object codes are not separated, the program can run if there is an available and appropriate Python interpreter.

4. The concept of "regular expression" is not a Python-specific language element, but it a simple tool for describing a set of strings. Regular expressions can be used by importing the re or regex module in Python, and applying the functions provided by them.

5. The Google Colab is one of the most popular applications, which is based on the design and functioning of the Jupiter notebook. Its great advantage is that the application does not need to be downloaded or installed but is available online.

Further, the researchers set the aim to define and underscore the most significant competencies which the interviewees mentioned. The Nivo 12 program was used to accomplish this task.

4. Results and discussion

First, the course-related and course-specific competences were gathered, classified, and put into groups as shown in Table 3.

Table 3. Competences in courses of the dual higher VET (Competences defined by the lecturers)

Courses	Competences
Key 1. International Marketing	1. Presentation skill. 2. Team working skill. 3. Arguing. 4. Global brands. 5. Ethnocentrism. 6. Diversification. 7. Relationship marketing. 8. Supply chain. 9. Product adaptation. 10. Distributor brand. 11. Vertical price differentiation.
Key 2. Corporate or (business) management	1. Entrepreneurial competence. 2. Analytical skills. 3. Corporate management.
Key 3. Logistics informatics	1. Knowledge of SAP R/3 logistics modules. 2. SD. 3. MM. 4. PP. 5. Automated technologies. 6. Semiautomatic technologies. 7. Data processing technologies. 8. Warehousing technologies. 9. Tracking technologies. 10. CRM. 11. Information evaluation. 9. Digital literacy. 13. IT communication.

Key 4. Logistics management	1. Harmonization of logistics functions and methods. 2. Analysis with appropriate methods, systematic thinking, corporate management.
Key 5. Controlling	1. Creation of information. 2. Interpretation of information. 3. Efficient utilization of information. 4. Autonomous thinking. 5. Critical thinking.
Key 6 Corporate finance	1. Integration of knowledge of various professional fields. 2. Reporting skill. 3. Making tables. 3. Making graphics. 4. Precision. 5. Investment and financing decisions. 6. Short-and long-term decisions. 7. Risk. 8. Business risks. 9. Liquidity management. 10. Fitting principle. 11. Capital structure. 12. Capital leverage. 13. Operation leverage. 14. Financial leverage. 15. Capital costs.
Key 7. Human resources	1. Corporate and human strategy. 2. Organizational design and development. 3. Workforce planning. 4. Recruitment. 5. Workforce selection. 6. Workforce placement. 7. Redundancy. 8. Training and development. 9. Performance evaluation. 10. Payroll administration. 11. Labour, employment relations. 12. Management-union relations. 13. Health and safety. 14. Welfare issues. 15. Social policy. 16. Job analysis and planning. 17. Resource planning. 18. Job analysis. 19. Incentive management. 20. Performance appraisal. 21. Remuneration for work. 22. Information system management. 23. Culture change. 24. Change management. 25. Competence and emotional intelligence. 26. Internal communication. 27. Social skills. 28. Creativity and teamwork. 29. Empathy. 30. Assertive communication.
Key 8. Logistics	1. Customer services, quality of logistics services and its appraisal by KPI. 2. Logistics costs. 3. Trade-off between logistics costs. 2. Direct and indirect procurement. 5. Centralized and decentralized purchasing. 6. Types of customer-purchaser relations. 7. Direct and indirect distributions systems (vertical and horizontal connections). 8. Inventory mechanism. 9. Warehousing technology. 10. Warehousing processes. 11. Transportation systems. 12. 1PL, 13. 2PL. 14. 3PL. 15. 4PL. 16. 5PL. 17. Supply chain types. 18. Systematic elaboration of problems. 19. Process approach. 20. Proactivity. 21. Planning. 22. Coordination. 23. Organizing.
Key 9 Marketing	1. Analysing and problem-solving skill. 2. Convincing skill proactivity. 3. Preparing decision. 4. Project efficiency. 5. In-store marketing. 6. Cash and carry. 7. Panel research. 8. Product life cycle. 9. Selective sales. 10. Representative sample. 11. SWOT analysis. 12. Sales promotion. 13. Pull strategy. 14. Attitude. 15. Customer's price acceptance. 18. Market leader strategy.

