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# ANALYSIS OF PERCEIVED CUSTOMER SATISFACTION IN THE CONTEXT OF RAIL TRANSPORT: A CASE STUDY OF THE SLOVAK MARKET*

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**Abstract.** Rail transport is one of the most widely used modes of transport in most parts of the world. Therefore, knowing what customers think of its quality means valuable information for making informed decisions. The aim of this paper is to assess the statistical significance of the relationships between selected analyzed variables of passenger satisfaction with rail transport in the selected market. To achieve this goal, the paper made use of questionnaire data. Data collection took place in the months of February to April 2022. A total of 252 verified records were included in the analysis. Prior to the analysis, the authors researched relevant literature and existing research studies (basic framework for the analysis). The research part of the study made use of the Mann-Whitney U test and the Kruskal-Wallis test to analyze the differences, followed by the Spearman's correlation coefficient to assess the relationships. The results did not confirm the statistical significance of the differences in the context of the analyzed groups, but in the case of the context of the individual analyzed factors, statistical significance was observed. The findings were put into a wider context in terms of the existing research. The limitations of the study and the possibilities for future research were also outlined.

**Keywords:** analysis; satisfaction; customer; railway transport; Slovak market

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## 1. Introduction

Tourism-related transport has been booming since the last century. Even today, the issue of transport is still seen mainly from the point of view of technology, even though it is one of the core services of tourism along with accommodation and restaurant services. As more and more people have access to motor vehicles, transport companies need to attract potential customers, retain regular customers and boost the attractiveness of the sector (not only from the customer's point of view). Public transport is one of the main factors determining the quality of a city, region as well as a country (Korba et al. 2021). Improvements in public transport services are known to affect customer satisfaction and quality of life (Yilmaz et al., 2021; Melnikova et al. 2016; Turisova et al. 2021). Customer satisfaction and customer loyalty are also affected by the perception of transport quality by passengers (Eboli & Mazzulla, 2014; Petruf et al. 2015). The task of improving public transport lies with cities, countries, ministries and other responsible entities who are in charge of measuring service quality, identifying gaps, improving service quality levels (Shen & Li, 2014) and providing financial supports (Ključnikov et al., 2020a; Civelek et al., 2022; Szabo et al. 2022). Thus, the collaborations of governments with other responsible institutions might also be crucial to overcome these issues (Civelek et al., 2020; Civelek et al., 2021; Ključnikov et al., 2020b; Periokaitė & Dobrovolskienė, 202; Ključnikov et al., 2021).

By focusing on the most important underlying factors, we can assess this mode of transport and its individual parts. Therefore, the aim of this paper was to assess the statistical significance of the relationships between selected analyzed variables of passenger satisfaction in the context of rail transport in the selected market. In this regard, this study differs from other studies that also focus on Slovakian market in different purposes (Štefko et al., 2020; Dvorsky et al., 2021; Petrakova et al., 2021; Kolková & Ključnikov 2021; Metzker et al., 2021; Ključnikov et al., 2022). The first part of the study presents an overview of the relevant literature and research and the methodology used. This is followed by the part where research results are presented. The discussion part places the research results within the context of existing research.

## 2. Theoretical background and current state of research

The aim of business is the company value, which depends on its ability to generate future profits (Machova et al., 2020). They refer to activities and abilities that increase profitability, decrease risk, and support the company's growth (Vochozka et al., 2017). The economy sector is always growing; Horak et al. (2020) stated that, there are companies that offer an ever-growing range of goods and services. A good company has their own future prediction. There is no doubt that the issue of making a good prediction about a company's possible failure is very important, as well as complicated (Vochozka et al., 2020). Future of the company is so important to all the stakeholders. The earnings and asset valuation methods are used to valuate the part of the company (Šuler et al., 2021). The future of the company is most of the time based on the future investment. It is very desirable, not for the profit from the investment but for the low investment risk (Vrbka & Vochozka, 2018). Another big step in company development is the innovations, which are going hand in hand to mee the customers expectations and to satisfy them The subsequent estimations are based on the structural modelling of the innovation process, i.e. decision to innovate, innovation input and innovation output (Vokoun, 2018). A great company focuses on profit and customer satisfaction.

