Youth for Contemporary Sustainable Transport Solutions: Insights from a Survey of Engineering Students

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Abstract. *The adoption of innovative transport solutions is a challenge and to great extent relies on the attitudes and perception of user on prospects of new technologies where new services based on sharing economy stand out. Results show dissatisfaction with current infrastructure supporting sustainable transport and low satisfaction with bicycle and pedestrian paths. However, students believe technology can greatly enhance urban transportation efficiency. This study highlights the importance of researching students' attitudes and provides a foundation for increasing their engagement in the development of sustainable transport solutions.*

Keywords. *New technologies, Transport, Students, Attitudes*

1 Introduction

Conducting research on students of technical faculties aimed to examine their attitudes towards sustainable transport and the infrastructure that supports it. Primarily, the study investigated the modes of transportation used by young individuals and the extent of their usage, to include students who are relevant to the research, i.e., those using any form of transportation. This research represents a comprehensive overview of how young people perceive transport, as well as the problems present within it and how they can be addressed. Nowadays, an increasing number of young people are beginning to consider where they plan to lead their lives. One of the most crucial aspects of a healthy lifestyle is a healthy environment, achieved through transitioning to sustainable transport, which undoubtedly improves living conditions. Young individuals, as a key category of every society, should be aware of how they can contribute to environmental preservation as individuals. Young people's views are crucial in decision-making processes, particularly in areas that directly impact them (Blakeslee & Walker, 2018). The research included their attitude towards the current situation of sustainable transport, its accessibility, traffic planning, as well as the integration of technology with traffic and its impact. By examining the attitudes of young people towards these issues, we actively contribute to creating a better community for the entire environment, and therefore, for the planet. Young adults, particularly those in urban areas, have shown a pragmatic attitude towards sustainable transport, desiring a system that is flexible, convenient, and affordable (Puhe & Schippl, 2014). The research involved 892 engineering students. This paper represents the beginning of research that will include numerous factors influencing the satisfaction of engineering students with transportation in Belgrade. The idea is that from these factors, through a series of analyses, strategies will emerge to improve the comprehensive attitude towards transportation.

2 Literature review

The current urban infrastructure is not fully designed to support sustainable forms of transport, as it lacks effective governance, fair funding, and strategic infrastructure investments (Kennedy, 2005), which is in line with the attitudes of our respondents. This is further complicated by the need for a sustainable transport paradigm and analytical framework (Zuidgeest, 2005). The integration of infrastructure systems is crucial for designing more sustainable cities (French, 2014), and the role of the built

environment in promoting 'greener' travel is a key consideration (Crane, 2003). Research on pedestrian and bicyclist satisfaction with roadways has found that factors such as traffic volume, speed, and the presence of pedestrian and bicycle facilities significantly influence satisfaction (Jensen, 2007), which is correlated with what was examined in the research. The availability of bicycle infrastructure, including bike lanes, has been shown to improve perceptions of bicycling safety (Branion-Calles, 2019), which is an important factor for the safety of traffic participants. Baang (2000) emphasizes the need for better tools and understanding of factors influencing traffic flow, while Coq (1973) suggests a comprehensive approach that includes both traffic organization and changes in transport modes, which aligns with the attitudes of our respondents who stated that traffic planning is not at a satisfactory level. Fouladfar (2021) emphasizes the importance of integrating cloud computing, internet-connected vehicles, and IoT in traffic management systems. Florea (2014) and Marshall (2015) both highlight the positive impact of electronic intelligent transport systems and IoT on fuel savings, CO2 emissions reduction, and overall transportation efficiency. Banister (2008) emphasizes the need for a more flexible transport planning paradigm to promote public acceptability of sustainable mobility measures, which also agrees with the opinion of young people from our research.

3 Methodology

The research was conducted on engineering students, specifically focusing on students of the Faculty of Organizational Sciences, who filled out the survey online. Data collection was completed by January 2024, and analysis began at that time. In our research, descriptive statistics were used to show the attitudes of young people on certain issues. Specifically, the mean and standard deviation were used to form conclusions based on the responses. Depending on the question, the scale on which they could rank their attitudes ranged from 1, representing general dissatisfaction or extreme disagreement with the given statement, to 5, representing great satisfaction or extreme agreement with the given statement.

In the research, descriptive statistics were used, specifically the mean, which represents the average attitude of young people towards the following questions:

- To what extent do you believe that the current urban infrastructure is designed to support sustainable forms of transport?
- How satisfied are you with the availability and condition of bicycle lanes and pedestrian paths in your city?
- In your opinion, how well does current traffic planning contribute to reducing congestion and improving traffic flow?
- To what extent do you believe that the integration of technology into traffic management can improve the efficiency of urban transportation?

