

City–University–Student Relationship in Strategic City Decision-Making

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Abstract: This paper explore university students' perceptions of the quality of life, study conditions, and employment opportunities in Trnava, one of the most important university cities in Slovakia. University cities play a significant role in regional development, talent retention, and knowledge-based urban governance. Trnava, located in western Slovakia, represents a suitable model of a medium-sized university city, as it hosts two universities – Trnava University and the University of Ss. Cyril and Methodius – as well as one faculty of the Slovak University of Technology. Its compact urban structure, accessibility of services, and proximity to the capital city create a dynamic environment influencing students' decisions about whether to remain in the city after graduation. The study is based on quantitative research conducted through a questionnaire survey among university students studying in Trnava. The questionnaire focused on students' perceptions of the city as a place for studying and living. The collected data were analysed using descriptive statistics and visualized through graphs and contingency tables. The Chi-square test of independence was applied to examine relationships between selected categorical variables. The findings provide evidence-based insights for municipal strategic planning and knowledge-based city management.

Keywords: University city, Students, Regional development, City management, City marketing

1. Introduction

Today's cities are increasingly confronted with the consequences of globalization, urbanization, and, to a much greater extent, the transformation of the economy toward knowledge-based development models. In this context, attention is focused on one of the key factors in the competitiveness of cities and regions: human capital. In this context, colleges and universities are irreplaceable centres for the dissemination of knowledge, insights, innovations, and a skilled workforce. Their presence—and, in some cases, their number—significantly influences a region's economic dynamics as well as its social and cultural environment. Cities and universities become, in a sense, virtual laboratories where it is possible to examine the relationships and consequences between a given institution, the city, and the people within it—especially students. Cities with this potential create a unique space for the convergence of the university and urban environments. The result is a significant mutual influence on the quality of urban life and its strategic development. Students play an important role in cities; they are not only residents but also potential future residents and a contribution to the local labour market. Whether they decide to stay in the city or leave after graduation will influence the city's demographic structure, economy, and progress. It is essential to understand the factors influencing this decision so that the city can adequately and effectively plan its future and formulate public policies. The originality of the paper lies in examining the relationship between the city, the university and students in the conditions of a medium-sized Slovak university cit. Although the issue of university cities and graduate retention is a subject of growing interest in foreign literature in the conditions of the Slovak republic there is only limited amount of empirical research focused on students' decisions about remaining in the city after graduation. The paper brings original knowledge about the factors influencing students' decision-making in the city of Trnava and at the same time connects the perspective of urban management with the issue of human capital management and strategic development of university city. The research problem of the paper stems from the need to better understand the factors that influence university students' decision to stay in the city after graduation. Despite the growing importance of universities for the development of cities and regions, the issue of retaining young and qualified human capital remains one of the main challenges of urban management. It is not sufficiently investigated to what extent students' decisions are influenced by their ties to the city and their subjective assessment of the quality of the urban environment. The aim of the paper is to analyse the perception of the city of Trnava by university students and to identify factors influencing their intention to remain in the city after graduation. Special attention is paid to the relationship between the place of residence of students, their satisfaction with the city and their future residential plans.

2. Theoretical Background

The relationship between a modern university and the city is one of the significant pillars of knowledge-based regional development. Universities can strategically engage in unlocking the development potential of the cities in which they operate, thereby serving as a driving force and engine of both regional and national development.