Source: own research

The competences determined by the project tasks were read as key 1, key 2, key 3, etc. in Python for the sake of simplicity, in accordance with the indexing of Table 2. It was necessary to clean up the files containing the competencies from redundant punctuation and special characters to enable Python to handle them properly. The text of the in-depth interviews was read as text 1, text 2, etc., also in accordance with Table 3. In all cases, it was necessary to use utf-8 encoding instead of Word format.

Researchers used the program to count the number of competences or keywords in the project tasks set by the academic lecturers. These values are shown in the first column of Table 4. They then examined how many of the given keywords occur in the in-depth interviews. The high number of occurrences may indicate an overlap between the expectations expressed by the companies and those expressed by the trainers. These values can be found in the second column of the table. Next, the total number of occurrences of the competences in the text, including multiple occurrences, was counted. The multiple occurrences may indicate the importance or emphasis of a given skill or competence. These numbers are shown in the third column of the table.

Table 4. Competence frequency/occurrence

	Number of competences	**Frequency/ occurrence of competences**	**All occurrences**
key 1	11	1	1
key 2	3	1	4
key 3	13	4	13
key 4	4	1	2
key 5	5	0	0
key 6	15	11	13
key 7	30	25	29
key 8	23	5	9
key 9	16	1	2
Altogether	120	49	73

The table shows that the academic lecturers determined 120 competences. There were 49 occurrences in the in-depth interviews; regarding the multiple occurrences, 73 occurrences were found in the texts. The set of competences with the smallest occurrence contains only 3 competences whereas the set with the largest occurrence numbers 30 (ten times higher), so the difference between the number and proportion of hits is to be expected. Competence sets including less than 5 elements were defined too concisely, therefore the results may be distorted in a keyword search.

The occurrence of a competence is likely to mean that the company expectations overlap with academic lecturers' expectations. If a keyword or competence was mentioned more than once, it is likely that the concerned competence has gained emphasis in the corporate sector.

The 49 unique occurrences and 73 total occurrences suggest that they were also mentioned by companies. As expected, the proportion of hits in competence sets with a small number of items is small. It is worth mentioning that in the case of competence set Key 9, holding 16 competences, the hit rate is very low, whereas the hit rate is relatively high in the case of competence set Key 6 with 15 competences. In the case of competence sets including more than 20 items, such as Key 7 and Key 8, we see proportionally high and low hit rates; these results seem to be of more use. To identify relevant and assessable results at least 15-20 items should be established in larger text searches.

If a keyword does not occur in the interviews, it could be because that the keyword was replaced by a synonym or paraphrased in the text. If the competences were formulated as search keywords, which means that the academic lecturers wanted to determine the set of terms and definitions of a particular field in complexity (broad interpretation), the non-occurrence of an item may be attributable to the use of a synonym, or related term and skill. As a conclusion, the 59 % of competences which do not occur need further investigation. The interview analysis (made by Nivo 12) also revealed the most frequently occurring competences.

The most frequently occurring do not necessarily stem from the same set of keys. There are two corporate management modules (MM, PP) among the most popular competences, which validates the university members activity, because they put emphasis on corporate IT solutions, which seems to be a lucrative investment in the labour market.

The researchers have continued their investigations. The BGE White Paper includes the sector-specific competences that the dual higher VET wanted to develop. In contrast to the subject-specific competences defined by academic lecturers, they are of a general nature regarding the expected knowledge and competences of the International Business Economics course. Table 5 gives a summary of them.

