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THE REGIONAL STRUCTURE OF HIGHER EDUCATION AND THE ROLE OF DISTANCE LEARNING

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Abstract. In the time of the COVID-19 pandemic the importance of distance learning is being enhanced, while formal, full-time, face-to-face university education is being converted to distance learning. The study explores the role of the Universities in distance learning market and reveals the factors that influence the students' university choice. The regional embeddedness of higher education in the Western Transdanubian region is analysed, highlighting the catchment areas of the region's universities. The educational commuting of distance learning students to the region increases purchasing power, has a positive impact on the rental market, the labour market and can boost future settlement. Commuting, university selection and training selection behaviours of correspondence and distance training of students is examined using questionnaires. The aim is to establish whether the university selection of correspondence training students is influenced by distance and by the characteristics of the student‘s place of residence. The findings show that distance is one of the main factors during the university-selection process in the case of any kind of distance learning.

Keywords: lifelong learning, distance learning, regional development, tertiary education.

JEL Classification: I21, I23, O18, R23.

1. Introduction

The use of distance learning techniques is becoming more important for higher education during these pandemic times, when face-to-face teaching faces tremendous challenges. The institution of the Internet has caused a paradigm

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change in distance education during the 21 century. „Twenty-first-century distance learning is an electronically driven, synchronous, or asynchronous and web based enterprise" (Eaton, 2010, 386). The distance learning process may be recorded for asynchronous presentation. The all day/any time availability of these courses offers maximum flexibility time wise for learning and is well suited for adult, working learners. „Interaction in the course takes place via written messages or audio/video posts to discussion boards, forums, wikis, and blogs" (Clark, 2020, 410). Distance education is an organizational form of Higher Education (HE) in which instructional provisions, tutorial interactions, monitoring of practice, as well as individual control of learning may take place via media which make the simultaneous personal presence of tutors and students avoidable (Fritsch, 2001, 3781).The wide range of distance learning courses increases the attractiveness of the Universities. Commuting students discover the labour market opportunities in the region and the settlement of a highly skilled workforce contributes to the economic growth of the region.

Previous studies on motivations to continue higher education (Rámháp, 2017) and school choice (Polónyi, 2012) have focused on full-time students. There is a dearth of research that investigated the university choice preferences of correspondence students. In particular, the clustering by location is a rather new feature.

The terms and expressions used in HE do not form a concise, universally accepted system. In the Hungarian higher education system, we can find full-time and part-time training. The part-time training is called correspondence training, which is an asynchronous and web based distance learning using e-learning methods. Electronic communication plays a prominent role in distance learning, while traditional forms of education are avoided. The most common method is "blended learning", which is a mix of e-learning and traditional forms of education ("classroom learning" and "face-to-face learning"). It can also be called „fostered open learning" according to Juszczyk and Kim (2020). Hereinafter, in Hungarian HE we mean distance training by correspondence.

In the past fifty years, the major part of discussions relating to higher education were linked to the appearance of mass education (Hrubos, 2016, Trow, 2000), thus, for example, to the operation and accessibility of the system or to the management of ever-increasing student numbers. Martin Trow agrees with the opinion of research universities that the creation of mass higher education should be promoted and momentum should be given to Internet-based universal accessibility. He also expressed that expanded learning opportunities promoted by information and communications technologies (ICT) highlight opportunities for improving innovations and the quality of educational systems.

Internationally, the definition of e-learning is explicitly related to training based on electronic communication (sharing of web-based training materials, video and audio), without making a difference between school-based (formal) and non-school-based (informal) training.

According to the definition of lifelong learning used by the EU, it includes "all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective" (COM, 2001, 9, UNESCO, 2014).

Lifelong learning is connected with the growing average age of the population (E-ruralnet, 2011, Muñoz et al., 2013, Slowey and Schuetze, 2012, Klug et al., 2014).

The average age in the OECD countries was 28 years in the 1950s, 38 years in 2010 and it might be as high as 45 years by 2100 (OECD, 2019). Regarding lifelong learning, the study of Slowey and Schuetze (2012) designates three categories with respect to students, which are the following: nature of entry/enrolment skills, route of access, and primary motivation for learning.

