Multidiszciplináris tudományok, 13. kötet, 2. sz. (2023), pp. 261-274 ***https://doi.org/10.35925/j.multi.2023.2.23***

ANALYSIS OF THE FACTORS AFFECTING STUDENT DROPOUT AT THE UNIVERSITY OF MISKOLC

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Abstract

Our research is linked to the strategy for higher education in Hungary, which sets out a clear expectation to reduce the number of university dropouts.
The first step towards achieving these goals is to explore and describe the phenomena and the context of university dropouts.
According to a number of studies, the first year is crucial for the success of students in obtaining a degree.
Significant failure to earn the number of credits set out in the recommended curricula implies a serious risk of dropout.
Our research sought to find out how previous studies, in particular secondary school attainment, the student's residence, and its level of infrastructure development as well as the student's sex influence the number of credits earned in the first two semesters.
Our analysis was carried out using data from students studying at the Faculty of Economics and the Faculty of Mechanical Engineering and Informatics at the University of Miskolc, broken down by fields of study.

Keywords: *higher education, dropout, field of study, non-parametric tests*

1. Introduction

Among the strategic objectives of the 2010 EU 2020 Agenda, the European Commission set an ambitious target of 40% of tertiary education graduates aged 25–35 (European Commission 2010).

By 2022, this target has not been reached even by Hungary and 7 other countries including Germany, which has the largest economy in the European Union.

In Hungary, the share of 25–34-year-olds with tertiary education was 31.4% in 2022 (European Commission 2022), the second lowest in the EU after Romania (24.6%), far below the EU target of 40% and the EU-27 average (43%). Cyprus boasts the most favourable indicator among EU countries year after year.

Table 1 *Key indicators for the share of tertiary education attainment in the 25–34 age group in the EU Member States in each year*

	Share of tertiary education attainment in the 25–34 age group (Data given in %)			
	2010	2015	2020	2022
Hungary	25.9	32.1	30.2	31.4
Strongest performer	55.2	62.8	68.7	68.9
Weakest performer	20.7	25.5	24.8	24.6
EU-27 average	33.4	37.7	41.3	43.0
EU-27 median	34.4	41.5	44.0	44.8

The table was sourced from Eurostat 2023

Looking at the period of 2010 to 2022, the relative position of Hungary in the European Union has deteriorated.

In 2010 it ranked 20th out of 27 countries, and in 2020 and 2022 it ranked 26th the second lowest after Romania as for the share of tertiary education holders in the examined age group.

The most important data for the 25–34 age group are presented in *Table 1* and the Boxplot charts for the 27 Member States are shown in *Figure 1*.

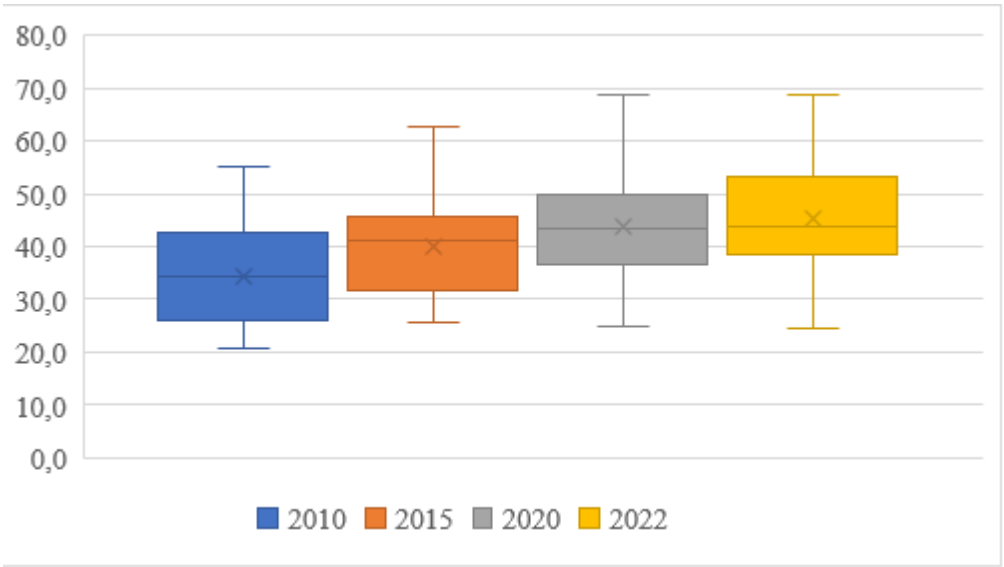

Figure 1. *Boxplots of the proportions of tertiary education holders in the EU Member States in each year, age group 25–34 (Eurostat 2023)*

