

The Importance of Determinants of Transition from Unemployment to Self-Employment: Evidence from Slovak Micro-Data

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Abstract

The study empirically analyses the determinants of self-employment from unemployment in Slovakia in the period of economic boom. The previous employment of individuals before support is proving to be an important factor in the transition to self-employment. We believe that the importance lies in gaining a practical basis from past jobs, market orientation or establishing contacts before starting a business. Practical courses and support in the form of a tax loan would contribute to the creation of value-added business ideas that have a better chance on the labour market (because after support there is entrepreneurship only in less capital-intensive industries). The paper examines short-term and long-term perspectives using decision trees and random forests, which are exceptionally used in the study of public support. At the same time, research is enriched with practical perspectives, which significantly increases the information base of research.

Keywords

Active employment policy, contribution to self-employment, decision trees, random forests, the importance of factors, Slovakia

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INTRODUCTION

In many European countries, support for self-employment is characterized by a huge number of support instruments, mainly public assistance for the unemployed, which is combined with education. Despite the considerable amount and popularity, support for self-employment in EU countries is financed by a very low share of total expenditure (below 1% in the long run). Support in Slovakia is below 0.05% of GDP (Eurostat, 2021). Although self-employment support is financially undersized, empirical evidence suggests positive effects of support, with most studies being in Western European countries (Germany: Niefert, 2010; Baumgartner, Caliendo, Kopeinig, 2008; Caliendo and Künn 2013; United Kingdom: Meager, Bates, Cowling, 2003; Finland: Haapanen and Tervo, 2009; France: Duhautois, Redor, Desiège, 2015; Spain: Millán and Congregado, 2010; Cueto, Mayor, Suárez, 2015).

The main idea of support is to place the unemployed in the labor market. According to several studies (Pfeiffer and Reize, 2000; Reize, 2004; Andersson and Wadensjö, 2007), self-employed persons do not differ in terms of socio-demographic characteristics from self-employed persons without support, but the differences are perceived mainly by smaller company size, less capital-intensive business and their business is growing slower. According to the study Haapanen and Tervo (2009), if it is not a push effect, but the entry into self-employment is from paid employment, it will be more sustainable due to higher human capital, motivation, and better information about business opportunities. In some cases, self-employment has a double effect, but for the unemployed it is more of a rarity.

Survival of self-employment from unemployment varies from study to study. While German studies (Pfeiffer and Reize, 2000; Reize, 2004) do not show a significant difference, our previous findings point to a significant difference (as do studies Cueto and Mato, 2009; Haapanen and Tervo, 2009). Significant differences between countries may be justified by the overall duration of the aid. While there is three years of support in Slovakia, in other countries the time is much shorter. E.g. in Sweden only for a period of 6 months (copies unemployment benefits). In Germany, according to a study by Caliendo and Künn (2013), support is also paid for the first 6 months. The Niefert study (2010) reveals the fact that subjects must prove their personal and professional suitability, which can also affect the survival of self-employment and prolong the period of receiving support.

The importance of behavioural aspects, the push effect of support and the regional specifics in which support, is provided in this article. The aim of the article is to examine the importance of factors of self-employment from unemployment in Slovakia in times of economic boom. Slovakia is the country with one of the lowest funding volumes in this area within the EU countries, and, at the same time, is not an economically strong country (GDP per capita is only 71% of the EU average). At the same time, however, it achieved a very significant improvement in the unemployment rate during the period under review; in 2012, the unemployment rate was 14.4%, so in 2017 it was only 5.94%. At the same time, Slovakia is a country with very significant regional differences, while regional characteristics are relatively rarely analysed in similar studies (Caliendo and Künn, 2013). The government has identified the areas of the south and east of Slovakia (Prešov, Košice and Banská Bystrica regions) as the least developed regions, which we include in our analysis as a significant element in survival of self-employment.

The benefit and originality also lies, in addition to the inclusion of the regional dimension, in the enrichment of research with unique factors such as the length of registration at the Office of Labour, Social Affairs and Family, the impact between the place of activity of self-employment and the residence of the supported entity. At the same time, the article is based on modern research methods (decision trees, random forests), which both classify and indicate the impact, which is an information-enriched approach compared to the traditional method of logistic regressions. The methods are considered in the field of public support as new methods, as there is no evidence of their application in the evaluation of active employment policy.