The question is if the distance between home address and the location of the parent institution has any significance, if the training is delivered in some sort of virtual space. There are usually many electronic communications between the university and the students, who may use e-materials and communicate with their fellow students, e.g. over the phone or via email, chat, Messenger, Facebook or Twitter.

In the opinion of Csepeli (2016), with the rapid growth in the use of technological tools and the move of Generation Z into the online space, the consequent social changes are unforecastable. He calls members of this generation 'digital natives', since they were born into the online space, the online reality, which is the primary space for them. This space can be shared with the "digital immigrants" willing to experience this reality. A significant ratio of correspondence students can be regarded as digital immigrants.

In the first years of the new century, many researchers investigated the issue of the digital divide (Godard et al., 2000, Clark, 2003, Henning and Westhuizen, 2004). Szarvák discussed Internet penetration rate, as the factor defining digital inequality (Szarvák, 2011). In Western societies the Internet is currently accessible by 80-90% of the population, while the digital divide still presents a problem to all generations, except young people.

In addition to student headcount, the rate of participation within the appropriate age group is a characteristic of higher education within a given country. According to 2019 data, 26% of the Hungarian population have a higher education qualification, which falls short of the OECD average (38%). Hungary ranks well with respect to secondary education, with a respective share of 59%, as compared to the average of 41%. The share of the population with higher education qualifications is below 30% in the majority of countries of the CEE Region (Slovakia, Czech Republic), while it is not far from the OECD average in Austria with 33.4% (OECD 2019). "Lifelong education is far from being safe from the waves of globalization of economic and social life" (Dabija et al., 2016, 34)."

2. Influence of Universities on the Western Transdanubian Region

The Western Transdanubian region is a rather developed region in Hungary and Győr-Moson-Sopron is the richest county (if we disregard the capital city of Budapest). (In 2018, GDP was 121.8% of the national average). The city of Győr is a county seat with a population of 130000; it is a regional centre with a significant industrial base and a favourable transport geographical location that is also home of Széchenyi István University.

In Hungary there are 64 higher education institutions, 28 of which are operated by the government (86.63% of the overall number of students), 23 are managed by churches (8.34% of students) and 13 are privately run (5% of students).[1] Most institutions (42) are located in Budapest, the country's biggest educational market,

[1] Data in 2018. In 2021 the legal form of more state universities was changed, they are operated as foundation forms

while outside Budapest, institutions are organized in local hubs and county seats, where there was previously no higher education (Tatabánya) or where one-sided higher educational specialization has evolved (Székesfehérvár), but there are also examples of institutions established in educational blind spots and the centres of underemphasized regions (Keszthely). The institutions employ up-to-date tools to develop their offers, as evidenced by the use of new training method elements (distance learning, e-learning), the renewal of the line and quality of services (Zalaegerszeg, Szombathely) and the use of an ever-increasing number of tools of higher education marketing (Kuráth, 2007, citing Rechnitzer , 2009).

Interregional activity was accelerated by the development of dual-level training (Bologna reform). As a result, new regional higher education centres have evolved. Győr became such a centre in Western Transdanubia, while a campus in Mosonmagyaróvár is also managed by Széchenyi University (with 337 full-time and 228 correspondence students) in addition to the Győr seat. 53% of the overall number of students attend faculties located in Budapest (149 466 students). The other institutions that hold a significant share of interregional activity are Debrecen, Pécs, Szeged, Veszprém and Miskolc (Rechnitzer, 2009). The regional structure of Hungarian higher education is depicted in Table 1.