The proportion of students starting higher education who go on to obtain a degree has a significant impact on the share of graduates. The success of higher education and the reduction of dropouts are key issues for higher education in Europe, as dropping out is a genuine problem for individuals, families, higher education institutions, the labour market, and budgets. According to the OECD's 2019 report,

20% of students who start higher education do not complete their studies. In Hungary, more than one third of all Bachelor students finish their studies without a degree (European Commission 2022).

The reasons for university dropout are complex. Among the most key factors influencing dropout are the student's abilities, the level of prior learning, competences, motivation, family and financial background, the quality of the services provided by the higher education institution and the attitude of the educators. According to a 2016 survey (Eurostat 2018), there were 3 million young people aged 20–34 in the European Union who had started higher education but did not complete it. The reason most cited for this failure was the wish to find a job. These young people accounted for almost 25% of dropouts. The second most common reason was the lack of interest (22%). 18% of the survey respondents left higher education because of difficulty of their studies. The distribution of reasons for leaving higher education before graduation is shown in *Figure 2*.

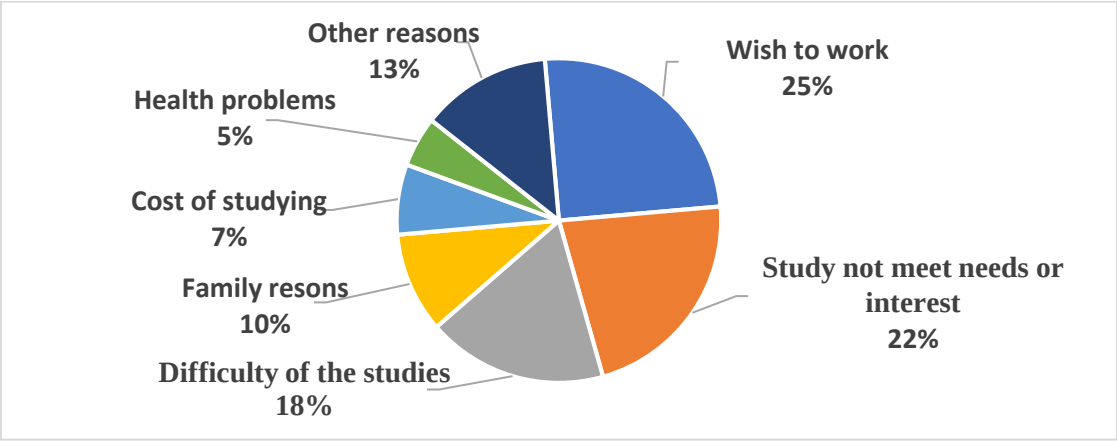

Figure 2. *Reasons for not completing tertiary education, EU 2016*
Source: Eurostat, 2018

In our research, we hypothesised that certain risk factors for early drop-out can be identified at the start of higher education studies, and we seek to find out what these factors are and to what extent they influence performance during university studies.

By using the data and correlations identified in our work, individual and institutional interventions to promote student success can contribute to the achievement of the EU targets for Hungary and to improve the tertiary attainment rate of the young adult population. (Sándorné, 2014)

2. Database and Methodology

2.1. The Observation Units

We investigated the number of credits earned in the first two semesters by full-time students admitted to the Bachelor programmes of the two largest faculties of the University of Miskolc (UM), the Faculty of Economics and the Faculty of Mechanical Engineering and Informatics, in the academic year 2022/2023, as well as the factors influencing the number credits earned.

