

# INDUSTRIAL PROFILES OF CITIES AND INTEREST IN WORK-BASED LEARNING

**Jozef BĽANDA**

*Department of Regional Science and Management, Faculty of Economics, Technical University of Košice, Slovak Republic*  
jozef.blanda@tuke.sk

**Nataša URBANČIKOVÁ**

*Department of Regional Science and Management, Faculty of Economics, Technical University of Košice, Slovak Republic*  
natasa.urbancikova@tuke.sk

## Abstract

The article deals with Work-Based Learning (WBL) provision by enterprises in selected EU countries. WBL is a form of education that combines teaching with practical training and is considered to bring many benefits to students, educational institutions and societies. Therefore, there is pressure on developing WBL as well as researching its impact on EU countries. The main aim of the article is to analyse the influence of cities' industrial profiles on WBL and to identify how the industrial profile of a city can be reflected in the provision of WBL. In order to analyse the impact of selected factors on WBL, two econometric models with logistic regression were designed and applied. In addition to the type of city, the models included variables such as the size category of the enterprise, the proportion of students in higher education, the proportion of people not in employment, education or training in the country and the perception of WBL by the enterprises. The results of the analysis show that the industrial profile of a city affects the provision of WBL. There is a higher chance of providing WBL in cities where business, administration and law are predominant rather than in cities where other types of economic activities prevail.

**Keywords:** work-based learning (WBL), the industrial profile of the city, WBL provision.

## 1. INTRODUCTION

The availability of skilled labour is one of the key preconditions to the prosperity of cities and regions. Nonetheless, there is often a mismatch between skills and the demands of the labour market. It is also the case that educational institutions have their own educational priorities set differently. Labour market dynamics are often volatile and hard to predict so markets cannot be optimized. There are issues as a result of time delays in education and job requirements. Countries have acknowledged this mismatch and have begun to recognize quality work-based learning as an efficient way of addressing labour market imbalances (European Commission, 2012). Therefore, there has been pressure on developing and harmonizing vocational training systems in European countries. A further motivation for introducing and developing vocational training is the context of ever-increasing specialization in the economy. There

is a growing number of different jobs in which specific knowledge and expectations of skills require measures in education and linking education through practical training or internships. Employers demand workers with the ability to deal with risk and unforeseen workplace situations and to improve labour mobility (Brockmann, Clarke and Winch, 2008). In addition to the skills mismatch, factors such as social and economic changes and global economic trends are also a part of the labour market incompatibility.

Urban development plays an important role as it influences the accumulation of human capital in urban areas (Glaeser and Resseger, 2010), (Preston and Green, 2008). Vocational education and training systems have been hit by the urbanization in all European countries which has caused the spatial balance to be disturbed and impacted competitiveness (Ertl, 2002). WBL is considered to be an essential part of the labour policy in eliminating the greatest market and spatial mismatches (Coles and Oates, 2004). WBL programs seek to provide and develop skills that not only focus on the technical aspects of training but also on more general skills that enable individual personality development (Sabates et al., 2010).

There are more and more enterprises which have realized that WBL is crucial to the success of their businesses (Cunningham and Dawes, 2016). A survey carried out by the European Centre for the Development of Vocational Training (CEDEFOP) found that 73% of businesses in the EU28 provided some form of vocational training in 2017. This was either for their employees or for students (Cedefop, 2019) and shows an increase of 10.5% in comparison to 2010. Despite the growth of WBL across the EU, there are significant differences in levels of provision among particular European countries. Learning in a real working environment is mainly in countries that have a long tradition of providing continuing education, better institutional backgrounds, experience and appropriate funding schemes. There are only some countries which have such a long tradition of learning through participation in the real work process such as the United Kingdom, Austria or Germany. In other countries, there are also programs which aim to integrate teaching and different forms of learning in the workplace. This is either organized at vocational schools as a central policy or as separate initiatives by companies and schools. Hence, the proportion of learning taking place in a real workplace varies considerably in EU countries, ranging from the very low frequency of WBL activities (i.e. internships, visits) to the high-intensity and frequency of WBL (i.e. apprenticeships, in-company training). It has increasingly been confirmed that the context-free acquisition of abstract knowledge through classroom-based learning should be at least supplemented and embedded within activities and culture (Brown, Bimrose and Barnes, 2010).

The benefits related to knowledge spill-overs apply to all parties of work-based practice, firms, schools, trainees and employees as well as vulnerable young people and the unemployed. However, certain conditions must be met to make the program effective in the workplace. The idea of work-based practice is to prepare students for the labour market through real work experience which would have an impact on their employability and lead to a smoother school-to-work transition. The main benefits include the development of hard and technical skills and tacit knowledge. In addition, there are harder to measure benefits such as soft skills, competencies, behaviour and socialization (Wallenborn and Heyneman, 2009). The integration of classroom learning with workplace practice is in the interest of a country because it addresses some of the problems of the labour market, facilitates the transition from school to work, contributes to reducing unemployment and encourages entrepreneurship.