The article consists of three parts. The first part is a literature review, which reflects the current state of the issue of factors of self-employment. The methodological part of the paper defines a specific instrument in Slovakia and methods for evaluating the importance of individual factors. The results and the conclusion combine the acquired knowledge about self-employment in comparison with the opinions from practice and at the same time submit proposals for further research in this area.

1 LITERATURE SURVEY

Potential factors influencing survival of self-employment can be monitored in different phases. The first of these is the phase in obtaining support, which means that the individual is still only a candidate for the contribution. Whether or not they receive a contribution is determined by law and the structure of the conditions for obtaining contributions. There are also factors such as administrative complexity, or the time or complexity of meeting the conditions necessary to obtain support. These factors are very individual, and more and more studies rely on behavioural aspects such as motivation to start a business and the necessary preparation for it (Bořík and Caban 2013; Caliendo and Kritikos 2010).

The second phase, which can be observed during the support, is a very risky phase, namely the survival of support. Here we also observe various influences that may make it difficult to successfully implement the instrument. Based on an overview of factors in research published so far and country specifics (grouped in the previous research by Pisár, Mertinková and Šipikal, 2021), we monitor 3 categories of factors, namely: (1) Socio-demographic factors (gender, marital status, age, education, last and previous records held at the labour office, previous employment); (2) Regional labour market (employment activity in an underdeveloped region, place of employment activity equal to the region where the employment activity takes place); (3) Economic factors (amount of aid, year of granting aid, economic cycle).

Studies Kuang-TaLo, Jiun-NanPan, ShuPeng (2020), Caliendo, Künn, Weißenberger (2016) have identified a positive statistically significant impact of men on keeping self-employment from unemployment. However, there are common differences between gender. Women are less tied to the labour market, earn less and have stronger family responsibilities regardless of participation status (Bořík, Ďurica, Molnárová, Švábová, 2015).

In the case of marital status, we observe that support is not more sustainable for singles and therefore it can be assumed that family support creates a better background in business. Even some studies (Niittykangas and Tervo, 2005) look for connections with previous family entrepreneurship, which can positively affect the sustainability of the current one (learning from parents, helping from a young age in entrepreneurship). Another factor related to marital status is the number of children examined by Caliendo and Kritikos (2010); Caliendo and Künn (2013); Millán and Congregado (2010) or Haapanen and Tervo (2009). Another additional variable of the study (Caliendo and Künn, 2013; Caliendo and Kritikos, 2010) reports health status or working time (Caliendo and Kritikos, 2010; Caliendo and Künn, 2013; Millán and Congregado, 2010).

Studies Holtz-Eakin, Joulfaïn, Rosen (1994), Parker (2004) suggest that support retention rates are higher in middle age than in younger or older self-employed people.

In the case of education, there are conflicting views. A study by Pankaj and Marcus (2019) found that self-entrepreneurs who have better financial abilities based on education and experience, achieve higher prosperity and can maintain support for longer. Studies Bořík, Ďurica, Molnárová, Švábová (2015), Parker (2004), Niefert (2010) also find that higher levels of education enter self-employment as one of the positive factors of sustainability. However, there are also conflicting views and the impact of the educational level of subjects is uncertain, according to a study by Baumgartner and Caliendo (2008). It is expected that the higher the level of education attained, the lower the likelihood of choosing to become self-employed, as other opportunities in the labour market open up for the subjects.

The length of registration at the employment office and previous job also plays an important role in maintaining employment support. Entities with business experience have higher human capital, motivation and better information about business opportunities (Haapanen and Tervo, 2009). The study further explains that starting a business in a new environment also brings unexpected risks such as search for suppliers or customers.

In summary, the theory does not clearly determine the order and importance of factors in self-employment from unemployment but has defined an appropriate selection of factors from the domestic and international environment.

2 METHODS

The method of implementing support for self-employment in Slovakia is to be found in *the contribution to self-employment* in accordance with §49 of the Employment Services Act, which is an intensively used instrument of active policy. The amount of support is granted within 30 days in the amount of 60% and then the remaining 40% of support for the past year. At the same time, the amount of support is conditioned by the place of self-employment. In the case of the least developed regions (southern and eastern Slovakia), where districts achieve an average registered unemployment rate higher than the national average, the contribution is at most 4 times the total price of labour calculated from the average wage of an employee. In the case of a lower unemployment rate, it is 3 times, while in the Bratislava region (the region with the highest GDP per capita) it is only 2.5 times.