This involves a complex system of multi-layered and interconnected relationships among various actors (Mohammed et al., 2022). Knowledge resources in regional economies, as well as the management and planning of relationships between the academic sphere and local partners and actors, play an increasingly important role; nevertheless, this issue remains under-researched. This suggests a need for a deeper understanding of the interrelationships between universities, cities, and other stakeholders, particularly in the context of strategic decisions (Russo and van den Berg, 2007). University cities are unique urban spaces where social, economic, and environmental relationships between universities and urban structures converge. These relationships are not only about physical connections—such as the location of university buildings within the city—but also about intangible relationships, such as social interactions, economic flows, and environmental impacts. A university city is thus a complex system of relationships between university and public institutions (De Lotto et al., 2022). Students themselves are also a significant component of this system. They constitute the future skilled workforce and are simultaneously active participants in urban life. Students contribute to the city's economy through their consumption, enrich cultural diversity, and have a significant impact on the region's social cohesion. However, students are often perceived as an invisible group with little or no direct influence on public policy-making, which obviously needs to be addressed (Russo et al., 2003). As the number of students increases, so does their impact on the city, primarily in the areas of housing and the labour market. Students are primarily concentrated in specific parts of the city, and this can significantly alter the character of certain urban neighbourhoods. Their specific position in the labour market, where they typically work in flexible and temporary roles, can influence job opportunities for other segments of the population (Turok and Munro, 2009). Student satisfaction with the university itself and the city in which it is located is another important factor. It influences their behaviour and decision-making. Research findings show that student satisfaction extends not only to the academic environment but also, to a large extent, to the quality of the urban environment. This includes the availability of services, safety, transportation, and opportunities for relaxation and leisure. The city and the university form a cohesive system in which improvements in one positively influence perceptions of the other (Yazgan, 2022). Current urbanization processes and globalization itself have a major impact on the role of universities in cities. Universities are increasingly viewed as active agents of economic development and civic life. Their position within the urban ecosystem must therefore be reevaluated. Developments highlight and reveal problematic areas of this relationship, such as the oversimplification of this synergy and the failure to account for the complexity of their interactions (Addie, 2017). Governments fund universities but cede control to them due to differing operational timescales, allowing academics autonomy over curricula and standards (Calford, 2019). Universities and governments play pivotal roles in fostering entrepreneurial pursuits among educated youths through synergistic collaboration, as evidenced by a comprehensive analysis of current practices and policies (Sarkar, Jena, 2025). Collaboration between universities and local governments enhances problem-solving and service capacity while expanding learning opportunities for public affairs students (Wodicka et al, 2012). It is predicted that increasing city satisfaction will increase university satisfaction in the context of the results achieved in this research. The fact that the city administrations pay more attention to the university administrations and university students in their decision to organize the city may contribute to the satisfaction of the students both with the city and with the university (Yazgan, 2022). Local authorities need to invest further in enhancing central cities' attractiveness and should implement policies to meet the residential preferences of young adults in the long run, as they accumulate financial resources and move through the life course. Only in safeguarding the value of location-specific capital in all stages of life will a higher proportion of people who studied in the city contribute to local tax revenue and to the long-term sustainability and liveability of cities (Imeraj et al, 2018). The relationship between the city, the university, and students is dynamic, constantly changing, and multidimensional. It is essential to examine and understand this relationship, primarily for the effective management of cities. Cities are striving to attract and retain new human capital as a key factor in their competitiveness and sustainable development.

3. Methodology

The practical section of this article is based on quantitative research conducted in the form of a questionnaire survey. The respondents were full-time university students attending institutions located in the city of Trnava. The aim of the questionnaire survey was to determine students' perceptions regarding the quality of life in Trnava, conditions for studying, and various factors influencing the decision to remain in the city even after completing their studies. Specific questions were selected for the purposes of this article.

The questionnaire survey took place from January 10, 2026, to February 13, 2026. Students were contacted via online communication channels, internet forums, student groups, and email. The selection of respondents was

a purposive (non-probability) sample. A prerequisite for participation in the survey was current enrollment in a full-time program at a university located in the city of Trnava.

Sample Size

The required sample size was determined based on the standard formula for estimating the proportion in the population:

$$n = \frac{0.9604 + 0.0025}{0.0025} = \frac{0.9629}{0.0025} = 385.16$$

n – desired sample size

z – critical value of the standard normal distribution (for a 95% confidence interval: z = 1.96)

p – estimated proportion of the observed characteristic (p = 0.5 was chosen as a conservative estimate of maximum variability)

e – permissible estimation error (e = 0.05)

Based on statistical sample calculations, the sample size was set at 386 respondents (n = 386). The questionnaire survey yielded 316 valid responses. This number is lower than that required by the formula; we consider this a limitation of the study. However, given the sample size, the results can be considered representative for the purposes of exploratory analysis.