It is up for debate as to why some countries avoid a more significant use of WBL. The important role plays the positioning of system of VET (vocational education and training) at their national level (Serwicka, 2016a). At the same time, the societal and spatial context need to be understood. There are certain known factors such as the size of the enterprise and the industry in which the enterprise operates (Hefler, 2010), the level of WBL perception among enterprises and employers (Ryan, 2011) as well as the job density in the city where the enterprise is located and the industrial profile of a city. All these factors need to be analyzed and identified as they can affect the development and provision of WBL. Workplace practice during the studies has its framework, related to the concentration of the population, industrial production and services. Therefore, it is also essential to study WBL geography according to location, profile and size.

## 2. THEORETICAL BACKGROUND

While there are several theoretical approaches to defining WBL, all of them emphasize that education is based on the job content and that focus is given to students (Clarke and Copeland, 2003), (Trigwell and Reid, 1998). The term work-based learning is used in conjunction with special education programs that are created by schools and universities in collaboration with companies (Lester and Costley, 2010). These programs are formally accredited and recognized and aim to provide an opportunity for students to learn directly at the workplace whilst addressing student needs and contributing to the long-term development of businesses. Work-based learning presents a form of education that combines theory with practice and knowledge with experience. It is based on the assumption that the workplace provides the same amount of learning opportunities as a school and a teaching process that includes real practice (Raelin, 2008).

Work-based learning can be defined based on six primary characteristics. The first one is a partnership between an external organization and a training institution. These partnerships seek to provide the necessary infrastructure to support WBL and ensure appropriate workplace learning conditions. For employers, this means a working partnership with an educational institution that takes into account their requirements for adapting the learning process to the needs of the enterprise. For an educational institution, this partnership provides new approaches to learning and extends its resources. The second characteristic is students in WBL being employees or in a contractual relationship with an external organization. Students have different needs and requirements for the WBL program, so the content of learning can be tailored to them. The third one is related to the curriculum. Often the curriculum is not in line with the needs of the labour market, so the content of WBL education is adapted more to market and enterprise needs. Students start WBL at different levels because WBL programs take into account the skills, experience and previous qualification of the student. Another significant feature of WBL is the place of learning with the majority of education being in the workplace. This allows WBL to focus on work skills and the future needs of students and enterprises. Finally, WBL should provide benefits to business, while simultaneously meeting the requirements of a formally recognized form of education (Boud and Solomon, 2001).

WBL is partially offered in higher education and is increasingly considered an important part of undergraduate and postgraduate education (Brodie and Irving, 2007). This emphasizes its role in supporting individual sectors and developing local and national economies, infrastructure and student skills (Atkins, 1999). Students can acquire specific work skills needed to work in a particular field or job, and they can continue to use the lessons learned for further education. This is also a productive part of secondary education, which is specifically designed to prepare students for college (Bailey, Hughes and Moore, 2003).

The importance of WBL comes from its ability to provide benefits to all involved actors such as students, educational institutions, enterprises and society as a whole. For educational institutions, there is the opportunity to share the responsibility for education with enterprises. At the same time, students acquire the education and skills needed in the workplace. Students perceive WBL as an attractive career growth option. Enterprises gain workers with knowledge and skills tailored to their needs, greater flexibility and productivity in the workforce, as well as motivated employees. (Anderson and Hemsworth, 2005); (OECD, 2018), (Renganathan et al., 2012). WBL has often been presented as a radical and innovative approach to help change the nature of higher education and relationship between universities and employers (Reeve and Gallacher, 2005). It should be designed and implemented to meet the needs of the student as well as the employer (Sobiechowska and Maisch, 2006).

However, the growth of work-based learning has attracted criticism. This is often a result of not following established education principles, a lack of a substantive curriculum and examinations or insufficient anchorage in a specific academic or professional discipline. Indeed, not all workplaces are good learning environments and they can often be unchallenging with the absence of problem-solving and a critical dimension (Lester and Costley, 2010). Workplace learning should not only be pertinent with today's but primarily with future work skills and competencies. However, in the case of two learning centres, there is always the risk of non-cooperation, duelling and underrating the importance of the second party's learning methodology. Classroom –workplace relationships also include the dangers of the school being overly colonised by the workplace and a loss of critical perspective (Usher and Solomon, 1999; Zembylas, 2006).