To analyze the research results more clearly, they will be presented in tabular form, with each question presented separately. After each table, a comment on the results will be provided. The scale on which respondents ranked their attitudes ranges from 1 to 5, where 1 indicates general dissatisfaction or extreme disagreement with the statement, 5 indicates great satisfaction or extreme agreement with the statement, and 3 indicates neutrality or moderate impact on the specific question.

4 Research results

For the first question, the analysis of students' responses indicates their general skepticism about the effectiveness of the current infrastructure in supporting sustainable forms of transportation. The average rating given by students is 2.36, suggesting a relatively low belief in the adaptability of existing transport systems to sustainability. The standard deviation of 0.97 indicates variability in ratings, which may reflect differing levels of awareness or experience among students regarding this topic.

Similarly, concerning the second question, students expressed a high level of dissatisfaction with the number of bicycle lanes and pedestrian paths as integral parts of sustainable transport. The average rating for this item is 2.39, with a standard deviation of 1.041. These results point to a general perception

of a lack of adequate infrastructure for alternative forms of transport, which could be crucial for promoting sustainable solutions in urban areas.

The third question also reveals student dissatisfaction, this time regarding the contribution of traffic planning to reducing congestion. The mean value for this item is 2.23, with a standard deviation of 1.026. This low rating suggests that students believe current planning strategies are not sufficiently effective in addressing congestion issues, indicating a need for revision and improvement of existing approaches.

On the last question, students indicated that technology can significantly improve the efficiency of urban transportation. The average rating for this item is high, at 3.77, with a standard deviation of 0.924. These results suggest strong support for the application of technology in transportation, which could be crucial for enhancing systems and reducing the negative impacts of transportation on the environment.

Overall, these results indicate a need for significant improvement in infrastructure and planning strategies to support sustainable transportation solutions. Investments in these areas can have a positive impact on the perception and efficiency of transportation systems, contributing to the creation of more sustainable and efficient urban environments.

5 Discussion

The results indicate that there is a general dissatisfaction among young engineering students regarding the current urban infrastructure's support for sustainable transport. The low average ratings for questions related to bicycle lanes, pedestrian paths, and traffic planning suggest that students perceive these aspects of sustainable transport as lacking in their cities. The research aims to identify the attitudes of young engineers towards sustainable urban transport and the integration of technology in traffic management. Understanding these attitudes can be crucial for the development of new technological solutions that would cater to their needs and expectations. Additionally, the research can provide insights into potential shortcomings in current infrastructure and traffic planning, serving as a basis for future urban planning and development projects. Regarding its relevance to the sharing economy, the study's results can be valuable for companies involved in shared mobility. Understanding young people's attitudes towards technological innovations in transportation can help these companies develop more efficient and appealing services that could contribute to increased usage of shared transport options. This research can also benefit urban planners and authorities, providing them with insights into the priorities and needs of young individuals regarding urban transport. This could assist them in creating policies and strategies that support a sustainable and efficient transport system.

However, there is a more positive outlook regarding the integration of technology into traffic management, with students believing it can significantly improve urban transportation efficiency. These findings highlight the importance of addressing infrastructure and planning issues to promote sustainable transport among young people. Improving bicycle and pedestrian infrastructure, as well as implementing smart technology in traffic management, could help cities create more sustainable transportation systems that meet the needs and expectations of the younger generation. Knowledge, acquired through education and various life experiences, is considered essential by young people, aligning with the emphasis on the crucial role of knowledge in human advancement within the current educational system in Serbia (Petrović et al., 2024), which is particularly relevant for understanding the complexities of traffic issues and how to make informed decisions regarding transport.

6 Conclusion

Young engineering students have a critical role to play in advocating for and contributing to the development of sustainable transport solutions. This study represents an initial exploration into the attitudes of students towards transportation, serving as a foundational basis for further research in this area. It aims to provide a starting point for understanding how students perceive transportation, particularly in terms of its efficiency, sustainability, and technological integration. This research marks the beginning of a broader investigation into the complexities of student perceptions and experiences related to transportation systems, intending to lay the groundwork for more comprehensive studies in the future. Further research will compare whether there is a difference between the genders of students,

their financial status, but also, there are plans to expand the research to include all age groups, which would provide a better approach to the problem. This research has shown that young people believe there are problems in this area. Through further research, efforts will be made to develop specific strategies.

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