In our conditions, the support is only for job seekers who are kept in the records of the Office of Labour, Social Affairs and Family for at least 3 months. The contribution is provided for the partial payment of costs related to the creation of a job for self-employment and the subsequent operation of self-employment for at least three years. There are no phases in Slovakia where we would educate individuals (we only monitor the preconditions for entrepreneurship in the form of a business plan). The research methodology is based on 2 models that evaluate the survival of support in the short term (after 6 months) and in the long term (after 3 years), which points to differences in time. The following table shows the methodology of the models.

Table 1 Methodology of models

Model name	Model parameters	
<i>Model3_3SZCO</i>	Survival of support after 3 years	The supported entity survival on the labour market (only cases of self-employed)
<i>Model4_6SZCO</i>	Survival of support after 6 months	The supported entity survival on the labor market (only cases of self-employed)

Source: The authors

A dependent variable in research is the survival of jobs created through support of the Contribution to self-employment. In each model 11 independent variables are analysed, as shown in Table 2. The selection of selected variables reflects other studies enriched with new factors and is also created in terms of Slovakia-specific data, which were discussed in the study Pisár, Mertinková, Šipikal (2021). The analysis includes the phase of survival of support in the period 2012–2016 in the Slovak Republic. The data sets with the data for the Contribution to self-employment were created from data that were processed based on 2 unique databases of the Ministry of Labour and Social Affairs on supported entities.

Table 2 Description of the variables that affect the probability of employment and self-employment

Name of variable	Variable description and coding
Dependent variables	
<i>Labour</i>	3 years after the end of the support period, the supported entity is employed as self-employed = 1, otherwise = 0 (model3_3SZCO). 6 months after the end of the support period, the supported entity is employed as self-employed = 1, otherwise = 0 (model4_6SZCO).
Independent variables	
<i>Gender</i>	Gender of job seeker (male = 1, female = 0).
<i>Age</i>	Age of the subject on the labor market in years.
<i>Marital_status</i>	Marital status: if job seekers is single = 1, otherwise = 0.
<i>History_1</i>	Last length of days at the employment office (in days).
<i>History_2</i>	Previous length of days at the employment office (in days).
<i>Education</i>	Achieved level of education. Code: 0 – without education or unfinished primary school, 1 – primary education (ZŠ), 2 – lower vocational education (NOV), 3 – secondary vocational education (SOV), 4 – complete secondary education (USOV), 5 – higher vocational education (VOV), 6 – 1 st level of university education (Bc.), 7 – 2 nd level of university education (Mgr./Ing.), 8 – 3 rd level of university education (PhD.).
<i>Job_previous</i>	Previous employment of job seeker – code according to the statistical classification of occupations. Code: 1 – Managers and legislators, 2 – specialists, 3 – Technical and professional staff, 4 – Administrative staff, 5 – Service and trade workers, 6 – Skilled workers in agriculture, forestry and fishing, 7 – Skilled workers and craftsmen, 8 – Operators and fitters of machinery and equipment, 9 – Auxiliary and unskilled workers. Variables used separately as dummy variables.
<i>Support_year</i>	Year in which the support was granted. The scope of the monitored period is in the range 2012–2016. The code assigned to each year is as follows: 1 – 2012, 2 – 2013, 3 – 2014, 4 – 2015 and 5 – 2016.
<i>Region</i>	If the job seeker is from the Prešov, Košice and Banská Bystrica self-governing regions (7; 8; 6) = 1, otherwise = 0.
<i>Same_place</i>	If the job seeker has the same NUTS code of residence and place of work, then the variable = 1, otherwise = 0.
<i>Aid_amount</i>	The total amount of financial support from the instrument for self-employment allocated to the job seeker (in Euros).

Source: The authors

Given the defined goal, the research questions are as follows:

Research question 1: *Which factor is key in self-employment and what is the target value in the root node?*

We use the decision tree method to determine the predictor and the target value in the root node. The *rpart* package (Therneau, Atkinson, Ripley, 2019) and the *rpart.plot* package (Milborrow, 2021), which contains the CART algorithm (*Classification and Regression Trees*) in the R program, were used to produce the outputs. The value of the explanatory variable was assigned using the labour variable.

The decision tree (or *tree diagram*) is a decision support tool that uses a tree as a decision model. In data mining and machine learning, the decision tree is a predictive model. This means that it informs from observations about the item to conclusions about its target value. In these tree structures, leaves represent classifications and branches represent combinations of characters that lead to these classifications (Stachová and Král, 2010).

