

# The impact of University of Žilina's employees on regional development

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**Abstract** The university is an important part of the region's infrastructure and has the potential to initiate changes and transform the economy into a diverse range. The presence of a university in a host city or region has a strong impact on regional development. Universities are usually among the largest employers in the city. Their employees, students and visitors spend some of their finances in this city, which have an impact on local and regional economic development. The total size of the impact of university varies depending on the size of the university and the characteristics of the local and regional economy. The primary aim of the contribution is identification of the selected short-term impacts of the University of Žilina to the city and region, where it has its registered office. To achieve the stated goal, primary research was carried out primarily focused on the economic impact of university staff on the development of the Žilina's region.

**Keywords** university, regional development, backward impact, residence employees, non-residence employees

**JEL** I25, O12, O15, O18, R11

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## 1. Introduction

Current modern universities are an active actor in the development of the region and their impact is much wider and more diverse. The impact of universities is classified in eight areas: knowledge creation, human capital formation, know-how transfer, technological innovation, capital investment, regional leadership, knowledge infrastructure creation and influencing local and regional environment. [1]

The importance of universities in the development of human resources and the region's irreplaceable, especially in terms of the benefits of innovation and technology. For this reason, it is important that local and regional authorities, which play a coordinating role in the development of the region, actively cooperate with universities. [2]

In addition to the education of university students, they also provide education directly in companies or non-profit institutions. Universities collaborate on applied, joint and customized research with companies. Universities also support the establishment of spin off companies and provide their hardware to businesses.

Top university staff often work in consultative bodies and committees established at local, regional or national level. Through their knowledge and moral authority, they contribute to the establishment of consensus, overcoming conflicting situations, identifying new development opportunities. Universities also increase the attractiveness of the local and

regional environment for potential migrants as well as businesses. [1]

University for their role in the host region improve the quality of life, developing greater value territory, but their main task is to shift the economy to become the primary source of wealth and prosperity. [3]

All the above-mentioned aspects of the university's impact on the development of the region deals currently solved project APVV-14-0512 "Universities and economic development of regions".

## 2. Theoretical background

The impact of universities on the host city or region can be divided into two groups: long-term and short-term impacts. [4] The University's long-term impact tracking focuses on analysing the impact of universities on increasing human capital, generating new knowledge and the overall attractiveness of the city or region. Knowledge, human capital, and infrastructure are accumulated over a long period of time, so the abolition of university would be manifested with greater time distance. [1] These effects can also be referred to as "forward" relationships. [5]

In the context of monitoring the university's short-term impact, an analysis of the impact of expenditures associated with the university's presence is made. The analysis includes expenditure on staff, university students, and university

expenditure on goods and services. [4] These short-term effects would eventually disappear if the existence of the university had been abolished. University offers additional funding to the city or region that affects the revenue of local businesses, household income and tax revenue. [1] Short-term effects may also be referred to as "backward" relationships. [5]

### 2.1. Residence and non-residence consumers

Employees and students of the university are within our primary research distributed to consumers who live and work in the studied region (ie. residents) and those who do not live and do not work in the studied region (ie. non-residents). Assuming that the university did not exist it can be divided into consumer spending following 4 groups:

- non-resident consumers who would work and study at another university in another region → expenditure would not be realized in the surveyed region if the university did not exist;
- resident consumers who would work and study at another university in another region → expenditure would not be realized in the surveyed region if the university did not exist;
- resident consumers who would work and study at another institution in the region surveyed → expenditures would be realized in the surveyed region if the university did not exist;
- non-resident consumers who would work and study at another institution in the surveyed region → expenditures would be realized in the surveyed region if the university did not exist. [6]

## 3. Aim and methodology

The primary aim of the contribution is to analyse selected short-term impacts of University of Žilina (UNIZA) on the development of the host city and the region in 2015.

To achieve the stated objective was conducted primary research aimed to determine the effect of university employees to develop the city of Žilina and Žilina region. The subject of the survey was UNIZA employees in 2015.

The research problem was defined as "Finding the Economic Impact of UNIZA Employees on the Region of Žilina".