When selecting the student groups for the study, we took into account that according to the study published by the Educational Authority in 2020 (Demcsákné Ódor, 2020), the highest dropout rates among the bachelor programmes are in the fields of informatics and engineering, and a significantly lower dropout rates can be seen in the field of economics. Two thirds of full-time students enrolled in the Bachelor programmes at the University of Miskolc pursue their studies in these two faculties and fields of study. In Hungary, the dropout rate for studies started in the 2010/2011 academic year was 53.1% in the field of informatics, 42.6% in the field of engineering and 35.6% in the field of economics. (Demcsákné Ódor, 2020)

Although the decision to leave higher education can be linked to a specific date, it is a prolonged process. We chose the first-year students as the subject of our study because several studies on university dropouts show that the first year is crucial for the success of students in obtaining a degree. (Tinto, 1975; Johnson, 1997; Paura et al., 2014; Perchinunno et al., 2019; Quiles et al., 2023). Early identification of the risk of dropout and the use of targeted support can reduce the negative process of dropout.

2.2. Range of the variables under study

In our analysis, the main outcome variable was the cumulative amount of non-recognised credits earned by students with two active semesters in the first two semesters. In compiling our dataset, we have subtracted the credits recognised from the cumulative total credits completed, since these credits were not acquired by the student as a result of his/her performance in the current academic year but were earned during his/her previous studies and counted in the respective semesters. This gave us the variable 'Cumulative non-recognised credits completed', which we use as the variable 'Credits earned' in our analysis.

In our research, we sought to find out how previous studies, and in particular secondary school results, influence or which results significantly influence outcome variable. The reason for choosing "Cumulative non-recognised credits completed" as outcome variable was because earning significantly fewer credits than the 60 credits set in the recommended curriculum for the first two semesters involves a serious risk of dropout. In the long run, deviating from the recommended curriculum may lead to a student not being able to take courses with the appropriate credit value in the following semester, partly because the prerequisites are not fulfilled and partly because the course to be taken is not advertised in the semester in question. This can lead to prolonged studies, which in turn leads to a shortage of publicly funded semesters and an unplanned increase in the funding of studies. According to the EUROSTUDENT VII international student questionnaire survey, late completion and non-compliance with training requirements is common among UM students compared to other comparable institutions, which means an increased risk of dropout.

In our calculations, some of the explanatory variables were indicators related to secondary school performance, such as secondary school leaving examination grades in Mathematics, study scores in the admission process, secondary school leaving examination points, and extra points, as well as the number of language certificates.

Among the demographic and social factors, the sex and place of residence of the student were selected as explanatory variables. According to the results of several studies, both in the European Union and in Hungary, female students have a lower risk of dropping out than male students. (Demcsákné Ódor, 2020; Pusztai, 2018; Eurostat 2018). A moderate correlation can be found between the socio-cultural background of students and dropout rates. The highest dropout rates are observed for students from less urbanised districts and those with an average socio-cultural background (Demcsákné Ódor,

2020). As for explanatory variables to examine the impact of socio-cultural background, complex indicators measuring the socio-economic and infrastructural development of districts and whether the district of the student's permanent residence is a district to be developed or a district to be developed with a complex programme were considered.

2.3. Database

A significant part of students' data was extracted from the Neptun Unified Study System database operated by the University of Miskolc. The information on students' secondary school performance and examination results is imported into the Neptun study system from the Gólya Admission System, while the data on students' university studies is recorded in Neptun by the study administrators and lecturers during the study and examination period. The advantage of Neptun database is that a large amount of reliable data is available.

The data on the development of the student's place of residence is based on Annex 2 of the Government Decree No. 290/2014. (XI. 26.) on the classification of beneficiary districts.

To ensure comparability, only students with two active semesters were included in the study.

2.4. Methodology

The students included in the study were analysed by field of study. Among the students enrolled for the academic year 2022/23, there were 74 students of informatics, 144 students of engineering and 175 students of economics with 2 active semesters.

To examine the stochastic relationship between the number of credits earned in the first two semesters (Cumulative non-recognised credits completed) and the affecting factors, descriptive statistics, measures of strength of association, parametric and non-parametric tests and regression analysis were used. The statistical program SPSS was used for the calculations.

Since the number of credits earned is not normally distributed in any of the study fields but it is skewed to the right with long left tail (see *Tables 2* and *3*), in addition to Pearson correlation coefficient Spearman rank correlation coefficient was used to measure the strength of association.