The most common decision algorithm is the CART algorithm. It is a form of binary division. In our case, self-employment in the decision-making node can be divided into only two groups. Thus, each parent node can lead to two child nodes, and each of these child nodes can split itself and create additional children.

CART analysis has a number of advantages over other classification methods, including classical multidimensional logistic regression. First, it is essentially nonparametric, so no assumptions are made regarding the basic distribution of the values of the predictor variables. Thus, CART can process numerical data that is highly distorted or multimodal, as well as categorical predictors with ordinal or non-ordinal structure. This is an important feature because it eliminates the time an analyst would otherwise spend finding out if the variables are normally distributed and performing the transformation if they are not. In addition, this algorithm uses the 'white box' model, in other words, the situation is observable in contrast to neural network models (Stachová and Král, 2010).

Research question 2: *How important are the individual factors of survival of self-employment in Slovakia?*

To evaluate the importance, we use the random forest method (one tree does not vote, but a group of trees determines the importance of individual factors). The *randomForest* package (Liaw and Wiener, 2018) in the R program was used for the chosen method. A data set of predictors was inserted in item x and a dependent variable was entered in item y, which in our case is the same as in decision trees. In this method, the results for the independent variables are distinguished based on the MDA (*Mean Decrease Accuracy*) indicator. The indicator was used as measurement of factors importance. It means, that the more the accuracy of our model suffers without this factor the more important the factor is.

The random forest is a classifier of a machine learning file that consists of many decision trees and issues a class that is a mode of class output according to individual trees. Many classification trees grow in random forests. Each tree gives a classification, and we say that the tree 'votes' for this class. The forest chooses the classification with the largest number of votes (Stachová and Král, 2010).

The list of the above methods is chosen mainly for their ability to select the most important information from a large number of options. The methods are usually used as a tool to support decision-making in the areas of company productivity, risk minimization or revenue maximization and thus to reduce the company's bankruptcy. The principle of examining self-employment is very similar. While in business practice models follow the survival of productivity, we will monitor the survival of support. What factors emerge as the most important will tell us how to minimize the risk of wasting public funds or maximize the survival of such support.

Research question 3: *Why are these factors of great importance in the support of self-employment and what is the opinion of practitioners?*

In addition to generating rare and heterogeneous evidence on the importance of self-employment factors, the paper, on the other hand, seeks to contribute to the understanding of the factors that lead

to these peculiarities in Slovakia. Therefore, in the discussion, we draw certain connections regarding the behaviour of support derived from the opinions of people from practice. Opinions will thus contribute to a more realistic view of the importance of factors.

We contacted the staff of the Labour, Social Affairs and Family Office, who are the first contact in obtaining such support. At the same time, representatives of institutions directly related to self-employment also took part in the professional discussion. These are the National Bank of Slovakia, where the labour market expert participates, the Institute of Employment Policy, where the President of the Institute spoke, and the Slovak Chamber of Commerce, which represents the interests of self-employed persons. Opinions are collected by the Delphi survey method, where they express an attitude towards each factor addressed. Confirmation resp. refute the knowledge gained and express the gradual importance of the factors.

The survey was conducted in two rounds, which reflected the results already found regarding the effects of factors. More precisely, in September 2021, employees at the labour office from the districts that record the most supported subjects were contacted. A month later (October 2021), further telephone conversations were held with representatives of employment policy in Slovakia. A total of 8 employees and 3 of the institutions took part in the survey.

3 RESULTS

Our strategy for selecting variables is based on similar studies that examine the determinants of survival on the labour market. The selection strategy reflects national specificities. Supported entities are divided according to 2 models – see Table 3.

Table 3 Division of subjects in models

Name of model	Share of persons placed as self-employed entity	Share of persons not placed as self-employed entity
<i>Model3_3SZCO</i>	39.05%	60.95%
<i>Model4_6SZCO</i>	56.22%	43.78%

Source: The authors

The largest proportion of supported entities are men. The average age is 37 years. 21% of entities did not have previous employment, 44% are single and 46% of them have completed higher vocational education (in 23.4% they were job seekers from the 2nd level of higher education). Most often they come from the regions: Žilina, Prešov and Banská Bystrica, two of which are among the least developed regions in Slovakia. Their average amount of contribution reached € 3 570, while they spent an average of 1 368 days in the register (approximately 3 year and 7 months, which can be considered as long-term unemployed). We observe the largest share of previous employment in the supported entities in the field of technicians and professionals; service and trade workers and craftsmen, processors, and repairers (according to the ISCO classification).