### ***Perceptions of WBL***

The benefits of WBL have been examined in many studies (Axmann, 2004), (Ebbinghaus and Ulmer, 2009), (Hefler, 2010), (Virolainen, Stenström and Kantola, 2011), (Powell and Solga 2010) and (European Training Foundation, 2013). They all point out that enterprises in Europe perceive WBL as the best tool to recruit and seek future employees. Enterprises can get to know students during their training so they can evaluate and develop their skills and then choose the most suitable ones for work in the enterprise.

There is a diverse motivation to run WBL on the enterprise side. There are differences between countries as well as between the size of companies and industrial context of a city. Companies often simplify the recruitment of employees in this way, which can lead to devaluing the education of young people. Enterprises perceive WBL as a tool for promoting growth and technology and product development. It helps them to acquire skilled workers and improve the performance of the enterprises and employee morale. Employers consider negative attitudes and individual prejudices of some employees as the biggest obstacle to the application of workplace learning (Keeling, Jones, Botterill and Gray, 1998). However, enterprises are aware of the recruitment benefits. According to a survey conducted by the German Federal Ministry of Education and Research in 2003, up to 3/4 of enterprises said that WBL programs allowed them to choose the best apprentices and avoid bad decision-making in recruiting. Nearly 60% of enterprises said that these schemes also contributed to reducing the costs of recruiting (Axmann, 2004). A further study in Germany found that German companies that provide WBL are less likely to make recruitment errors than companies that do not offer this type of training (Ebbinghaus and Ulmer, 2009).

A survey done among employers who provide training programs for applied science students, considered “the opportunity to know their future workforce” as the most important motivating factor for employers. The survey also highlighted other important factors such as the opportunity to bring new ideas and new research findings to the workplace and apply them to the development of the enterprise (Virolainen, Stenström and Kantola, 2011). The German Ministry of Education and Research found that 57% of employers believe that providing training for employees and students improves the company's reputation (Axmann, 2004). This is particularly true for larger enterprises which believe that WBL improves their corporate image in the eyes of the public, customers, and suppliers as well as making the enterprise more attractive to potential highly qualified employees (Ebbinghaus and Ulmer, 2009). However, the perception of WBL depends on the country in which the enterprise operates. For example, businesses in Scotland do not consider WBL as an important element in improving the image of an enterprise (Glass, Higgins and McGregor, 2002). Enterprises consider apprenticeships and WBL as one of the best ways of how to eliminate gaps in the skills mismatch of future employees (European Training Foundation, 2013). Students in Europe also perceive WBL positively and as a suitable opportunity to acquire new work skills and experience (Burke et al., 2009).

#### ***The role of cities in the provision of WBL***

Cities play an important role in the provision and development of WBL. Most WBL apprentices are concentrated in larger cities which provide the space and opportunities for important WBL actors such as employers, training providers, educational institutions, chambers of commerce and other stakeholders (Thomas et al., 2016). Larger enterprises located in cities are more probable for investing in training and can develop their own internal trainees independently to government training programmes. There has been little research done regarding the differences between different industries although many initiatives are primarily driven by sectors, sectoral or spatial associations, at different stages of development. The industrial profile of a city is an important factor in the involvement and spread of work-based practise as it is influenced by the predominant type of economic activity in the city. WBL is mostly provided in cities where business, administration, law or humanities are the main economic activities. There is also a high level of WBL provision in cities where engineering, construction, science and maths information and communication technology predominate. Cities also influence the provision of WBL in terms of employer concentration, human capital, knowledge and job density (Servicka, 2016). Small businesses cannot always afford to co-operate with schools in education. However, specialization has brought about the emergence of sectoral geographic structures - clusters, existing on and collaborating, usually based in the city. The co-operation of companies,



higher education institutions and schools associated with clusters in terms of industrial similarity makes it possible to launch common work-based programs focused on the development of skills, competencies and qualifications in an effective way. Clusters are therefore an excellent platform for creating sector-specific programs and enabling SMEs to be involved in active collaboration in the city.

#### ***A comparison of VET in selected countries***

It is necessary to understand and compare the VET system within countries in order to do an analysis of WBL in European countries. The European Centre for Development of Vocational Training (CEDEFOP) regularly publishes evaluation reports which assess the vocational training system in European countries. It was possible to compare selected countries in terms of VET based on the national reports for individual countries.

There are many forms of VET type that are applied in each country, such as VET funding and institutions responsible for VET. In all the countries analyzed, WBL is done as a form of vocational education and training; dual education is also done in Bulgaria, Spain, and Slovakia. There is a similar VET structure in Greece, Italy and Portugal, where VET consists of WBL and apprenticeships. All three types of VET (WBL, apprenticeships and dual education) are done in Slovakia and Spain. VET is offered at secondary and post-secondary levels in all the selected countries. Each country provides a different VET system which is different from all the other countries. Study programs that focus only on VET education, as well as programs that provide a combination of VET and general education, are offered in all the analyzed countries except Bulgaria, where all study programs offer only a combination of vocational and general education (CEDEFOP, 2018).