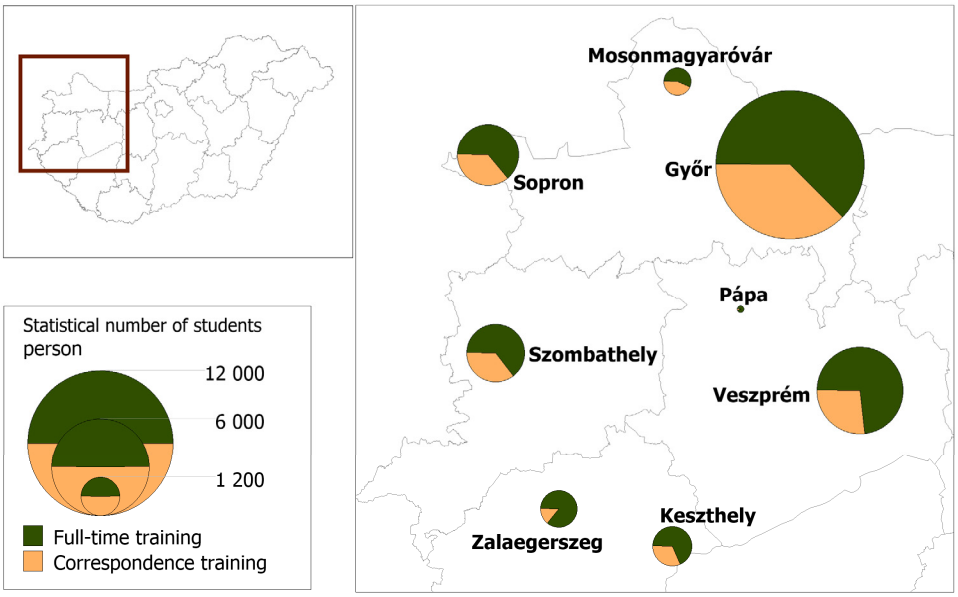
Table 1. *Regional structure of higher education (2018)*

NUTS2	Overall number of students		Full-time students		Number of academic teachers		Overall number of students per 1000 inhabitants		GDP per capita as a percentage of the national average	
	2007	2018	2007	2018	2007	2018	2007	2018	2007	2018
Western Transdanubia	28428	22943	16610	16419	1235	1171	28,5	23,3	100,69	101,75
Central Transdanubia	27268	24854	16983	16545	1284	795	24,6	23,5	92,32	93,23
Southern Transdanubia	37486	21338	21827	15011	2476	2260	38,7	24,1	67,18	69,14
Central Hungary	172435	85678	113709	57986	10701	12110	60	28,4	165,04	150,68
Northern Hungary	39171	27199	15414	18089	1490	1265	31,3	24,0	62,73	69,02
Northern Great Plain	50060	37881	31385	25520	2373	2372	32,8	25,9	62,06	64,32
Southern Great Plain	42856	31405	26965	21958	2817	2546	31,9	25,2	66,99	73,01
Hungary	397704	281461	242393	200130	22376	22519	39,5	28,8		

Source: compiled by the author based on CSO data

In the academic year of 2018, 28.6% of the higher education students, i.e. 81.5 thousand students studied their education in the form of non-full-time training. Therefore, the share of students involved in correspondence training continued to increase (90%). The Western Transdanubian Region involves three counties: Győr-Moson-Sopron, Vas, and Zala Counties. Within the region, training opportunities are offered by 6 higher education institutions, according to the distribution of students presented in the following figure (Fig. 1).

Figure 1. Student numbers in the Western Transdanubian Region and Veszprém county in 2018



Source: compiled by the author and prof. Tamás Hardi based on Educational Authority data

In addition to Széchenyi István University (with 11 557 students) the Theological College of Győr also operates in the city, but represents a much less significant weight (with 89 students). The 200-year-old agricultural university of Mosonmagyaróvár merged into Széchenyi University with its respective 602 students. Sopron University is likewise the only institution operating in the town of Sopron with 2 457 students enrolled at its economic and engineering faculties. Although the Veszprém-based Pannon University (4 457 students) does not belong to the West-Transdanubian Region, it clearly impacts the region on account of its catchment area to the west, its training courses organized within the region and its proximity to Győr (70 km).