The aim of primary research is to find out if UNIZA employees would remain in the city of Žilina, even if UNIZA did not exist. Another aim is to determine how much an average% of total income spent UNIZA resident employees for the purchase of goods and services in Žilina in 2015. In calculating the average expenditure % were considered UNIZA employees who worked on UNIZA continuously throughout the year 2015.

Following research objectives, the following research assumptions were set:

1. research assumptions: At least 30% of non-resident UNIZA employees would work in another city if UNIZA did not exist.

2. research assumptions: UNIZA Resident Employees throughout the year spent an average of at least 40% of total income in the city of Žilina as non-resident employees.

### 3.1. Selection sample size

Quantitative research was carried out to find the necessary data. Information was obtained through oral questioning using a structured questionnaire. The target group of research was UNIZA's pedagogical and non-pedagogical employees in 2015. Based on the formula to calculate the size of the research sample in the base set (1), we obtained the minimum sample size,  $n$ . 308 respondents (employees) for the whole UNIZA.

$$n \geq \frac{N * t_{1-\frac{\alpha}{2}}^2 * \sigma^2}{(N-1) * \Delta^2 + t_{1-\frac{\alpha}{2}}^2 * \sigma^2} ; \sigma = \sqrt{p*(1-p)} \quad (1)$$

$n$  – minimum sample size (minimum number of respondent)

$t_{1-\alpha/2}$  – critical value determined from tables

$\sigma^2$  – variance calculated from the standard deviation

$p$  – variability of base file (character share)

$\Delta$  – maximum allowable margin of error

$N$  – base file size

UNIZA employed 1,545 employees in 2015. The structure of the employees was as follows:

- university teachers - 647 (professors - 100; docents - 166; professional assistants - 344; assistants - 8 and lecturers - 29);
- researchers - 181;
- professional employees - 167;
- administrative employees - 208;
- operating employees - 342.

When performing the survey, the required confidence interval of 95% was selected, which according to the table value corresponds to 1.96. The maximum permissible error range was  $\pm 5\%$ . Since the value of the share of the character was not known, the standard value of the character part, was used in the calculation. i.e. 0.5. The survey was attended by 263 UNIZA employees (respondents), representing 86% of the return on demand. Due to the difficulty of the search, this return was post-accountable for our purposes. Microsoft Excel charts and spreadsheets were used to evaluate the results. We've analysed and graded the data we obtained in accordance with the required criteria using the Excel filters tool to validate or reject predefined research assumptions.

## 4. Results

The structure of respondents (total number of respondents 263) was as follows: 96% (253) of 263 respondents were employees living in Žilina region. Of these, 72% (180) live in the city Žilina and 28% (73) commute to UNIZA from other cities in the Žilina region. 4% (10) of the respondents were employees who commute to UNIZA from other regions of Slovakia.

41% (108) of 263 respondents were university teachers, 19% (49) respondents were operating employees, 19% (49) respondents were administrative employees, 12% (33) respondents were researchers and 9% (24) respondents were professional employees.

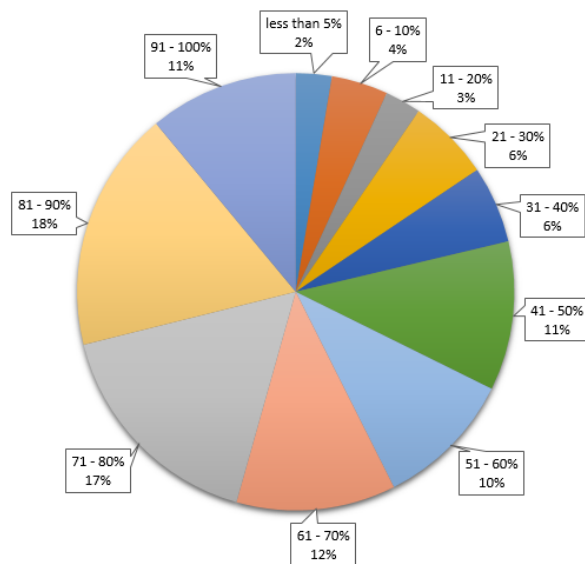
Of the total number of respondents (263) were 69% (136) of such respondents who studied at UNIZA. 24% (48) of 263 respondents studied at another university in Slovakia and 1% (3) respondents studied at another university in Žilina. University education do not have 27% (71) of 263 respondents.