It is not possible to continue to the tertiary level of education after post-secondary education in Bulgaria, Greece, Italy and Slovakia. In Portugal and Spain, the continuation at HEIs is possible (CEDEFOP, 2018). Funding makes another difference; VET is funded from various sources. However, the main source of VET funding in all countries is the state budget. Besides, VET funding is also provided from regional funds in Bulgaria, Italy, Portugal and Spain. European and international funds and programs are also used for financing with the most common source being the European Social Fund.

The leading institution responsible for VET is the Ministry of Education in all countries although the VET National Committee is in charge in Italy. Some VET competencies are also delegated to the regional level in Slovakia and Spain (CEDEFOP, 2018).

### ***Factors affecting WBL provision***

Several factors influence the provision of WBL including economic, social, urban and even psychological.

**The city where the business is located** affects the degree of WBL and vocational training available. There is a presumption that there is greater involvement in WBL in cities with a high concentration of jobs. A critical factor in the strength of the industrial learning system is strong and active local stakeholder involvement. The level of WBL provision is also affected by the industrial profile of the city (Serwicka, 2016a). Urban population density enables the formation of industrial cluster employment and knowledge sharing. Larger cities certainly attract more skilled workers and students so human capital is accumulated faster in urban areas.

**The type of enterprise**, size and the industry of operation are expected to influence WBL provision. There is a higher probability of WBL provision by large companies than by small and medium-sized companies. Small and medium-sized enterprises do not pay much attention to WBL and spend less money on staff and workforce development than large companies (Hefler, 2010).

**Perception of WBL** The perception of employers may have an impact on the development and provision of WBL. A negative perception is a serious obstacle in building a relationship between learning and work. Several employers offer internships, apprenticeships and WBL programs as a way to get cheap labour rather than investing in the development of future employees' skills (Ryan, 2011). The benefits for an employer can be financial such as increased productivity as well as non-financial such as better morale and lower employee turnover.

**The demographic and socio-economic indicators** for the development of VET that may point out the differences between countries should be taken into consideration (Cedefop, 2016). The factors studied in the paper include the number of students in upper secondary education, the proportion of public expenditure spent on vocational training, the employment rate of graduates, percentage of the population aged 18-24 years not employed or involved in further education or training, and the unemployment rate in the country.

### **3. METHODOLOGY**

The analysis aims to identify the impact of selected indicators on the provision of WBL by enterprises in six EU countries - Bulgaria, Greece, Italy, Portugal, Slovakia and Spain. All six countries have a less developed system than leaders in the United Kingdom, Austria and Germany. Education mostly takes



place in schools and the provision of WBL by SMEs is more challenging, as a result of shortcomings in the enterprises' support system and failure to create financial and social benefits.

The choice of indicators and methods of data used in the analysis were based on previous studies (Ryan, 2011). The data used in the analysis were obtained through a questionnaire carried out in all six countries. The questionnaire provided data concerning the provision of WBL in the enterprise, the city where the enterprise is located, the number of employees, the sector in which the enterprise operates and the perception of enterprises regarding WBL. A 7-point Likert scale was used in questions concerning perceptions of WBL. Respondents stated their opinion on the most important aspects of WBL, such as its impact on enterprise performance and effectiveness, on employees, apprentices, society and the business environment. The target group consisted of representatives from all enterprise size categories. In total, 132 enterprise representatives participated in the questionnaire.

The analysis of demographic, socio-economic, urban and enterprise indicators affected the provision of WBL. The indicators in the model included the percentage of students in upper higher education and the share of 18-24 year-olds not in employment, education or training. The CEDEFOP database was used and took data from the last surveys in 2015 and 2016. The size category of the enterprise was also taken into account in the models. The importance of an enterprise's size in providing WBL was pointed out as well (CEDEFOP, 2019).

The industrial employment structure in a city (industrial city profile) could be a factor explaining the engagement of enterprises. In the model, the cities were divided into three categories according to the prevailing economic activities. The geography of industries and jobs across a city influences the degree of apprenticeships and workplace learning. It can be assumed that there is an inverse relationship between job density in the city and provision of WBL (Serwicka, 2016b). Urban density is important in spreading knowledge (Glaeser and Resseger, 2010). Similarly, the profile of a city has an influence and the highest rate of WBL provision exists in UK cities where business, administration and law prevail (Serwicka, 2016b).

The proposed models contain variables related to the enterprise, the city where it is located (obtained from the questionnaire), the WBL indicators at the national level and the indicators related to enterprises perception of WBL (obtained from the questionnaire).

There were two different econometric models with logistic regression used to analyze the impact of the selected indicators on the provision of WBL by enterprises in the selected countries. The odds ratio of providing WBL for all used variables was evaluated within the regression analysis.