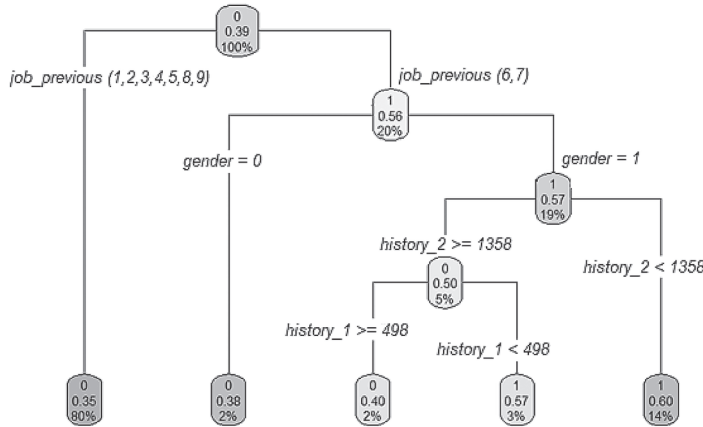
3.1 Determination of the most important factor and the target value of survival of self-employment

We follow the answers to the first research question using the decision tree method. The bushyness of the tree in the models was set to minimize the cross-validation error (xerror) and at the same time the tree was not too bushy and therefore opaque. The resulting models in the case of self-entrepreneurs are shown in Figures 1 and 2.

The results show that the *Model3_3SZCO* model distributed to entrepreneurs after 3 years in the root node and identified the previous job as a predictor. Self-employment, which met the following condition

(they were from the category 1, 2, 3, 4, 5, 8, 9), were not placed on the labour market for up to 3 years. Other subjects are redistributed in other nodes according to conditions related to predictors (e.g. education of the subject, the last and previous length of days at the employment office). In other words, with a closer understanding of the survival of support (*Model3_3SZCO*), we observe that the greatest amount of variability is explained by the variable of previous job.

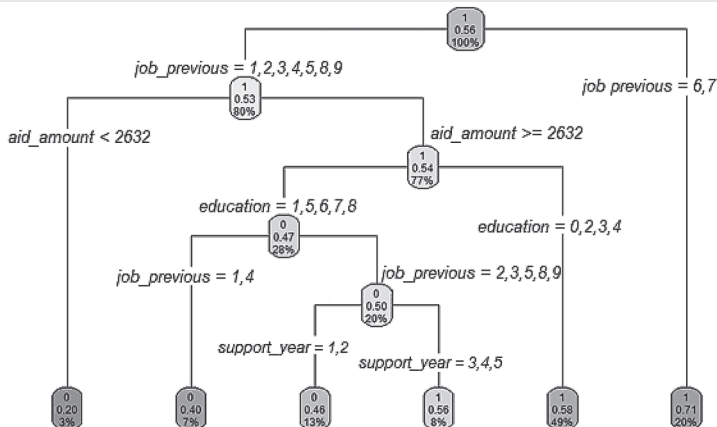
Figure 1 Decision tree for model *Model3_3SZCO*



Source: Own processing in program R

In the case of self-employment from unemployment, survival after 6 months (*Model4_6SZCO*) identified in the root node as the main predictor just the previous job, which is identical to the long-term survey. Other subjects are redistributed in other nodes according to conditions related to predictors such as aid amount, education of the subject or year of provision. In other words, with a closer understanding of survival, we observe that the greatest amount of variability is explained by the variable of previous job. Those whose previous job was from the field of skilled workers and craftsmen or skilled workers from the field of agriculture, forestry and craftsmanship were able to be placed on the labour market (the same as in the *Model3_3SZCO* model, which concerns placement after 3 years).

Figure 2 Decision tree for model *Model4_6SZCO*



Source: Own processing in program R

The predictive abilities of the created decision trees are expressed in Table 4 together with its errors of the first and second kind⁵. The results show a relatively good predictive ability of the models in the range of 60.56% to 64.01%.