Research variables and questionnaire

The questionnaire focused on several thematic areas; for the purposes of this paper, the following were selected:

- the respondents' place of origin,
- satisfaction with the city of Trnava as a place to study and live,
- intention to remain in the city after completing studies,
- evaluation of selected aspects of quality of life (e.g., services, safety, mobility).

The variables were predominantly categorical in nature, which allowed for their subsequent processing using contingency tables and testing of statistical dependencies.

Research Hypotheses Based on previous analyses and theoretical background, the following hypotheses were formulated:

Hypothesis 1 - Students living in the city of Trnava (i.e., the city where they study) are more likely to remain in this city after completing their studies.

Hypothesis was set based on Haapanen and Tervo (2012), their study showed that the place of study significantly influences the subsequent location of graduates in the labour market and that many remain in the region where they studied.

Hypothesis 2 - Students who plan to stay in Trnava report a higher level of overall satisfaction with the city.

Hypothesis was set based on Jazgan (2022), his study demonstrated that students' satisfaction with the city is linked to their overall evaluation of the study experience and their attitude towards the city.

The data obtained through the research were analysed using descriptive statistics, and the results are presented in the form of graphical outputs. The chi-square test of independence (χ^2 test) was used to verify the relationships between the given variables. This test allows us to assess whether a statistically significant relationship exists between two nominal or ordinal variables. The analysis examined the relationships between:

- students' place of residence and their intention to remain in the city,
- overall satisfaction with the city and the intention to remain there even after completing their studies.

Statistical significance was assessed at a significance level of $\alpha = 0.05$. The chi-square test of independence (χ^2 test) was used to test the relationship between two categorical variables.

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

χ^2 – value of the test statistic

O_{ij} – observed (empirical) frequency in the table cell (i-th row, j-th column)

E_{ij} – expected frequency in the cell

Cramér's V coefficient was used to assess the strength of the relationship between the variables:

$$V = \sqrt{\frac{\chi^2}{N \cdot (\min(r-1, c-1))}}$$

V – Cramér's V (measure of relationship strength)

χ^2 – chi-square test value

N – total number of observations

r – number of rows

c – number of columns

$\min(r-1, c-1)$ – the smaller value of the degrees of freedom in rows and columns

Interpretation of Cramér's V

0.00 – 0.10 → very weak relationship

0.10 – 0.30 → weak relationship

0.30 – 0.50 → moderately strong relationship

> 0.50 → strong relationship

4. Results

The results of a questionnaire survey conducted among full-time university students in Trnava are presented below.

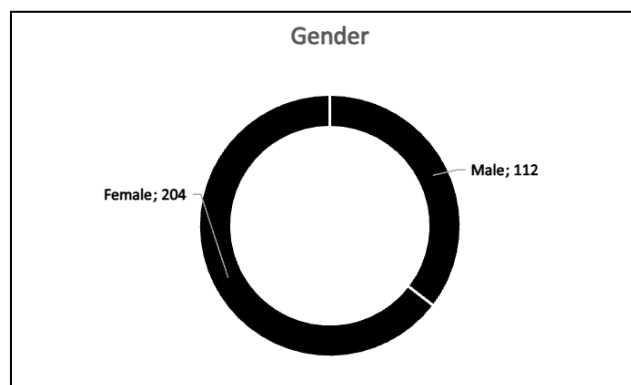


Figure 1: Gender; Own processing, 2026

The graph shows the breakdown of respondents by gender. Of the total 316 respondents, women make up the majority, with 204 respondents (64.6%). Men constitute the smaller portion of the sample, with 112 respondents, or 35.4%.