Szombathely and Zalaegerszeg are more recent western hubs, where no universities are based, only local campuses operate. Local courses are run in Szombathely by Eötvös Loránd University (1 863 students, university seated in Budapest), the Theological College of Győr (42 students; university seated in Győr) and the University of Pécs (288 students; university seated in Pécs), while in Zalaegerszeg by Budapest Business School (433 students; university seated in Budapest), Pannon University (115 students) and the University of Pécs (384 students). An agricultural course has also been launched by the Georgikon Faculty of Pannon University in Keszthely with 1098 students.

Among the counties with higher education institutions, the proportion of students per one hundred thousand people is higher in those counties where large universities have a long history. Győr-Moson-Sopron county is an exception, where this ratio is 30.1%, despite the fact that the Széchenyi István University in Győr only has a 15-year-old history.

3. Overview and analysis of the students of correspondence training

Due to ICT (Information Computer Technology) development distance learning centres have been established at universities all over the world in recent decades. The Distance Education Centre has been also operated at Széchenyi István University in Győr since 2004, therefore, the better utilization of infrastructure and human resources, the tasks of student training, such as separate student affairs management (training organization) for courses, course organization, timetable compilation, training material preparation and course book ordering, are carried out more efficiently.

In the case of distance learning, communication is fundamentally conducted through an electronic framework with the support of an up-to-date Learning Management System (LMS). This is especially important from the aspect that the catchment area of the university can be widened to include the entire country.

Subsequently, we can redefine the correspondence training offered in Győr within the formal framework, as a learning activity that forms part of higher education and that aims to develop the knowledge-based society via the fundamental tool of electronic communication.

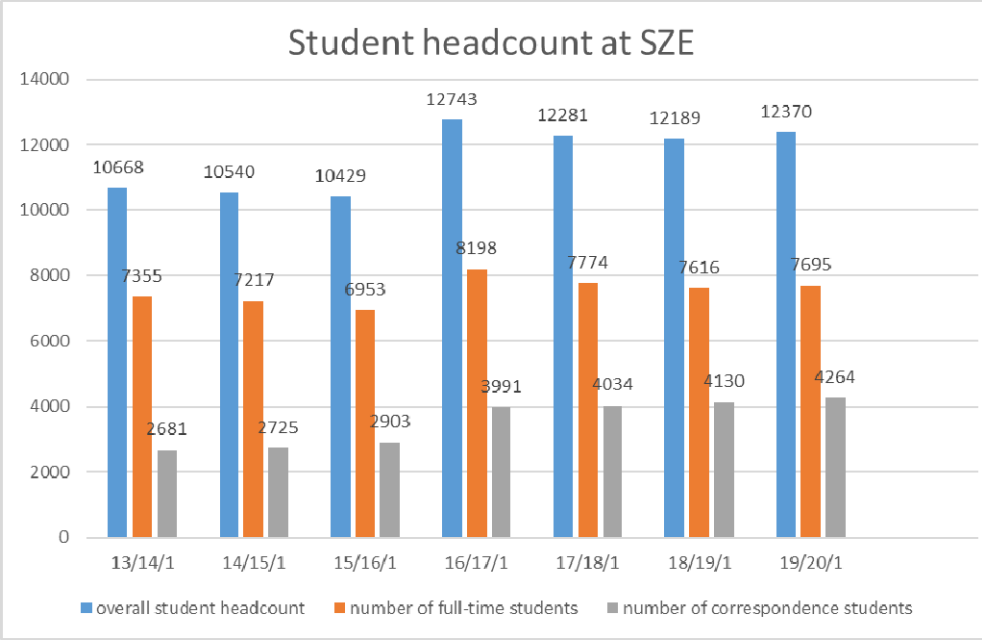
Széchenyi István University is offering a sub centre in Budapest, where students are able to comply with their exam obligations. Student drain by universities of the capital city from other parts of the country is a well-known phenomenon, therefore, it is of strategic importance that students living farther away do not have to travel to Győr in the e-learning framework. It is sufficient for the student to indicate that they intend to take their exams in Budapest and they have the chance to complete the exam tasks of the given course, via the electronic examination system, in the chosen location.