Table 2 *Stem and Leaf plots of the number of credits earned by first-year students with two active semesters in certain fields of study of the UM in the academic year 2022/23*

		informatics
4	0	0034
5	1	02445
5	2	00046
6	3	044557
10	4	0045555578
26	5	00000000000222355555555589
18	6	000000000000003338
		engineering
5	0	04589
5	1	12257
7	2	0225677
28	3	0001123444445555555577777889
22	4	0222244555566777899999
35	5	00000111122222334455555555567777788
42	6	000000000000000000000000000000000012233458

		economics
8	0	00556779
12	1	011222455577
10	2	1113456778
20	3	00012333334555556667
18	4	000233455566778888
34	5	00000111122333334455555555566888999
68	6	00000000000000000000000001222233333333333334455556666666666666668999
5	7	03459

The parametric ANOVA test was supplemented with the nonparametric Kruskal–Wallis test and the Mann-Whitney test was used instead of the two-sample t-test. The Kruskal–Wallis test is the non-parametric equivalent of the one-way ANOVA. It can be used as a substitute for ANOVA when the differences in between-group variance is significant and when the between-group normality assumption is flawed. Neither the Kruskal–Wallis nor the Mann–Whitney test requires that the dependent variable be normally distributed, only that it be measured on an ordinal scale.

Table 3 *Normality test of the number of credits earned by first-year students with two active semesters in certain fields of study of the UM in the academic year 2022/23*

Tests of Normality							
field of study		Kolmogorov–Smirnov[a]			Shapiro–Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
informatics	credits earned	.216	74	<.001	.851	74	<.001
engineering	credits earned	.142	144	<.001	.887	144	<.001
economics.	credits earned	.157	175	<.001	.893	175	<.001
a. Lilliefors Significance Correction							

3. Factors affecting the number of credits earned in the first two semesters

Our research analysed the number of credits earned by 393 students in the first two semesters. 19%, 37% and 44% of the students involved in the study were studying computer science, engineering, and economics, respectively. *Table 4* shows the main indicators of the total number of credits earned in the first two semesters. In each of the three fields of study, more than half of the students did not complete the 60 credits of the recommended curriculum. 24.3%, 25% and 41.7% of students achieved at least 60 credits in the first two semesters in informatics, engineering, and economics, respectively.

Table 4 *Descriptive statistics on the number of credits earned by first-year students with two active semesters in certain fields of study of the UM in the academic year 2022/23*

Descriptive statistics on the credits earned	***Field of study***			***Total***
	Informatics	***Engineering***	***Economics***	
N (person)	74	144	175	393
Mean	44.6	46.2	48.0	46.7
Mode	60.0	60.0	60.0	60
Median	50.0	50.5	55.0	52.0

Descriptive statistics on the credits earned	***Field of study***			***Total***
	Informatics	***Engineering***	***Economics***	
Percentiles 25 (Q_1)	35.0	35.0	35.0	35
Percentiles 75 (Q_3)	59.3	60.0	62.0	60.0
Std. Deviation	17.6	15.1	18.6	17.2
Minimum	0	0	0	0
Maximum	68.0	68.0	79.0	79.0

3.1. Secondary school performance

According to some research, a key factor in dropping out is associated with learning difficulties and lack of knowledge acquired in previous studies. Some theories of persistence hold that achievement in secondary education is a key factor (Bean 1980, 1985). It was therefore considered appropriate to examine the relationship between secondary school achievement and the scores calculated in the admission procedure as well as the credits obtained.

Table 5 *Indicators measuring the strength of association and the corresponding significance levels between the number of credits earned by first-year students with two active semesters in certain fields of study of the UM in the academic year 2022/23 and the points obtained in the admission procedure*

Explanatory variables	Informatics		Engineering		Economics	
	Spearman's ρ (rho)	$\alpha_{critical}$	Spearman's ρ (rho)	$\alpha_{critical}$	Spearman's ρ (rho)	$\alpha_{critical}$
Study points	0.596	<0.001	0.558	<0.001	0.494	<0.001
SSLE points*	0.257	0.027	0.100	0.234	0.242	0.001
Extra points	0.476	<0.001	0.341	<0.001	0.305	<0.001

*SSLE: Secondary school leaving examination points

The results conclude that for all three fields of study, first year performance in university is most positively associated with the secondary school grades, and the explanatory power of the secondary school leaving examination grade is the lowest. Extra points in informatics have a moderately strong positive relationship with the number of credits earned.