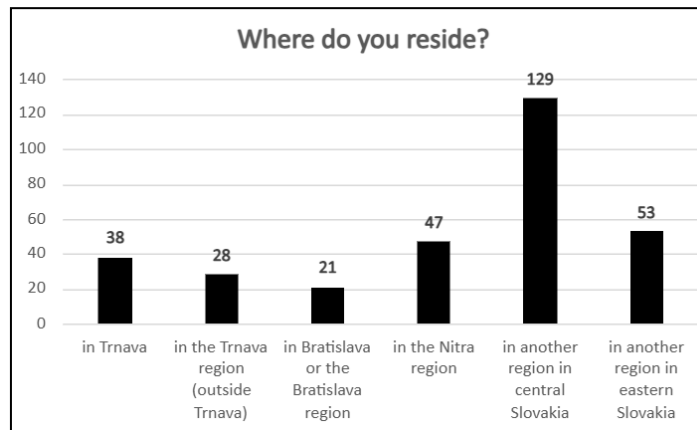


Figure 2: Own processing, 2026

The graph shows the distribution of respondents by place of residence. The largest group of respondents (129, 41%) comes from central Slovakia, i.e., outside the Trnava region. The second-largest group consists of respondents from eastern Slovakia, with 53 (18%). This is followed by the Nitra region with 41 responses (15%). Respondents living directly in the city of Trnava numbered 38 (12%). The Trnava region, excluding the city of Trnava, had a slightly smaller representation, with 28 respondents (8%). The least represented group consists of respondents from the city of Bratislava or the Bratislava region—21 (6%).

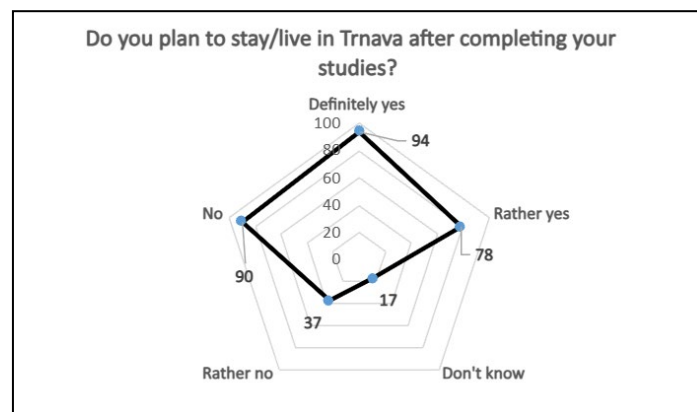


Figure 3: Own processing, 2026

Chart X shows the distribution of responses to the question regarding respondents' intention to continue living in Trnava after completing their studies. The majority of respondents selected "definitely yes"—94 (30%)—which indicates a relatively strong desire to remain in the city. The "somewhat yes" option was also a significant response, chosen by 78 respondents (26%). On the other hand, the "no" option also received a high number of responses (90 respondents, 28%); these students do not plan to stay in the city after completing their studies. The "rather no" response was chosen by 37 (11%) students, and the smallest group consisted of students who were unsure—17 (5%).

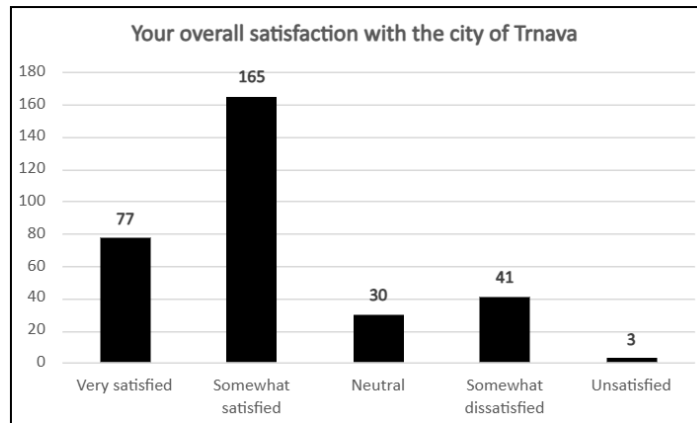


Figure 4: Own processing, 2026

The assessment of respondents' overall satisfaction with the city of Trnava yielded the following results. The largest group of students—165 respondents (52%)—stated that they were “somewhat satisfied.” A significant group also consisted of respondents who were “very satisfied” (77 respondents, 25%). A neutral attitude toward the city was expressed by 30 respondents (10%). Dissatisfaction was expressed by 41 respondents (12%), who were “somewhat dissatisfied,” and only 3 respondents stated that they were dissatisfied with the city of Trnava.