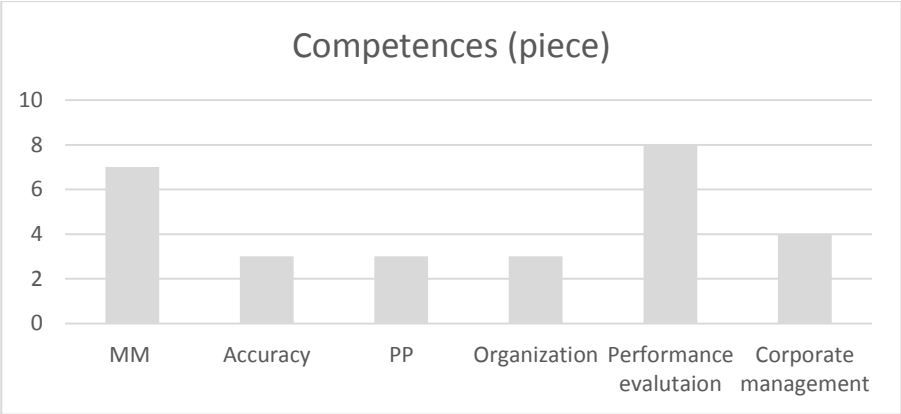

Fig. 3. The most frequently occurred competences
Source: own chart

Table 5. The competences set out by the BBS White Paper

Competences as to the BBS White Paper Key0	1. Knowledge on structure, and tendencies of international economy. 2. Thinking in processes. 3. Understanding of global, integrated supply chains. 4. Harmonized application of logistics functions and methods. 5. Application of logistics interdependencies in productions and commerce. 6. Establishing and managing commercial relations. 7. Business ethics. 8. Measuring the profitability of business activities and projects. 9. Systematic thinking. 10. Ability to aggregate the knowledge elements of different science fields. 11. Analysis with appropriate measures. 12. Ability to re-structure task-specific information. 13. Systematic elaboration of problems. 14. Convincing and encouraging skill. 15. Documentation of information. 16. Presentation skills. 17. Using statistical methods for analysing data. 18. Proper assessment of own work and position. 19. Generating, interpreting and effective using the information. 20. Pro-active thinking. 21. Applying quality-assurance systems. 22. Tolerance. 23. Decision-making preparation, arguing. 24. Loyalty, respect, and responsibility. 25. Being and acting precisely and in concentrated way. 26. Knowledge of foreign languages. 27. Planning, coordination and organizing. 28. Digital skill for making graphics and charts. 29. Alignment with corporate goals and values. 30. Using corporate ERP systems. 31. Ability to work in teams. 32. Knowledge of IT communication means.

Source: own table

The researchers compared the competences of Key0 to the previously gained data in Python, to find out the interrelations.

Applying the above-described code the Table 6 presents the occurrence of competences set by the BBS White Paper in the interviews.

Table 6. Occurrence of competences set by the BBS White Paper in the interviews

	Number of competences	**Number of occurred competences**	**All occurrences**
text 1	50	2	2
text 2	50	11	15

text 3	50	3	3
text 4	50	12	17
text 5	50	6	10
text 6	50	2	3
text 7	50	12	32
text 8	50	7	12
text 9	50	2	2
Altogether	50	27	96

Source: own table

The proportion of occurring and non-occurring competences is 54 % and 46 %; it means that the rate has improved but not significantly. However, the ratio of total occurrences to the number of competences is almost the reverse of previous results, albeit the number of occurrences amounted to 27, which is much lower than before. However, it should be clarified that the total number of competences is only 50, instead of 120. In other words, the authors may assume that in-depth interviews virtually include general, profession-specific, and profession-related competences other than course-specific skills and competences. If the number of keywords to be searched for in both texts were similar, it would enable a more balanced comparison. Anyway, it is promising that there are no 0 hits and repetitions in either of the texts.

Table 7 also indicates that the competences defined by the BBS White Paper are broader understandings which define required skills referring to the course (or subjects) requirements in part. That is the reason for its low incidence in the in-depth interviews. The respective rate is below 25 % everywhere and sometimes as low as 4 %.

The authors searched for the most frequently occurring keywords. The 5 most frequently occurred keywords are presented by Figure 6. The keyword "development" leads by a wide margin. The other four keywords hardly differentiate; thus, their occurrence order cannot be considered as relevant, but can be interpreted with appropriate tolerance.