Table 4 Classification table – decision trees

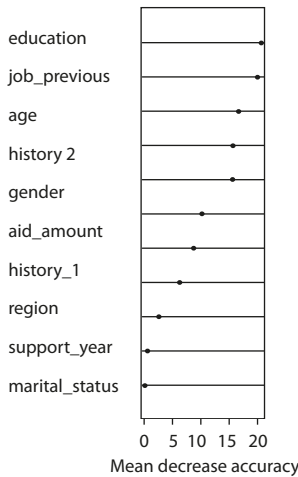
Model	Model3_3SZCO		% correctly classified subjects	Model	Model4_6SZCO		% correctly classified subjects
The actual classification	0	1		The actual classification	0	1	
0	3 769	467	54.23%	0	1 367	3 010	13.67%
1	2 034	680	9.78%	1	933	4 687	46.88%
Total predictive power	64.01%			Total predictive power	60.56%		

Source: Own processing in program R

3.2 Determination the importance of factors in survival of self-employment

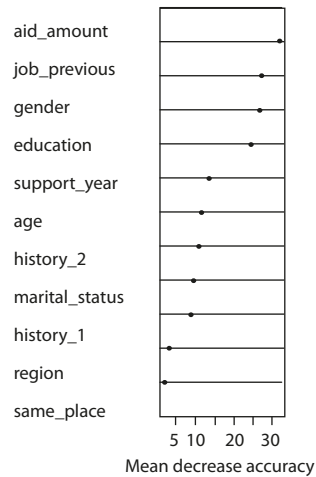
We follow the answers to the second research question by the method of random forests. The self-employment factors shown in this way (Figures 3 and 4) form the predictive power of the random forest model. If we consider deleting the upper variable, the predictive power of the model will be significantly reduced. On the other hand, if we consider reducing one of the lower variables, it may not have much effect on the predictive power of the model. Therefore, we consider the first variables to be the most important variables in the models.

Figure 3 Variable importance for model Model3_3SZCO



Source: Own processing in program R

Figure 4 Variable importance for model Model4_6SZCO



Source: Own processing in program R

⁵ The error of the first kind expresses the % of truly sustainable self-employment, which the model mistakenly classified as unsustainable, and we get it if we subtract the percentage of correctly classified from 100%. The error of the second kind expresses the percentage of unsustainable self-employment that the model incorrectly classified as sustainable and can be found by analogy

According to the chosen MDA indicator, based on ,tree voting, education was identified as the most important variable influencing the long-term maintenance of self-employment support, while second place belongs to previous job (according to the decision tree is the dividing criterion in model *Model3_3SZCO*).

The results of models up to 6 months (short-term observation) show that in the model *Model4_6SZCO*, we can mark variables according to their importance as the aid amount, previous job and gender.

The model differs in the importance of variables in terms of time, while in self-employment from unemployment, the amount of funding provided plays an important role, in the long run it is the level of education. Just behind these factors is the previous job, the importance of which is significant in both respects.

The predictive ability of the created random forests is expressed in Table 5. The results show a relatively good predictive ability of the models in the range of 59.52% to 61.61%.

Table 5 Classification table – random forests

Model	<i>Model3_3SZCO</i>		% correctly classified subjects	Model	<i>Model4_6SZCO</i>		% correctly classified subjects
The actual classification	0	1		The actual classification	0	1	
0	3 359	840	20.00%	0	1 911	2 434	56.02%
1	1 808	891	66.99%	1	1 593	4 010	28.43%
Total predictive power	61.61%			Total predictive power	59.52%		

Source: Own processing in program R

In addition to the above results, we try to determine the links with views from practice on the survival of self-employment from unemployment and draw possible conclusions for Slovakia.

4 DISCUSSION

The use of decision trees and random forests was effective. These algorithms have been shown to be classification techniques that are easy to understand, interpret and can be used in the public sector. These techniques, despite leaving the reality of the data, achieved satisfactory predictive accuracy. The models were able to learn to recognize placed rather than unplaced subjects due to the lower number in the examined models.

The knowledge gained through decision trees and random forests is largely identified with practical views. The most important factors such as previous job before support and the subject's past at the employment office are always in the first place. Opinions from practice also confirmed the importance of the age factor, where the staff of the Office ranked it as the most important. A little higher, the practice would include the factor of operation in an underdeveloped region compared to our results. Both research and practice have decided that the factor marked *same_place* is the least important factor. The most controversial factor was the gender of the subjects.

What specific statements provided by practitioners (to confirm/refute the importance of the factor) will show a detailed examination of the 5 most important factors: length of last unemployment, previous job, age, education and the amount of financial support.

The most important factor from the category of socio-demographic factors is the previous job. We assume that its significance lies in obtaining a practical basis from past employment, market orientation in the given area or obtaining contacts before starting a business. In our sample, there are 21% of entities with zero pre-support experience, which may emphasize the importance of the factor.