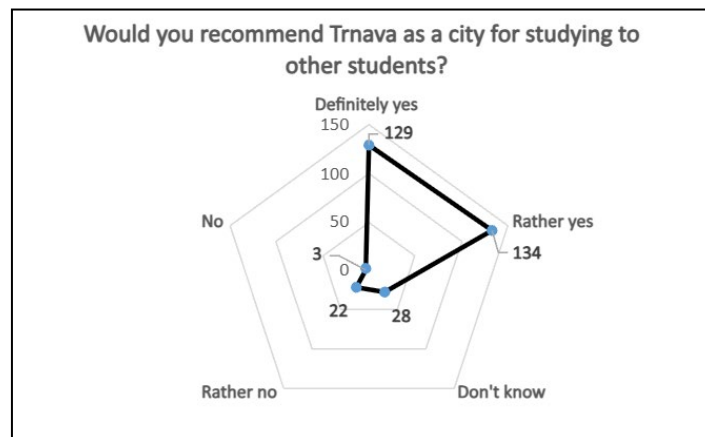


Figure 5: Own processing, 2026

This question sought to determine whether the surveyed students would recommend the city where they study to other prospective students. The largest group consisted of respondents who answered “probably yes,” numbering 134 (43%); the second-largest group was those who answered “definitely yes,” with 129 respondents (41%). These two options represent a significant majority of the responses. Other responses included “I don’t know” – 28 respondents (8%), while “rather no” was selected by 22 students (7%). Only 3 people gave the unequivocal answer “no.”

Verification of hypothesis

Several hypothesis were established as part of the research; for the purposes of this study, we have selected two relevant ones to verify:

Hypothesis 1 - Students living in the city of Trnava (i.e., the city where they study) are more likely to remain in this city after completing their studies.

Hypothesis 2 - Students who plan to stay in Trnava report a higher level of overall satisfaction with the city.

Hypothesis 1

As part of Hypothesis 1, we statistically tested the relationship between place of residence and the intention to remain in Trnava after graduation.

Table 1: Place of residence and the intention to remain

Residence	Do you plan to stay/live in Trnava after completing your studies?			
	Yes	No	Don't know	Total
Trnava	30	6	2	38
Trnava region	22	5	1	28
Eastern Slovakia	36	15	2	53
Central Slovakia	70	52	7	129
Nitra region	14	30	3	47
Bratislava region	0	19	2	21
TOTAL	172	127	17	316

To examine the relationship between respondents' place of residence and their intention to remain in Trnava after completing their studies, the chi-square test of independence (χ^2 test) was used.

The analysis was conducted using a contingency table that included 6 categories of residence and 3 categories of intention to remain.

The number of degrees of freedom was calculated using the following formula:

$$df = (r-1) \times (c-1) = (6-1) \times (3-1) = 10$$

Test results: $\chi^2 = 57,7$; $df = 10$; $p < 0,001$

Based on the p-value obtained ($p < 0.001$), it can be concluded that there is a statistically significant relationship between the variables under study. This means that students' place of residence has a significant influence on their decision to remain in the city of Trnava after completing their studies. The most significant deviations between observed and expected values were identified primarily in the responses of respondents from the city of Trnava, respondents from the Bratislava region, and respondents from the Nitra region.

Cramér's V coefficient was used to assess the strength of the relationship, yielding a value of $V = 0.30$.

This value indicates a moderately strong relationship between the variables, suggesting that place of residence is a significant but not the sole factor influencing students' decisions.

Hypothesis 2

Under Hypothesis 2, we statistically tested the relationship between the intention to remain in the city of Trnava and overall satisfaction with the city.

Table 2: Plan to stay and overall satisfaction

Plan to stay in Trnava	Your overall satisfaction with the city of Trnava			Total
	Satisfied	Neutral	Unsatisfied	
Definitely yes	85	5	4	94
Rather yes	70	5	3	78
Don't know	15	1	1	17
Rather no	25	10	2	37
No	47	9	34	90
TOTAL	242	30	44	316

A chi-square test of independence was used to examine the relationship between students' intention to remain in Trnava after graduation and their overall satisfaction with the city. The analysis is based on a contingency table containing 5 categories of intention and 3 categories of satisfaction.