The proposed econometric models are as follows:

*Model 1:*

$$WBL \sim \beta_0 + \beta_1 City + \beta_2 EMP + \beta_3 IVET + \beta_4 NEET + \beta_5 X_1 + \beta_6 X_2 + \varepsilon$$

*Model 2:*

$$WBL \sim \beta_0 + \beta_1 EMP + \beta_2 IVET + \beta_3 NEET + \beta_4 X_1 + \varepsilon$$

where,

$\beta_0 - \beta_6$  are regression coefficients

*WBL* is a binary variable that can reach the value 0 or 1, depending on whether the enterprise provides (1) or does not provide WBL (0);

*City* is a nominal factor variable that ranges from values 1 to 3. The reference value is 1 for Business cities (business, administration, law and humanities are predominant); the value 2 points to Industrial cities (engineering, construction, science, maths and ICT); and value 3 corresponds to Service cities (retail, leisure, travel, tourism and public services);

*EMP* is a nominal factor variable that represents the size category of an enterprise. It ranges from values 1 to 4, where 1 is the value corresponding to a micro-enterprise (1 - 9 employees); 2 corresponds to a small enterprise (10 - 49 employees); 3 points to a medium-sized enterprise (50-249 employees); and 4 refers to a large enterprise (more than 250 employees);

*IVET* is an ordinal variable that reflects the percentage of students in higher vocational education;

*NEET* is an ordinal variable that reflects the percentage of people between 18 and 24 years of age not in employment, education or training;

*X<sub>1</sub>* is a nominal factor variable that shows the degree of consensus that WBL brings value for money. 1 is a reference value indicating disagreement, value 2 corresponds to a neutral opinion, and value 3 means agreement;

*X<sub>2</sub>* is a nominal factor variable which expresses the degree of consensus that WBL brings more benefits than risks. 1 is a reference value indicating disagreement, value 2 corresponds to a neutral opinion and value 3 means agreement;

Model 1 is focused on the impact of the selected factors on providing WBL in all three types of city. Based on the results of the analysis of Model 1, an econometric Model 2 was designed to analyze the

impact of selected indicators on providing WBL in a particular type of city, where the impact on providing WBL is the most significant. Model 2 focuses on cities where business, administration, law or humanities predominate as the highest statistical significance of all types of sites analyzed was recorded in this type of city.

Model 2 was cleared of variable X2, as this variable is not significant in this model.

The quality of the proposed models was assessed by calculating the variability of the models where the McFadden R2 coefficient and the ability of the models to predict the dependent variable was used. The proposed models have also been tested for the presence of multicollinearity. The statistical significance of all variables in both models was assessed on the basis of p-values at a significance level of 0.05.

Both models were interpreted based on the odds ratio of WBL provision for all independent variables.

#### 4. RESULTS AND DISCUSSIONS

In order to evaluate the results of the analysis, the quality of the proposed model as a whole is assessed.

Model 1

$$WBL \sim \beta_0 + \beta_1 City + \beta_2 EMP + \beta_3 IVET + \beta_4 NEET + \beta_5 X_1 + \beta_6 X_2 + \varepsilon$$

The variability of Model 1 was tested by the McFadden variability test. The McFadden test value for Model 1 was 0.4105, which means that the model explained 41.05% of the variability of the dependent variable. The presence of multicollinearity was tested by the variance inflation factor (VIF). The VIF values for the independent variables used in the model are shown in Table 1. Based on the calculated VIF values, there was no multicollinearity present in the model. Hence, the model is suitable and meets the quality requirements.

TABLE 1 - VIF VALUES OF MODEL 1

Variables	VIF
City	3.832105
EMP	2.810367
IVET	2.876003
NEET	3.295957
X <sub>1</sub>	1.317952
X <sub>2</sub>	2.012066

Source: Own processing

The odds ratios measure the association between an exposure and an outcome. Table 2 shows the calculated odds ratio of WBL provision for all independent variables, regression coefficients, and p-values in Model 1.

TABLE 2 - ODDS RATIO AND P- VALUES OF MODEL 1

Coefficients:				
	Odds ratio	Regression coefficients	Std. Error	Pr(> z )
(Intercept)	2.942980e-06	-12.73609	4.08627	0.001828 **
City2	1.345708e-01	-2.00567	1.26694	0.113402
City3	1.594723e-01	-1.83589	0.91571	0.044976 *
EMP2	7.783096e-01	-0.25063	0.71782	0.726971
EMP3	4.023815e-03	-5.51552	1.62179	0.000672 ***
EMP4	3.955293e-02	-3.23012	1.43251	0.024142 *
IVET	1.115276e+00	0.10910	0.03339	0.001086 **
NEET	1.364487e+00	0.31078	0.12737	0.014689 *
X <sub>1</sub> 2	2.756301e+01	3.31647	1.09651	0.002490 **
X <sub>1</sub> 3	6.088365e+00	1.80638	0.95242	0.057879 .
X <sub>2</sub> 2	1.940560e+00	0.66298	0.92097	0.471605
X <sub>2</sub> 3	1.004117e+01	2.30669	0.83731	0.005871 **
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