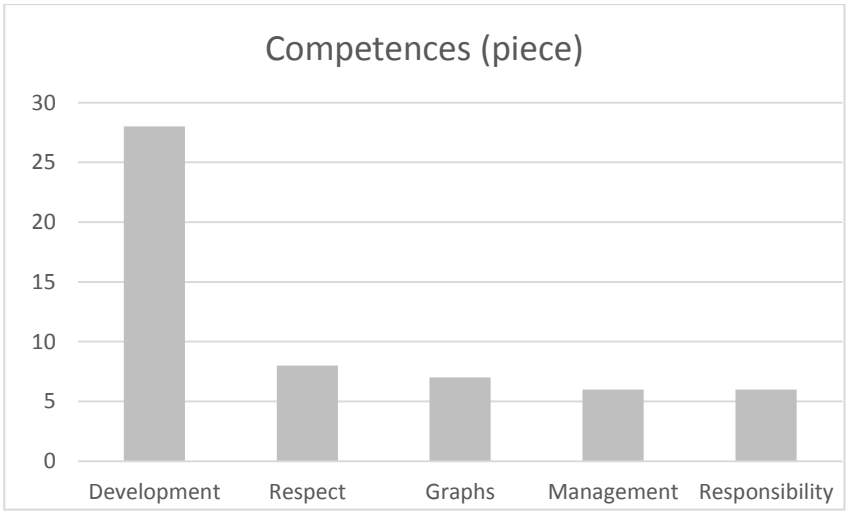

Fig. 6. The most frequently occurred competences
Source: own chart

Analysing the results of the study, the researchers concluded that the companies participating in the dual higher VET in many cases interpret the competences and their development in a general way. In the current study, the companies did not mention about 60% of the competences determined by the academic lecturers, albeit this proportion is lower in the cases of the competences set by the BBS White Paper. Since the study did not contain the analysis of related words, it is advisable to extend the concerned study to these words to refine the research

results. Based on the current study results, it can be stated that employers who have participated in the program are satisfied regarding several competence areas, but there are still several competence fields that need further improvement, and thus the authors reject their hypothesis.

Higher education is traditionally centred on knowledge, but competence-oriented programmes focus on skills (Zlatkin-Troitschanskaia, 2021). According to Bratianu, Hadad and Bejinaru (2020) this new focus requires a paradigm shift from linear curriculum based on knowledge transfer, to a nonlinear curriculum based on developing competencies. Other researchers also point out that the competence-based approach necessitates development of flexible and innovative solutions by higher education institutions (Coonan, Pratt-Adams; 2019; Martin, 2019). Most recommendations contain a strengthened collaboration with employers (Coonan, Pratt-Adams, 2019; Gámez-Pérez et al., 2020; Martin, 2019) and incorporation of more experiential learning opportunities into the academic programmes through internship and degree apprenticeship, and more active and collaborative learning elements (Bratianu et al., 2020; Coonan, Pratt-Adams, 2019; Martin, 2019).

The dual higher VET is one of the future educational models that sets various aims. One of its aims is to define a clear and definitive criterion for determining quality standards and to increase the transparency of dual higher VET education; thereby improving its recognition in labour markets by employers (Maenning et al., 2019). The skills which can be gained through work experience are "analytical and problem-solving competencies as well as, critical thinking, organisational skills and the ability to communicate and cooperate with people from different departments." (Hirsch-Kreusen, 2014: 23). However, the research has shown that it is very important for companies and universities to have a common methodology on competences, as this is the only way to achieve successful dual cooperation.

5. Conclusion

Recapitulating the results of the analysis the lack of common understanding regarding the required academic competence and their precise content, can be perceived.