The number of degrees of freedom was calculated using the formula:

$$df = (r-1) \times (c-1) = (5-1) \times (3-1) = 8$$

Test results: $\chi^2 = 95,6$; $df = 8$; $p < 0,001$

Cramér's V coefficient was used to assess the strength of the relationship, yielding a value of $V = 0.39$, which is interpreted as a moderately strong to strong relationship. The results of statistical testing showed that there is a statistically significant relationship between the variables. The intention of students participating in the survey to remain in the city of Trnava is significantly influenced by their overall satisfaction with the city. Respondents who answered "definitely yes" and "rather yes" exhibit a high level of satisfaction. The "no" and "rather no" categories show a transitional nature (neutral and dissatisfied).

5. Conclusion and Discussion

The results revealed a significant relationship between the city, universities, and students in the context of students' strategic decision-making. The data confirmed that students' decisions are not determined by a single indicator, but rather represent an overall process influenced by multiple factors, such as place of residence and satisfaction with the urban environment. Hypothesis testing revealed a relationship between students' place of residence and their intention to remain in the city even after completing their studies. A moderately strong Cramér's V value suggests that permanent residence plays a significant role, though not a dominant one, in decision-making. Further findings from the hypothesis testing revealed an even stronger relationship between overall satisfaction with the city and the intention to remain there after graduation. This is a moderate to strong relationship, underscoring that the subjective perception of quality of life in the city is among the significant determinants of decision-making for this cohort. The result corresponds with theoretical findings that emphasize the importance of the quality of the urban environment and other determinants for the overall satisfaction of groups living in a given city. The city of Trnava has the potential to retain a portion of its student population, yet it simultaneously faces challenges regarding its long-term attractiveness to young people. These findings carry significant weight for city management. They confirm the need to systematically work on improving the quality of life in the city, including strengthening and deepening cooperation and partnerships between the city and the university, which can contribute to more effective integration of students into the urban environment and increase their motivation to stay. If the city of Trnava works to make itself more attractive as a suitable place for young people to live, through the systematic development of coordinated cooperation between public administration and universities, it has great potential. The research findings represent a contribution to the city's strategic planning and can serve as a basis for policy-making aimed at retaining human capital, strengthening the city's competitiveness, and promoting its sustainable development. The research results confirm the importance of the university environment as one of the factors influencing the long-term development of the city. The findings indicate that students' decision to remain in the city after graduation is influenced not only by objective factors, but also by subjective assessments of the quality of life and satisfaction with the city. The research confirms that creating a positive relationship between students and the city can be an important tool for maintaining qualified human capital in the region. From the perspective of city management, the results point to the need for systematic involvement of students in the strategic development of the city. Local government should pay increased attention to areas that affect student satisfaction, especially the availability of housing, the quality of public spaces, transport accessibility, leisure options and job opportunities during and after studies. The results support the need for more intensive cooperation between the city, universities and local employers in order to create conditions for graduates to stay in the city. Such an approach can contribute to strengthening the city's competitiveness, stabilizing the labour market and long-term sustainable development. The research has several limitations that need to be taken into account when interpreting the results. The first limitation is the use of a deliberate (non-probability) selection of respondents, which does not allow full generalization of the results to the entire population. Another limitation is the lower number of respondents obtained compared to the calculated sample size. Also the fact, that only selected factors affecting students' decision-making were analysed, while other determinants, such as economic situation or family ties, were not investigated in more detail, however, the future research is going to cover these areas as well. Future research is going to be focused on more detailed investigation of the factors influencing graduates' decisions about staying in university towns. The qualitative method will enable a deeper understanding of students' motives and preferences. There is also consideration for comparative research between several Slovak university towns, which would enable the identification of specific factors affecting the maintenance of young human capital in individual regions.

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Ethics Declaration: The research was conducted through an anonymous questionnaire survey among university students. Participation in the survey was voluntary. According to the applicable institutional regulations, no formal ethical approval was required for this type of research.

AI Declaration: Artificial intelligence was used in some parts of this paper to translate it into English.

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