Source: Own processing

Model 1 confirms the impact of a city's industrial profile on the provision of WBL. There is a 6.27 times lower chance of employer engagement in WBL in Service cities than in Business cities. The results for Industrial cities were not statistically significant. However, the greatest chance of providing WBL was found in Business cities. This is in line with the results of WBL research carried out in the UK (Serwicka, 2016b). The shift from manufacturing towards business and services is also reflected in the distribution of WBL. However, in many countries, there is still the prevailing idea of WBL and apprenticeships only taking place in manufacturing. European cities and their economic structure have changed considerably. Therefore, there is a higher demand for a workforce in the service sector and as well as in business and administration.

It was expected that the size of the city would affect the provision of WBL due to the higher concentration of enterprises. However, the analysis in the six countries has suggested no significant effect of job density and city size. This is in line with other urban research (Glaser and Resseger, 2010). The size of the city does not guarantee participation in enterprise-school partnerships in learning. Cities with more developed networks enable more spillovers and positive experiences and best practices are more rapidly disseminated. Community spirit and social capital have the ability to compete with the advantage of city size. The size of the city does not affect the productivity of an enterprise's employees or skills development significantly.

On the other hand, the size of the enterprise is an important factor affecting the provision of WBL. There is a 248 times lower chance of a medium-sized enterprise providing WBL than a micro-enterprise and a 25 times lower chance of a large enterprise providing WBL than a micro-enterprise. In the case of a medium-sized and large enterprise, there is a 9.92 times lower chance of a medium-sized enterprise providing WBL than a large one. This is in line with other studies (Hefler, 2010) which have emphasized the higher probability of large companies providing WBL. Eurostat has also confirmed a higher rate of WBL provision by larger enterprises in comparison to smaller enterprises. In Model 1, the highest chance of providing WBL is in micro-enterprises and large enterprises. This is different from other WBL studies and Eurostat statistics (Eurostat, 2019). An explanation for the discrepancy in the research results may be the negative perception of WBL by the enterprises in the six countries (Ryan, 2011). In addition, micro-enterprises perceive WBL as a tool for obtaining a cheap labour force. Therefore, these businesses may be more interested in WBL.

The percentage of students in higher vocational education is a significant factor in the provision of WBL. Increase of the share by 1% in the country results in WBL 1.12 times higher, so the chance increases by 12%. Even higher increase by 36% corresponds to increase by 1% of the number of people not in employment, education or training. Accordingly, the national level and changes in the economy and policy have an impact on WBL provision. An increase in the number of students in upper secondary education provides a better pool of candidates for enterprises and opens up better possibilities of hiring quality future employees. It is of interest that a higher IVET rate increases the chance of providing WBL in a country. As a result, national governments can support enterprises in providing WBL through VET-oriented programs.

Perceptions of WBL have also been shown to be an important factor. The perception of WBL as a tool that brings value for money means a 6.08 times higher chance of providing WBL in comparison to the opposite perception. Once enterprises perceive WBL as an opportunity offering more benefits than risks, the chance of providing WBL is 10.04 times higher. The results have highlighted that there is a higher chance of enterprises which perceive WBL positively, providing WBL than those who perceived WBL negatively. This is a challenge for governments to promote this type of learning among enterprises also in economic terms.

Model 2

$$WBL \sim \beta_0 + \beta_1 EMP + \beta_2 IVET + \beta_3 NEET + \beta_4 X_1 + \varepsilon$$

As shown in Model 1, the industrial city profile has an impact on the level of WBL provision. There is a higher chance of WBL provision in business cities, where business, administration, law or humanities prevail. Therefore, Model 2 is focused on business cities in more detail. In comparison to Model 1, the variable  $X_2$  is omitted as it is not statistically significant in Model 2.

The McFadden test value for Model 2 is 0.32, which means that the model explains 32.05 % of the variability of the dependent variable. The VIF values for the independent variables entering the model are shown in Table 3. There is no multicollinearity present in the model.

TABLE 3 - VIF VALUES OF MODEL 2

Variables	VIF
EMP2	2.877679
IVET	2.380546
NEET	2.402123
XL1	3.039295
EMP2	2.877679
IVET	2.380546

Source: Own processing

As in Model 1, the odds ratios are used to estimate the expected values of a binary response. Table 4 shows the calculated odds ratios of WBL provision, regression coefficients and p-values for the independent variables in Model 2.