The company professionals express their requirements in respect of the knowledge which they want the university to transfer by taking and referring to their daily operations and to the industry specific processes, whereas the university wants to provide comprehensive multiple-purpose competence sets, taking into consideration the respective educational regulations, the available academic literature, and the academic lecturer's expertise in teaching and work. Due to these different approaches the existing bias between the actors' – academic players and participating companies- standpoint is reasonable and comprehensible, but this difference, which gives much room for broad interpretation, needs reconciliation. During the harmonization process the unique, profession-driven, or company-specific requirements must be built into the set of competencies and skills in a way that they would not overwhelm the general requirements.

A healthy equilibrium is needed since universities must prepare students for various company profiles, for an array of jobs in international business-related sectors. However, the failure to continuously follow the companies' permanently changing human resource needs, which are the signs and reflections of their alignments to the world economy, would harm both the educational sector and the European economy and would weaken its resilience and potential competitiveness.

The pivotal conclusion reached by the authors holds that there is a need for a "common language" in respect of precise meaning of competences and skills. The university must encourage the clarification and the classification of the definitions and phrases that are being circulated in industry-university relations. The authors assume that the industry will appreciate this intention and initiative because clarified competence and skill sets are necessary to find the best candidates for recruitment and diminish the costs and time of their introduction to work.

These two fundaments of efficiency and the consequence of competitiveness can be strengthened by mutually elaborated course contents which have been traditionally believed and recognized as effective tools.

It is universally recognized that information is a valuable good and the global economy of the 21st century is based on this precious asset. However, the acquisition of information creates costs, and the person who is interested in obtaining it is only willing to pay for it until he has got access to it. After having received the information, it becomes a valueless asset for the acquirer. Pursuant to

this general thesis of science, the result of a competence clarification process must be a public good. The production of clear competence sets in courses is in the public interest, thus it needs public (state-financed) support, since both academia and industry are only indirectly interested in generating this information, but it ultimately serves the European Union's public interest, and it improves its long-lasting competitiveness. It is for this reason the authors would initiate the development of both the dual higher VET and its comprehensive mechanisms where industry and academia can harmonize, and develop knowledge, competences, and skill sets.

References

Act..., 2011 – Nemzeti Felsőoktatásról szóló törvény [Act on the National Higher Education of Hungary] *CCIV*. 2011. 108. [Electronic resource]. URL: https://net.jogtar.hu/jogszabaly?docid=a1100204.tv [in Hungarian]

BGE, 2021 – BGE. White Paper on dual Higher Education of Budapest Business School, Faculty of International Management and Business (2021 revised). Felsőfokú Duális Képzés Fehérkönyve, Budapest.

Bratianu, Hadad, 2020 – *Bejinaru, R.* (2020). Paradigm Shift in Business Education: A Competence-Based Approach. *Sustainability*. 12(4): 1348. DOI: https://doi.org/10.3390/su12041348

Coonan, Pratt-Adams, 2019 – *Coonan, E., Pratt-Adams, S.* (2019). Building Higher Education Curricula Fit for The Future: How Higher Education institutions are responding to the Industrial Strategy. York: Advance HE.

David et al., 2021 – *David, M.E., David, F.R., David, F.R.* (2021). Closing the Gap between Graduates' Skills and Employers' Requirements: A Focus on the Strategic Management Capstone Business Course. *Administrative Sciences*. 11(1): 10. DOI: https://doi.org/10.3390/admsci11010010

Elsholz, 2021 – *Elsholz, U.* (2021). Neu A. Duales Studium- Hintergründe, Debatten und zentrale Forschungsfelder [Dual study – backgrounds, debates and central fields of research]. Fernuniversität in Hagen. 2021. [Electronic resource]. URL: https://www.researchgate.net/publi cation/349238941_Duales_Studium__Hintergrunde_Debatten_und_zentrale_Forschungsfelder [in German]

Empfehlungen zur Entwicklung..., 2013 – Empfehlungen zur Entwicklung des dualen Studien, Positionspapier [Recommendations for the development of dual studies, position paper]. 2013. [Electronic resource]. URL: https://www.wissenschaftsrat.de/download/archiv/3479-13.pdf?__blob= publicationFile&v=1 [in German]