The Széchenyi István University Distance Learning Centre delivers services to a significant number of students, launching 14 000 courses annually (1 course refers to 1 course subject registration instance) and running close to 150 course e-materials. The Centre organizes 11 exam days during the exam period, which involves 11 000 exams being taken by students of the different courses, also via the e-learning framework system. The exams taken in Budapest account for 20% of the number of overall exams.

4. Local headcount analyses of students

Student headcounts have evolved in a very favourable manner at Széchenyi István University during the past 7 years (Fig. 2). Overall student headcount was above 12 000 during the last four years and the number of correspondence students exceeds 50% of the full-time student headcount, which puts the university in a special position, even on a regional scale.

Figure 2. Student headcount at Széchenyi István University, 2013-2019



Source: compiled by the author

At country level the 23 to 29 age group is the most numerous in non-full-time higher education, accounting for 36% of the overall number of students (29.6 thousand individuals). Student headcounts decrease, as the age group is increased with 17% (13.6 thousand students) belonging to the 30 to 34, 13% (10.6 thousand students) to the 35 to 39, 12.5% (10.2 thousand students) to the 40 to 44 and 13.5% (11 thousand students) to the 45+ age group.

In the following section we will analyse the students of Széchenyi István University attending courses according to correspondence learning. The necessary data for the analysis have been gathered from the NEPTUN System. Data access was granted by the university course organization department. Data from the 2020/21 academic year were used in the analyses with new enrolled correspondence students, N=1 239.

Typical age and gender distributions of these students can be seen in Tab. 2.

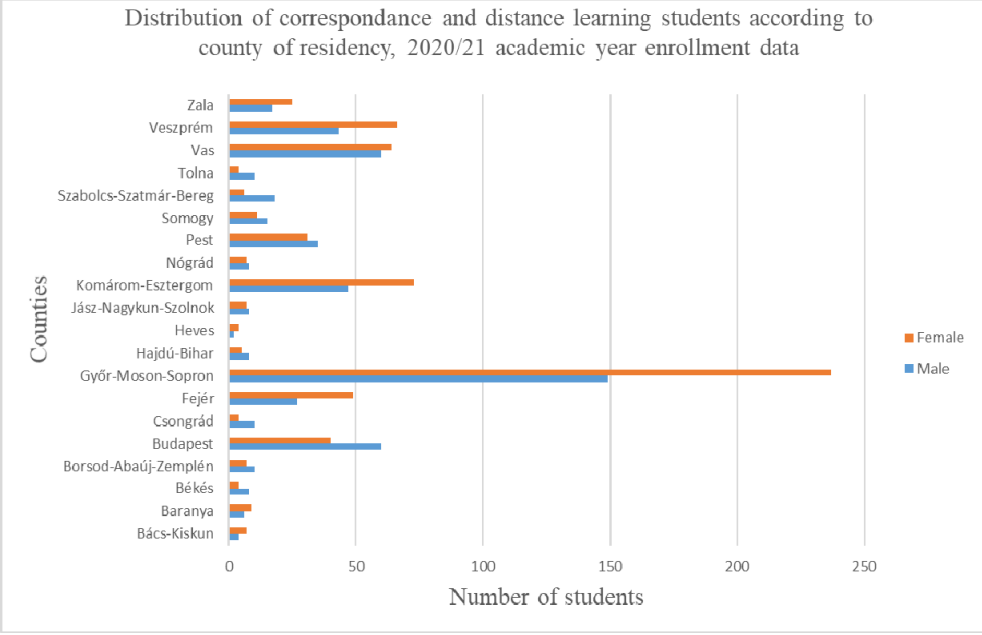
The sample includes 676 female respondents (54%), of an average age of 30.16 years, with the oldest female student being 61 years old. Male students accounted for 46% and had an average age of 29.5 years, with the oldest student being 59 years old. Correspondence students are predominantly already working therefore, their motivations are different from regular students, with the goal being the acquisition of new skills or the retention of the inspiratory impact of the family background or of the place of work.