Despite the high significance of the factor, there are no phases in Slovakia where we would monitor the practical experience of individuals before starting a business (we only monitor the preconditions for doing business in the form of a business plan). We often meet that the business plan is developed by a third party and so we do not know the real business knowledge. In other countries, it is often possible to combine support for self-employment with education (Oberschachtsiek and Scioch, 2015; Wolff, Nivorozhkin, Bernhrard, 2016).

To capture the importance of this factor, we recommended to check the practical experience of future self-employed person, but the views of practice are conflicting. An expert from the National Bank of Slovakia states as a counterargument that *'overdiversification of the experience would lead to complications, more bureaucracy and probably would also lead to discouragement of some people. Therefore, I would not even try to introduce. However, I agree with the statement that previous job has an impact on the success and survival of the self-employment'*. The director of the Slovak Chamber of Commerce very similarly expresses the opinion that *'verification of the level of business skills would be disproportionately financially demanding in practice and unnecessary, as knowledge alone is not the only necessary skill for successful entrepreneurship'*.

An interesting observation was the statement of the President of the Institute of Employment Policy, who states that *'the review of experience should take place, but only in areas of business that require deeper practical experience'*.

It can therefore be argued that previous employment is understood by both practice and empirical evidence as the most important factor in self-employment. The practice largely states that we do not need to know the business experience of self-entrepreneurs (financially and administratively demanding). The form of preparation and gaining experience can be practical courses before support, where the entity itself recognizes what it requires deeper experience (how to gain contacts, product presentation, market research and competition ...). We note that not in current areas such as taxes, accounting and levies, as this service will still be provided externally. Thus, the contribution would ensure access for all without distinction, but at the same time it would offer the possibility of education before the actual application. This would naturally select applications for self-employment and decisions would be more certain.

Another important factor is education. Education is the starting point before being placed on the labour market, which we consider to be the main reason for the importance of the factor. Education has a shorter and less intensive duration compared to previous jobs, which confirms that previous experience is more important than education.

We note that the significance of the factor is monitored in the period 2012–2016, which is a period of economic boom. The entity is essentially “pushed” to choose to become self-employed in a less developed region, as the region does not offer opportunities equivalent to its education. At the same time, he is also affected by social influences such as strong ties in the region, contacts, background, ... (more pronounced if the subject decides to be a self-employed person due to unemployment). Representatives of the institutions add that the area of business is important. e.g. those doing business in the IT sector have literally “unlimited possibilities” at the global level.

It can therefore be argued that education affects the survival of self-employment support from unemployment, especially in the long term (it is a kind of starting point for placement in the labour market). In the case of other models and from the point of view of practice, education is less important than previous practical experience and evaluates it as a moderately strong factor. The level of education mainly affects entities that are pushed to support in a less developed region.

An important factor in the field of economic factors is the amount of financial support. Sufficient financial resources are logically more important for self-employed people from unemployment than from employment⁶. The fact that this effect is mainly short-term can be explained by its importance when starting a business. In the long run, sufficient financial resources replace other factors (e.g. education, age, ...).

The assumption of the importance of funds in starting a business is largely confirmed by practice. The employees of the labour office confirm the importance, while the contribution will provide the greatest help with the input capital, such as rent or material and technical equipment. Furthermore, but they draw attention to the fact that *'the financial value of the support is sufficient only for starting a business, in the later period the business idea must generate complementary funds'*. Based on the above findings, our question was whether a higher amount of aid would not provide a better labour place, a better product/service and thus a higher added value of the investment. Some authors (Niefert, 2010) also dispute whether subsidies should not be exchanged for loans that entities would have to repay. This would increase the motivation to keep the business going and prosper in the future. The President of the Institute for Employment Policy recommends a 'golden mean' called tax loan. Instead of a grant that covers only basic needs, the business would be subsidized by a more significant repayable amount. It would probably attract more educated people who would otherwise choose paid employment.

It can therefore be argued that the amount of aid is an important factor mainly from the point of view of self-employed persons and is mainly short-term. Financial resources are the first step to the successful survival of self-employment, but the main focus of survival shifts to the human capital of the entity, which is hidden in previous practical experience, education or length of registration at the employment office.

An important factor in self-employment (especially in terms of practice and a broader understanding of the purpose of the contribution) is age.

Age plays an important role in our analysis, with the average being 37 years. Studies Holtz-Eakin, Joulfaïn, Rosen (1994), Parker (2004) suggest that support retention rates are higher in middle age than in younger or older self-employed people. E.g. in a study by Bořík, Ďurica, Molnářová, Šváblová (2015) an average of 34 years, Ellen et al. (2021) approximately 46 years or Parker (2004) with an age limit of 40.