European Economic..., 2018 – European Economic and Social Committee; Skills Mismatches – An Impediment to the Competitiveness of EU Businesses, Study. 2018. [Electronic resource]. URL: https://www.eesc.europa.eu/sites/default/files/files/qe-02-18-922-en-n.pdf

Gámez-Pérez et al., 2020 – *Gámez-Pérez, K.M., Sarmiento, A.M., Garcia-Reyes, H., Velázquez-Martínez, J.C. (*2020). An international university-industry collaboration model to develop supply chain competences. *Supply Chain Management*. 25(4): 475. DOI: https://doi.org/10.1108/SCM-08-2019-0317

Handreichung..., 2010 – Handreichung der AG "Studiengänge mit besonderem Profilanspruch" (Beschluss des Akkreditierungsrates vom 10.12.2010). Handreichung der AG "Studiengänge mit besonderem Profilanspruch" [Resolution of the Accreditation Council of 10.12.2010]. [Electronic resource]. URL: https://archiv.akkreditierungsrat.de/fileadmin/Seiteninhalte/AR/Beschluesse/AR_Handreichung_Profil.pdf [in German]

Maennig-Fortmann, Poppenhagen, 2019 – *Maennig-Fortmann, F., Poppenhagen, N.* (2019). Duales Studiem [Dual study]. [Electronic resource]. URL: https://www.kas.de/de/analysen-und-argumente/detail/-/content/duales-studium [in German]

Martin, 2019 – *Martin, P.* (2019). On The Horizon. An AdvanceHE report on the challenges for learning and teaching in global higher education over the next five to ten years. York: AdvanceHE.

OECD, 2015 – OECD. Future shocks and shifts: challenges for the global workforce and skills development. 2015. [Electronic resource]. URL: https://www.oecd.org/education/2030-project/about/documents/Future-Shocks-and-Shifts-Challenges-for-the-Global-Workforce-and-Skills-Development.pdf (date of access: 07.01.2022).

OECD, 2021 – OECD. Embedding Values and Attitudes in Curriculum – Shaping a Better Future, 2021. DOI: https://doi.org/10.1787/aee2adcd-en (date of access: 07.01.2022).

OECD/EU, 2017 – OECD/EUROPEAN UNION. Supporting Entrepreneurship and Innovation in Higher Education in Hungary, 2017. [Electronic resource]. URL: https://www.oecd.org/industry /supporting-entrepreneurship-and-innovation-in-higher-education-in-hungary-9789264273344-en.htm

Stifterverband..., 2015 – Stifterverband, Ein Handbuch für die Praxis [A handbook for practice]. Volker Meyer-Guckel, Sigrun Nickel, Vitus Püttmann, Ann-Katrin Schröder-Kralemann (Hrsg.): Qualitätsentwicklung im dualen Studium [Quality development in dual studies]. 2015. [Electronic resource]. URL: https://www.stifterverband.org/qualitaetsentwicklung-im-dualen-studium [in German]

Study... – Study on higher vocational education and training in the EU (Final report). [Electronic resource]. URL: https://op.europa.eu/en/publication-detail/-/publication/cf35147d-0a60-11e7-8a35-01aa75ed71a1

White Paper... –White Paper on Dual Higher Education issued by the Hungarian Council for Dual VET. [Electronic resource]. URL: https://www.oktatas.hu/pub_bin/dload/felsooktatas/dualis_ kepzes/A_Felsofoku_Dualis_Kepzes_Feher_Konyve.pdf

Zenner-Höffkes et al., 2021 – *Zenner-Höffkes, L., Harris, R., Zirkle, C., Pilz, M.* (2021). A comparative study of the expectations of SME employers recruiting young people in Germany, Australia and the United States. *International Journal of Training and Development*. DOI: https://doi.org/10.1111/ijtd.12214

Zlatkin-Troitschanskaia, 2021 – *Zlatkin-Troitschanskaia, O.* (2021). Advances and perspectives of competence research in higher education – Report on the German KoKoHs program. *International Journal of Chinese Education*. 10(1). DOI: https://doi.org/10.1177/22125868211006205