TABLE 4 - ODDS RATIO AND P- VALUES OF MODEL 2

Coefficients:				
	Odds ratio	Regression coefficients	Std. Error	Pr(> z )
(Intercept)	1.225579e-05	-11.30951	4.15705	0.00652 **
EMP2	5.017717e-01	-0.68961	0.77809	0.37546
EMP3	1.329321e-02	-4.32050	1.4414	0.00272 **
EMP4	1.969584e-02	-3.92735	1.62193	0.01546 *
IVET	1.101933e+00	0.09707	0.03381	0.00410 **
NEET	1.238314e+00	0.21375	0.12673	0.09166 .
X <sub>12</sub>	2.832294e+01	3.34367	1.18504	0.00478 **
X <sub>13</sub>	1.754267e+01	2.86464	1.15774	0.01335 *

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Source: Own processing

The results show a 75 times lower chance of WBL being provided by a medium-size enterprise than by a micro-enterprise in business cities. This chance is even higher than in Model 1. Moreover, there is a 50.7 times lower chance of WBL in large enterprises than in microenterprises. A 1%, increase of students in higher vocational education in the country would result in a 10% higher chance that the enterprise would provide WBL. If the pool of people out of work increased by 1%, the chance of WBL provision would increase by 23%.

## 5. CONCLUSIONS

The paper has brought new insights into the work-based learning performance in six EU countries - Bulgaria, Greece, Italy, Portugal, Slovakia and Spain. All the countries are less involved in enterprise-school partnerships than countries such as the UK or Germany. Among other things, this is due to a lack of tradition and often negative public attitudes. Therefore, the motivation for enterprises is low as they consider the risks of education in their workplaces and the cost of WBL as too high with low value for money. The research in these selected EU countries has focused on the factors present in cities, enterprises and at the country level. It has been of benefit to divide the cities into three groups such as Industrial, Business and Service cities. Differences have been shown based on the different character of cities and their size. The logistic regression used in the two models quantified the likelihood of WBL in enterprises based on the difference in the industrial profiles of cities.

Despite the expectation of greater interest in WBL in industrial cities, the interest in cities characterized as business cities is significantly higher. In addition, the size of the enterprise also affects the WBL interest in enterprises. Unexpectedly, the estimates of chance show that the highest chance of providing WBL is in micro-enterprises. The factors of different types of cities, the size of cities and negative attitudes in the countries have been shown to be significant in WBL provision. However, research into enterprises and their motivation to run work-based learning requires further study in the future.

### Acknowledgement

This work was supported by the Scientific Grant Agency VEGA, project number 1/0453/19.

### REFERENCES

- Anderson, A., & Hemsworth, D. (2005). *From Apprenticeship to Higher Education: A Guide to Developing Work-Based Progression Routes to Higher Education for Advanced Apprentices and other Skilled Staff and Managers*. University Vocational Awards Council.
- Atkins, M. J. (1999). Oven-ready and self-basting: taking stock of employability skills. *Teaching in higher education*, 4(2), 267-280.
- Axmann, M. (2004). *Facilitating labour market entry for youth through enterprise-based schemes in vocational education and training and skills development*. Geneva, International Labour Organization.
- Bailey, T. R., Hughes, K. L., & Moore, D. T. (2003). *Working knowledge: Work-based learning and education reform*. New York: Routledge Falmer.
- Boud, D., & Solomon, N. (2001). *Work-based learning: a new higher education?* McGraw-Hill Education (UK).