Table 2. *Age and gender distribution of correspondence students that have enrolled at Széchenyi István University for the 2020/21 academic year, N=1 239*

Age groups	Frequencies		
	male	female	Total %
18-20	28	43	5.75%
21-25	193	230	34.25%
26-30	158	146	24.62%
31-35	62	73	10.93%
36-40	54	73	10.28%
41-45	34	76	8.91%
46-50	19	26	3.64%
51-60	11	9	1.62%
Overall	**559**	**676**	**100.00%**

When examining the residency of students, we can conclude that a predominant majority of students live in Győr-Moson-Sopron county, but the share of students from Komárom-Esztergom and Veszprém counties and from Budapest is also significant (Fig. 3). Therefore, the geographical location of the university is a decisive factor.

Figure 3. Number of correspondence students that enrolled at Széchenyi István University for the 2020/21 academic year, by place of residence (NUTS 3), N=1 239



Source: compiled by the author

5. Methodology

Participants

The participants of the study were undergraduate correspondence students at Széchenyi István University during spring semester in 2019-2020 academic year. When selecting the target group, we included all students that had an active status in the given semester, i.e. who have validly enrolled for the semester and have validly registered for course subjects. The online questionnaire consisted of 42 questions: socio-demographic data, career choice, application, impressions regarding the university, learning methods and motivations, and the learning process and the Covid19 pandemic.

Data in the study were collected using online forms sent out in the NEPTUN student's administration module. A total of 512 responses were received. This study analyses the relationship between the university selection preferences and geographical place of their residence.

In the following section we intend to determine whether university selection by correspondence students is influenced by geographical distance and the characteristics of the students' place of residence.

Data analysis

Researchers use different statistical methods to develop and confirm their research findings. Descriptive statistics (e.g., frequency, percentage, correlation) were conducted for the data analysis. A cross tabulation analysis of the answers (e.g., Pearson Chi-Square, p-value, Cramer's V value, Gamma value) showed that hypotheses gained empirical support.

6. Results and Discussion

Universities with a tradition of distance learning, a usable LMS platform, and experience in electronic examinations perform better during the pandemic. Distance learning students take their exams in the usual way, manage their own schedules and work-study-family balance better. Their e-learning skills and satisfactions are more positive than full-time students.

Hardi explained the commuters' behaviours: "Compared to the other regions of Hungary, the number and proportion of commuters is high in North Transdanubia: 45% of employees in this region commute, which is the highest among all regions of Hungary. This fact is due not only to the high level of economic development but also to the special characteristics of the settlement network" (Hardi – Szörényiné, 2014, 41). The results show that the distance learning area and the commuting area overlap.

Primary data collection has confirmed that our correspondence students came primarily from Győr-Moson-Sopron county and the neighbouring counties. Our questionnaire research has also shown this relation; therefore we formulate the following hypothesis:

H1: Correspondence students come primarily from the nearby villages and small towns.

Relationship between settlement structure and commuting is significant, the Pearson Chi-Square value is 152.717, and the p-value <0.001. The Cramer's V value is 0.381 which is a medium strong relation between the two features.

Table 3. *Relationship between settlement structure and commuting*

		How do you ensure that you are in Győr on contact hour weekends/exam days?			Total
		Others*	In Győr**	I commute	
settlement structure	village	13	7	100	120
	town of small/medium size	27	14	107	148
	county seat/city	21	96	55	172
	capital	23	11	53	87
Total		84	128	315	527

Notes * I stay at friends/relatives or in guest house, hotel, Airbnb, couch surfing
** live in a student home; rent an apartment; have a permanent place of residence in Győr.

Distance does not cease to be a factor, even with the use of e-learning. Proximity and availability of accessible affairs management and exams is important. The average commuting time is only half an hour for 7.6 percent of respondents, 23.1% commute for between half an hour and an hour, 41.5% commute for between 1 and 2 hours and 27.8% commute for more than 2 hours. This does not qualify as excessive, since they do not have to make this journey on a daily basis.