Concerning the duration of employment of employees at UNIZA in 2015, we found out that 91% (241) of the total number of respondents 263 worked at UNIZA throughout the year 2015. 9% (22) of respondents worked at UNIZA only a few selected months in 2015.

One of the research objectives was to find out what respondents would most likely do if UNIZA did not exist. The results of the findings are as follows:

- 59% (154) of interviewed respondents would work in Žilina at other institutions / in another sector;
- 29% (76) of respondents would work in another city at other institution / in another sector;
- 7% (19) of respondents would work at another university in another city / region;
- 5% (14) of interviewed respondents would work at another university with a detached workplace in Žilina.

Another aim of the research was to determine the percentage of respondents' expenditure (employees working at UNIZA the whole year 2015) of their total income in 2015. This included expenditure on the purchase of goods and services in Žilina. Figure 1 shows the structure of employees according to their expenditures as a percentage spent in the city of Žilina.



**Figure 1.** The structure of UNIZA's employees according to their expenditures as a percentage spent in the city of Žilina in 2015.

The largest share of their income (81-90%) spent in 2015 in Žilina 18% of respondents. Of these, 77% were resident employees and 23% were non-resident employees. The

smallest share of their income (less than 5%) spent in 2015 in Žilina 2% of respondents. Of these, 83% were non-resident employees and 17% were resident employees.

Based on the research objectives, the research assumptions (see Chapter 3. Aim and methodology) have been established. We confirmed or rejected these by analyzing the collected data.

**The first research assumption** (finding the percentage of non-resident UNIZA's employees who would work in another city if UNIZA did not exist) was confirmed: 55,42% > 30%. We assume that such a group of people accounts for at least 30% of UNIZA's employees.

83 respondents from all respondents do not live in Žilina. Of these, 46 respondents would work at another university, at other institution or in other sector in another city / region if UNIZA did not exist. 37 respondents said they would work at another university, at other institution or in other sector in Žilina, even if UNIZA did not exist. The findings show that 55,42% of non-resident UNIZA's employees would work in another city if UNIZA did not exist.

**The second research assumption** (finding of the annual average percentage share of UNIZA's employees expenditure in the total income in Žilina) was rejected: 35% < 40%. We assume that UNIZA's employees living in Žilina spend in a year at least 40% more of total income than the employees who come from another city. In this case, we took into account the employees who worked at UNIZA in the whole year 2015.

Resident UNIZA's employees spent in Žilina on average 69% of their total income in 2015. Non-resident UNIZA's employees carried in Žilina city out on average 45% of their total income in 2015. It follows from the above that resident UNIZA's employees spent in Žilina in 2015 on average 35% more of their expenditures than non-resident respondents.

## 5. Conclusions

UNIZA is an important institution in its host city and region. It acts here as a stable employer, educator and resource for the local economy.

Through primary research, we found, in particular, the positive short-term impacts of the university on the host city and the region. By interpreting the information obtained, two research assumptions were confirmed and one research assumption was rejected.

More than half of UNI-ZA non-resident employees would work in another city if UNIZA did not exist. Thanks to the existence of UNIZA, this category of employees is regularly visited by the city of Žilina and thus contributes to the development of the local economy.

Resident respondents UNIZA spent an average of 35% of their expenses in Žilina as respondents living outside the city of Žilina. It follows that non-resident employees spend less than a third of their income in Žilina than resident UNIZA employees. Both groups of respondents have quite the same and also significant impact on the development of the local and regional economy.

More than half of UNIZA's university teachers living in the Žilina region have completed their university studies at UNIZA. UNIZA provides a stable source for the local economy because of that almost 68% resident university teachers are realized expenditure since their student days.

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