- Brockmann, M., Clarke, L., & Winch, C. (2008). Knowledge, skills, competence: European divergences in vocational education and training (VET) - the English, German and Dutch cases. *Oxford Review of Education*, 34(5), 547-567.
- Brodie, P., & Irving, K. (2007). Assessment in work-based learning: investigating a pedagogical approach to enhance student learning. *Assessment & Evaluation in Higher Education*, 32(1), 11-19.
- Brown, A., Bimrose, J. and Barnes, S. (2010). *Changing patterns of working, learning and career development across Europe*, Warwick: Warwick Institute for Employment Research, University of Warwick.
- Burke, L., Marks-Maran, D. J., Ooms, A., Webb, M., & Cooper, D. (2009). Towards a pedagogy of work-based learning: perceptions of work-based learning in foundation degrees. *Journal of Vocational Education and Training*, 61(1), 15-33.
- CEDEFOP. (2018). *VET-in-Europe country reports*. Luxembourg: Publications Office of the European Union, From <https://www.cedefop.europa.eu/en/publications-and-resources/country-reports/vet-in-europe-country-reports>.
- CEDEFOP. (2019). *Continuing vocational training in EU enterprises*. Luxembourg: Publications Office of the European Union,
- Clarke, D. J., & Copeland, L. (2003). Developing nursing practice through work-based learning. *Nurse Education in Practice*, 3(4), 236-244.
- Coles, M., & Oates, T. (2004) *European reference levels for education and training*, Thessaloniki, CEDEFOP.
- Cunningham, I., & Dawes, G. (2016). *The handbook of work based learning*. Routledge.
- Ebbinghaus, M., & Ulmer, P. (2009), Schlussfolgerungen aus einer Befragung von 15.000 Betrieben: Gründe betrieblicher Ausbildungsbeteiligung und ihr Einfluss auf die Ausbildungsqualität, *Wirtschaft und Berufserziehung*, 61(1). 20-27.
- Ertl, H. (2002). The concept of modularisation in vocational education and training: the debate in Germany and its implications. *Oxford Review of Education*, 28(1), 53-73.
- European Commission. (2012). *Apprenticeship Supply in the Member States of the European Union, Final Report*. Luxembourg: Publications Office of the European Union.
- European training foundation (ETF). (2013). *Work-based learning: benefits and obstacles: a literature review for policy makers and social partners in ETF partner countries*. Torino. European Training Foundation
- EUROSTAT. (2019). *Enterprises providing training by type of training and size class - % of all enterprises*. Eurostat, Luxembourg
- Glaeser, E., & Resseger, M. G. (2010). The complementarity between cities and skills. *Journal of Regional Science*, 50(1), 221-244.
- Glass, A., Higgins, K., & McGregor, A. (2002). *Delivering work based learning. Project Report*. Scottish Executive Central Research Unit.
- Hefler, G. (2010), *The qualification-supporting company: The significance of formal adult education in small and medium organisations, Comparative Report*, Krems: Danube University Krems.

- Keeling, D., Jones, E., Botterill, D., & Gray, C. (1998). Work-based learning, motivation and employer-employee interaction: Implications for lifelong learning. *Innovations in Education and Training international*, 35(4), 282-291.
- Lester, S.; & Costley, C. (2010). Work-based learning at higher education level: Value, practice and critique. *Studies in Higher Education*, 35(5), 561-575.
- OECD. (2018). *Work-based learning and productivity*. From <http://www.oecd.org/education/skills-beyond-school/work-based-learning-and-productivity.htm>
- Powell, J. & Solga, H. (2010). Analyzing the nexus of higher education and vocational training in Europe: a comparative-institutional framework. *Studies in Higher Education*, 35(6), 705 - 721.
- Preston, J.; & Green, A. (2008). *The role of vocational education and training in enhancing social inclusion and cohesion*. Luxembourg. Office for Official Publications of European Communities.
- Raelin, J. A. (2008). *Work-based learning: Bridging knowledge and action in the workplace*. San Francisco: Jossey-Bass
- Reeve, F., & Gallacher, J. (2005). Employer–university ‘partnerships’: a key problem for work-based learning programmes? *Journal of education and work*, 18(2), 219-233.
- Renganathan, S., Ambri Bin Abdul Karim, Z., & Su Li, C. (2012). Students’ perception of industrial internship programme. *Education+ Training*, 54(2/3), 180-191.
- Ryan, P. (2011). The apprentice: Employee, student, both, neither? Evidence from four countries. *ETF International Panel on Work-based Learning*, 14-15.
- Sabates, R., et al. (2010). *Social benefits of vocational education and training for individuals: concepts, contexts and empirical results*. Thessaloniki, CEDEFOP.
- Serwicka, I. (2016a). *Apprenticeships in cities What does the data show?* London, Centre for Cities.
- Serwicka, I. (2016b). *Briefing: Apprenticeships in cities. What does the data show?*, Centre For Cities, London.
- Sobiechowska, P., & Maisch, M. (2006). Work-based learning: in search of an effective model. *Educational Action Research*, 14(2), 267-286.
- Thomas, E., et al., (2016). *Making apprenticeships work in cities*. Centre for Cities, London
- Trigwell, K., & Reid, A. (1998). Introduction: work-based learning and the students' perspective. *Higher Education Research & Development*, 17(2), 141-154.
- Usher, R., and Solomon, N. (1999). Experiential learning and the shaping of subjectivity in the workplace. *Studies in the Education of Adults*, 31(2), 155–63.
- Virolainen, M. H., Stenström, M., & Kantola, M. (2011). The views of employers on internships as a means of learning from work experience in higher education. *Journal of Vocational Education & Training*, 63(3), 465-484.
- Wallenborn, M. and Heyneman, S. (2009). Should vocational education be part of secondary education? *The Journal of Educational Change*, 10, 405-413.
- Zembylas, M. (2006). Work-based learning, power and subjectivity: Creating space for a Foucauldian research ethic. *Journal of Education and Work* 19(3), 291–303