Table 4. *Relationship between settlement structure and time spent with commuting*

		Time spent with commuting on one way				Total
		half an hour	between 0.5 and 1 hour	between 1 and 2 hours	more than 2 hours	
settlement structure	village	20	28	34	18	100
	town of small/medium size	4	33	43	28	108
	county seat/city	0	9	26	20	55
	capital	0	3	28	22	53
Total		24	73	131	88	316

Pearson Chi-Square value is 54.437, and the p-value <0.001. The Gamma value is -0.191 that means the medium strong, negative sign relations between two features (students do not commute from the capital, and from remote large cities).

The next question directly inquired whether physical distance played an important factor when students chose this form of training. Distance is important to 70.7% of students, 29.7% drive their own car when commuting and another 4.3% commute by car together with others. Public transport is used by 22.4% of the respondents – the county seat of Győr can be easily accessed either on motorway or by rail, while the inferior road network in Western Transdanubia is one of the best-maintained in the county. 29.3% have indicated that distance wasn't really a factor for them, whilst 14.3% only travel to Győr for exams, therefore they were not very concerned about the physical distance between their home and the university. With respect to analysing the university selection preferences of students, to the question "Please indicate which factors had the most influence on your selection" 43.8% of the responses confirmed that respondents have chosen the University of Győr, because "*the university is close to where I live*".

Table 5. *TOP 5 factors of university selection*

TOP 5 factors of university selection	**N**	**Percentage**
the university is close to where I live	233	18.2%
good labour market opportunities	211	16.5%
can be easily accessed using public transportation	111	8.7%
enough and high-quality curriculums	111	8.7%
I have studied here before	106	8.3%

With respect to whether they would again choose the university, if they could rethink their application, students gave the university an average score of 7.79 on a Likert scale of 10, which we can consider as an exceptionally high value. A significant part (47.4%) of students already had some earlier higher education qualification, with the typical level of bachelor degree (40.9%) or higher-level specialist training (19.4%). Another interesting feature is that correspondence students have predominantly obtained their first degrees through full-time training (75.8%), switching to the correspondence time schedule later on. One obvious explanation is that a significant proportion of correspondence students already have jobs during the educational training, so they could not take another full-time course.

The responses given to the question "why they chose distant learning/ correspondence training" also confirmed that "this is the only way they can study while working" (89.2%). With respect to specialization, 61.1% of respondents indicated that they have chosen a scientific discipline that is different to the previous one(s).

7. Conclusion

Higher education in Hungary has retained its characteristics since the appearance of mass higher education (1990). Budapest continues to play a dominant role, concerning both the number of students (53% of the overall student headcount) and the number of educational institutions. Notwithstanding the Budapest dominance, the position of other higher educational centres in other parts of the country is also strengthening, bringing educational opportunities closer to potential students. Certain

local university centres can be isolated and highlighted, as statistical regions (NUTS2) however, the catchment area of correspondence training expands over the border of regions and counties. The results of the questionnaire research have confirmed our hypothesis, namely that “The university selection of correspondence training students is influenced by distance and the characteristics of the student’s place of residence.” We were able to confirm this statement, on one hand, through statistical data collection from the residency data originating from the student database, and on the other hand, the questionnaire confirmed that the accessible distance of the educational centre is important to students. 43.8% of the responses confirmed that respondents chose the University of Győr, because “the university is close to where I live”. Most of the students come from villages and small-towns. Rámháp explains that when choosing an institution, students prefer to choose a region that is suitable for settlement and employment (Rámháp, 2017). However, he does not distinguish between full-time and part-time students, the latter being under-represented in the surveys. We agree with this, but this research has also shown that for distance learning students the role of distance is important in their choice of institution. Széchenyi University is a young university with dynamic growth, capable of increasing the number of distance learning students. Nowadays, the trend is to put distance learning techniques into practice, which is why this topic should be pursued. This study explores the relationship between the university selection preferences and geographical place of their residence. The study does not compare the preferences of distance learners and full-time students during the pandemic.

As we have discussed, the role of regional centres also extends to higher education. In the case of Győr, the following factors jointly contribute to the expansion of the catchment area of the university: favourable transport-geographical position, good accessibility, wide training spectrum at the university, favourable labour market conditions, low unemployment level and the second highest average income after Budapest.

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