Using the non-parametric Kruskal-Wallis test, we examined the relationship between the secondary school leaving result in Mathematics and the number of credits earned in the first year. As for hypothesis testing, the null hypothesis and the alternative hypothesis were formulated as follows:

H_0 = The distribution of first year credit earned is the same for each category of school leaving examination grade in Mathematics.

H_1 = There is at least one category of school leaving examination grade in Mathematics for which the distribution of credits earned is different from that of the other groups.

The data in *Table 6* concludes that for all three fields of study, both the p critical significance values and the Bonferroni-corrected significance values (Adjusted Sig. in the last column of the table) indicate

that students with an excellent grade in the school leaving examination in Mathematics earned significantly more credits than the others.

Table 6 *Relationship between the number of credits earned by first-year students with two active semesters in certain fields of study of the UM in the academic year 2022/23 and the school leaving examination results in Mathematics*

Pairwise Comparisons of the school leaving examination results in Mathematics						
field of study	Sample 1–Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig. (p)	Adj. Sig.
informatics	2–3	–.867	16.089	–.054	.957	1.000
	2–4	–6.714	15.643	–.429	.668	1.000
	2–5	**–22.414**	**15.625**	**–1.434**	**.151**	**.909**
	3–4	–5.848	6.839	–.855	.393	1.000
	3–5	**–21.547**	**6.797**	**–3.170**	**.002**	**.009**
	4–5	**–15.700**	**5.663**	**–2.772**	**.006**	**.033**
engineering	2–3	–13.707	13.902	–.986	.324	1.000
	2–4	–24.526	13.266	–1.849	.064	.387
	2–5	**–52.529**	**12.601**	**–4.169**	**<.001**	**.000**
	3–4	–10.818	10.260	–1.054	.292	1.000
	3–5	**–38.821**	**9.386**	**–4.136**	**<.001**	**.000**
	4–5	**–28.003**	**8.415**	**–3.328**	**<.001**	**.005**
economics	2–3	–10.508	20.048	–.524	.600	1.000
	2–4	–37.017	19.028	–1.945	.052	.310
	2–5	**–54.566**	**18.791**	**–2.904**	**.004**	**.022**
	3–4	–26.509	11.182	–2.371	.018	.107
	3–5	**–44.058**	**10.774**	**–4.089**	**<.001**	**.000**
	4–5	–17.549	8.731	–2.010	.044	.267
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.						

3.2. Language certificates

Some research on dropout rates in higher education institutions also cites the existence of language certificates as an affecting factor. (Pusztai et al., 2021; Józsa, 2020) Therefore, the non-parametric Kruskal–Wallis test was used to investigate the relationship between the number of language certificates previously obtained and the number of credits earned. The language certificate categories are defined as follows, depending on the number and level of language certificates obtained by the student. 0: no language exams or elementary (B1) level; 1: 1 intermediate (B2) level; 2: 2 intermediate (B2) or 1

advanced (C1) level; 2: 2 language certificates, of which at least one is advanced (C1) level. Only type C complex language certificates or equivalent type A and B examinations held together are accepted.

As for hypothesis testing, the null hypothesis and the alternative hypothesis were formulated as follows:

H_0 = The distribution of the number of credits earned in the first year is the same for all language certificate categories.

H_1 = There is at least one language certificate category for which the distribution of the number of credits earned is different from the other groups.

The results in *Table 7* show that only the data on students of engineering point to the conclusion that students with a language certificate are significantly more successful in meeting the requirements of the recommended curriculum.

Table 7 *Relationship between the total number of credits acquired by first-year students with two active semesters in each field of study in the ME in the academic year 2022/23 and language certificates*

Hypothesis Test Summary				
field of study	Null Hypothesis	Test	Sig.[a,b]	Decision
informatics	The distribution of non-recognised_credit is the same across categories of Language_certificate.	Independent-Samples Kruskal–Wallis Test	.174	Retain the null hypothesis.
engineering	The distribution of non-recognised_credit is the same across categories of Language_certificate.	Independent-Samples Kruskal–Wallis Test	<.001	Reject the null hypothesis.
economics	The distribution of non-recognised_credit is the same across categories of Language_certificate.	Independent-Samples Kruskal–Wallis Test	.709	Retain the null hypothesis.
a. The significance level is .050.				
b. Asymptotic significance is displayed.				