The assumption of higher survival of support at middle age has been partially confirmed. There are several reasons. From the point of view of an NBS expert, this is mainly a *'combination of experience and greater knowledge of the market. At a younger age, it may be about testing what will work on the market, respectively finding your place'*.

The president of the institute justified higher sustainability by choosing a business. *'while the elderly have a choice of less risky businesses than the liberal professions (consulting, expertise, expertise), the younger ones are dominated by start-ups'*. According to the employee of the labour office, burnout, health or pension are associated with older age.

Another significant factor from the category of socio-demographic factors is the length of registration at the employment office. We assumed that the high significance of the factor is caused by the fact that subjects (whose registration at the labour office is on average over 3 years) have lost work habits. The entity is likely to enter the labour market with limited access to information on business opportunities, which may lead to an insufficient business idea (most often goods and services without added value).

⁶ Entities are likely to be affected by factors such as the network of contacts, good work habits and business experience that have brought them new work experience.

Despite the questionable profitability of a business, their push effect makes it work, which ultimately has a negative impact on the survival of business.

The presumption of loss of work habits due to long-term placement in the employment office or limited access to information that will lead to an insufficient business idea has been largely confirmed from the point of view of practice.

The director of the Slovak Chamber of Commerce adds that '*work habits and real contact with the labour market usually weaken after only 6 months of unemployment*'.

It can therefore be argued that the length of registration at the employment office is understood by both practice and empirical evidence as one of the most important factors. Experience agrees that the loss of work habits and real contact make the support unsustainable in the short and long term.

CONCLUSION

The aim of the paper was to examine the importance of the factors of self-employment in Slovakia in times of economic boom. The choice of the contribution was chosen due to its significant effectiveness according to the research carried out so far and the relatively lowest support among all active instruments of the EU countries.

The contribution and originality of this state compared to other studies lies in the enrichment of research with unique factors such as the length of registration at the Office of Labour, Social Affairs and Family or specifically capture the least developed regions. At the same time, the article is based on modern research methods (decision trees, random forests), which both classify and indicate the impact, which is an information-enriched approach compared to the traditional method of logistic regressions. The methods are considered in the field of public support as new methods, as there is no evidence of their application in the evaluation of active employment policy.

The data are not from freely available databases and therefore self-employment research is a significant milestone in capturing the importance of factors and behaviour of subjects. Factors influencing sustainability were examined from both the short-term (after 6 months) and long-term (after 3 years), with the main idea of supporting the unemployed to be placed on the labour market.

We consider the use of decision trees and random forests to be effective. These algorithms have been shown to be classification techniques that are easy to understand, interpret and can be used in the public sector. These techniques, despite leaving the reality of the data, achieved high predictive accuracy. Even the error rate is relatively low due to keeping the data realistic.

The knowledge gained through decision trees and random forests is largely identified with practical views. The most important factors such as previous job before support and length of registration at the employment office are always in the first place. Other factors are age, amount of financial support and education.

We perceive the importance of these factors on two levels. The first is a consequence of past human capital building events (education, previous employment, length of support and age) and the second is the level of financial assistance, which is less important. These findings suggest possible improvements in several areas. The first is the introduction of practical courses, which could have a different information base than previously provided. Until now, future self-employed person have been able to choose consulting courses in the field of taxes, accounting or levies (for which they will still use an external service), topics such as gaining contacts, product presentation, market research or competition are more important when starting a business. The second improvement concerns the overall setting of the aid, which is rather related to the importance of the amount of aid. Just as some authors (Niefert, 2010) argue over whether subsidies should not be exchanged for loans, we argue about the so-called tax loan. Instead of a grant that covers only basic needs, it could be more efficient to subsidize with a more significant repayable amount, which can also cover value-added businesses (at the same time

more acceptable than a normal loan on the market). It would probably attract more educated people who would otherwise choose paid employment. Thus, a tax loan is not the absolute extreme of any alternative.

We note that the study is formed in terms of macroeconomic factors in times of economic boom, which can significantly affect the behaviour of individuals and policy settings as such. If we look at the current situation (caused by the COVID-19 contagion), which rather points to the downturn in economic development and the labour market, we see that active employment policies respond differently. What impact this will have and how the importance of factors will change will be the subject of further research that will build on the results of this state.

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