According to the group averages in *Table 8*, the averages tend to be higher for those with more language certificates or with language certificates of higher levels. Differences are particularly marked for higher (C1) level language certificates.

Table 8 *Descriptive statistics of cumulative credits earned by first-year students with two active semesters in certain fields of study of the UM in the academic year 2022/23, grouped by language certificate category*

Field of study	**Categories of language certificates**	**N**	**Mean**	**Median**	**Std. Deviation**
informatics	none or B1	25	42.08	50.00	18.509
	1 B2	34	43.97	50.00	17.114
	2 B2s or 1 C1	15	50.13	55.00	16.847
	Total	74	44.58	50.00	17.553

Field of study	Categories of language certificates	N	Mean	Median	Std. Deviation
engineering	none or B1	54	39.94	42.00	15.546
	1 B2	60	49.68	55.00	13.326
	2 B2s or 1 C1	26	49.96	55.50	14.973
	2 certificates incl. at least one C1	4	55.50	55.00	6.403
	Total	144	46.24	50.50	15.091
economics	none or B1	35	45.83	53.00	20.335
	1 B2	87	48.32	55.00	18.940
	2 B2s or 1 C1	41	48.15	55.00	16.569
	2 certificates incl. at least one C1	11	51.18	60.00	19.788
	Total	174	47.96	55.00	18.637

3.3. Sex of the student

Some research hold that male students are more at risk of dropping out. According to Pusztai, Szigeti, male students are almost one and a half times more likely to fall into the risk group. (Pusztai et al., 2021) However, research by Zsuzsanna Demcsákné Ódor shows that when the fields of study are also considered, almost the same proportion of female and male students of informatics do drop out, but there is a significant difference between the dropout of male and female students of economics. (Demcsákné Ódor, 2020; Józsa 2020)

Due to the small number of female students of informatics, calculations were only carried out in the study field of engineering and economics. To compare sex differences, the Mann–Whitney test was used, because the conditions for analysis of variance were not met for the number of credits earned. *Table 9* shows the means, medians, and standard deviations of the total number of credits earned in the first two semesters, grouped by field of study and sex.

Table 9 *Indicators of credits earned in the first two semesters by sex and field of study*

	Engineering			Economics		
	Male	Female	Total	Male	Female	Total
N	126	18	144	74	101	175
Mean	44.8	56.4	46.2	45.8	49.6	48.0
Median	49.5	60.0	50.5	50.5	59.0	55.0
Std. Deviation	15.2	9.1	15.1	18.1	18.9	18.6

Both the mean and median scores of female students are higher than those of male students in both fields of study.

Since the conditions for analysis of variance are not met for the number of credits earned. the Mann–Whitney test was used to compare differences by sex. The results of the test are summarised in *Table 10*. The results conclude that the median value of the number of credits earned by female students of engineering in the first year is significantly higher than the median value of the number of credits earned by male students. As for the study field of economics, this can only be claimed at a first-order risk of error of 9.4%.

Table 10 *Summary of the Mann-Whitney Test*

	Engineering	Economics
Total N	144	175
Mann-Whitney U	1730	4290
Wilcoxon W	1901	9441
Test Statistic	1730	4290
Standard Error	164.4	330.4
Standardized Test Statistic	3,626	1,674
Asymptotic Sig.(2-sided test)	<.001	.094

3.4. Development level of the student's place of residence

In the 2022/23 academic year, 18.2% of the full-time students admitted and enrolled in September of the same year to the Faculty of Economics and the Faculty of Mechanical Engineering and Informatics of the University of Miskolc come from districts to be developed, and 12.9% of them from districts to be developed with a complex programme.

Developing districts are districts with the lowest complex indicator where 15% of the country's cumulative population live, and districts to be developed with a complex programme are districts with the lowest complexity index where 10% of the country's cumulative population live. The complex indicator is composed of social and demographic, housing and living conditions, local economy and labour market, infrastructure, and environment indicators. (Jogtár, 2023)

Analysis of the progress of young people in disadvantaged districts was also part of our research on success in higher education. Partly correlation indicators and partly non-parametric hypothesis testing was used to examine the relationship between the student's place of residence and the number of credits earned.

Both Pearson's correlation coefficient and Spearman's rank correlation suggest that there is a very weak relationship or independence between the complex indicators of districts and the number of credits earned in the first two semesters. The Pearson correlation coefficients for the rank order of the fields of study in informatics, engineering and economics are –0.02; 0.14; –0.03, and the Spearman rank correlation coefficients are –0.01; 0.15; –0.03, respectively.

3.5. Linear regression model of the number of credits earned in the first two semesters and the affecting factors

Regression analysis was used to investigate how a function can characterise the relationship between the number of credits earned and the affecting factors.

Table 11 *Characteristics of a linear regression model of the number of credits earned in the first two semesters and its affecting factors by field of study*

	Informatics	Engineering	Economics
R Square	0.305	0.303	0.286
F	10.235	15.108	32.587
p (α critical)	<0.001	<0.001	<0.001

Backward Elimination Procedure was carried out by fields of study. First, the following explanatory variables were included in the model: Secondary school leaving examination grades in Mathematics (hereinafter: SSLE in Mathematics), Language certificates, Study points, Secondary school leaving examination points (hereinafter: SSLE points), and Extra points obtained in the admission procedure, as well as whether or not the student's permanent residence is located in a district to be developed with a complex programme. The characteristics of the regression models obtained by study area are summarized in *Table 11* and the data on regression coefficients in *Table 12*.

Table 12 *Number of credits earned in the first two semesters and coefficients of the linear regression model of the affecting factors by fields of study*

	Explanatory variables	b	t	Sig (p)	VIF
Informatics	(Constant)	–6.814	–0.569	.571	
	Study points	0.138	2.739	.008	1.13
	SSLE points	0.119	1.995	.050	1.03
	Extra points	0.198	3.369	.001	1.16
Engineering	(Constant)	–3.622	–0.518	.605	
	District to be developed with a complex programme	–10.587	–2.717	.007	1.02
	SSLE points in Mathematics	3.177	2.528	.013	1.39
	Study points	0.180	3.910	<.001	1.34
	Sex (male=1; female=2)	8.637	2.595	0.010	1.07
Economics	(Constant)	–30.476	–2.846	.005	
	Study points	0.442	6.399	<.001	1.30
	Extra points	0.093	2.031	.044	1.20

Tables 11 and *12* draw the following conclusions:

In the study field of informatics, Study score determined in the admission procedure, Secondary school leaving examination points and Extra points explain 30.5% of the total number of credits earned in the first year.

In the study field of engineering, Secondary school leaving examination grades in Mathematics, Study points determined in the admission procedure, the sex of the student, and the fact that the student's permanent residence is in a district to be developed with a complex programme explain in total 30.3% of the total number of credits earned in the first year.

In the study field of economics, Language certificates, Study score determined in the admission procedure, and Extra points explain 28.6% of the total number of credits earned in the first year.
The VIF indicator shows that there is no multicollinearity. (Kovács, 2008)

4. Summary

Several studies on dropout during higher education have shown that the first year is crucial for students' success in obtaining a degree. Since earning significantly fewer credits than the 60 credits set in the recommended curriculum for the first two semesters involves a serious risk of dropout, our research sought to find out how previous studies, in particular secondary school attainment, the student's residence and its level of infrastructure development as well as the student's sex influence the amount of credits earned in the first two semesters.

Our analysis was carried out using data from students studying at the Faculty of Economics and the Faculty of Mechanical Engineering and Information Technology at the University of Miskolc. As a result of our research, we can conclude that among the scores determined during the admission procedure, first year performance is positively related to the secondary school Study scores, and the explanatory power of the secondary school leaving examination score is the lowest. Extra points in informatics have a moderately strong positive relationship with the number of credits earned.

Students with an excellent grade in secondary school leaving examination in Mathematics earned significantly more credits than others.

Only in the engineering field of study is it possible to conclude that students with a language certificate are significantly more successful in meeting the requirements of the recommended curriculum.

In the engineering field of study, the median number of credits earned by female students in their first year is significantly higher than that of male students. As for the study field of economics, this can only be claimed at a first-order risk of error of 9.4%.

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