Customer satisfaction is a term often used in marketing. Marketing is nowadays heavily influenced by the social medias. It is important to know the risks associated with entering this environment, but also the benefits (Kučera & Smolková, 2022; Simionescu, 2021). Marketing is on of the core parts of every company. It is a measure of how the products and services provided by the company meet or exceed customer expectations (Krajčík, 2022). Farris et al. (2010) define customer satisfaction as the number or percentage of the total number of customers whose experience with a company, its products or its services exceeds the set satisfaction goals. Customers play

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an important role and are essential in maintaining the relevance of a product or service. In their work, Hill and Alexander (2017) state that organizations of various types and sizes have been gradually realizing how important customer satisfaction is. It is well known that retaining an existing customer is much less costly than acquiring a new customer. There is a strong link between customer satisfaction, customer retention and profitability. Customer satisfaction is becoming a key goal of many organizations. It is important to invest in improving performance in areas that significantly contribute to customer satisfaction, such as quality and customer service (Košč et al. 2021). Customer satisfaction can come from benefits that the company offer to their customers. Most customers own a loyalty card only because of a possible benefit or reward (Kalinova & Mílová, 2022).

The customer is satisfied when the performance provided exceeds his expectations. However, if the customer expects better performance than the one he was provided with, the customer is dissatisfied and does not enjoy the service provided (Gejdoš and Šatanová 2011). The quality of the services provided is closely related to customer satisfaction. Harvey and Green (1993) have already described quality as a relative term. Quality is relative as it depends on the user's perspective and other circumstances. In this case, quality is a subjective concept because every customer may perceive quality differently. The quality of services can be divided into physical (material elements), social (image, reputation, reputation) and interactive (interaction of staff and customers as well as customers themselves).

In order to measure the service quality, the SERVQUAL method comes at hand. The method is based on a model of the expectancy-disconfirmation paradigm. This method was first published by Parasuraman et al. (1985) to measure quality in the services sector. Although this method is widely used, a significant disadvantage of this method is the problem with high customer expectations and at the same time a higher probability of a difference between expectations and actual experience. Chowdhury et al. (2015) conducted their research on rail transport in Bangladesh using the SERVQUAL method. The method consists of the following five dimensions: tangibles (everything the customer sees and with which the customer comes into contact - appearance of amenities, facilities, equipment, staff, etc.), reliability (ability to perform the promised service reliably and accurately), responsiveness (willingness to help customers and provide fast services), assurance (knowledge and understanding of employees, courtesy and their ability to inspire confidence) and empathy (striving for a sensitive and individual approach). Satisfaction factors in public transport were broken down by the authors Linh and Sanh (2016) into five categories. Transport (factors directly related to transport from the place of departure to the destination, such as availability of ticketsn and interior cleanliness), timeliness (frequency of transport services), information (various information available on transport services, etc.), professionalism (behavior and communication style of staff) and staff attitudes (customer care).

According to Agarwal (2008), who worked on research on rail customer satisfaction in India, satisfaction factors in public transport can be broken down into 6 categories, in particular behavior of the staff (friendly staff, quick service, etc.), tangibles of the platform (platform cleanliness, vending machines for drinks and snacks on the platform, etc.), services on the train (e.g. train cleanliness, safety features on the train, up-to-date information available on the train), train availability and tickets (number of trains, availability of tickets, etc.), basic services on the platform (information system, seating, etc.) and the ticket office (number of ticket offices, opening hours of the ticket offices, waiting time in line, etc.). In their research on public transport customer satisfaction in the European Union, Minelgaite et al. (2020) divided customer satisfaction factors into four categories, namely frequency and reliability, comfort and safety, ticket prices and amenities at stops and stations. The basic groups of factors according to Le-Klähn et al. (2014) include comfort, accessibility and usability, quality of service and factors of price, information, usability and staff. Felleson and Friman (2012) consider the system (timetable), safety and staff to be important factors in addition to comfort.

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Recently, the issue has been researched from various points of view, in particular by Park et al. (2022) who focused on datamining on social media, Chauhan et al. (2021) and their research in the context of multimodal transport HUBs (MMTH), Güner (2018) measured the quality of public transport using a multi-criteria decision-making technique, Kostiuk et al. (2021) compared the added value of public transport in EU countries in the pre-pandemic period, Hybel and Mulalic (2022) assessed the relationship between transport and quality of life in Denmark with similar research carried out by in the US market by Mattson et al. (2021).

## 3. Research objective and methodology

The research goal was to assess the significance of the relationships between selected analyzed variables of satisfaction of passengers with the services provided by the national railway carrier of the Slovak Republic. To do so, three research hypotheses were formed:

H1: There is a statistically significant difference in the perception of the analyzed rail transport variables between men and women.
H2: There is a statistically significant difference in the perception of the analyzed rail transport variables depending on the availability of another mode of transport.
H3: The selected qualitative variables of satisfaction have a statistically significant impact on the overall satisfaction with rail transport.

The dataset consisted of primary data collected using the questionnaire distributed in electronic form by the CAWI method among railway passengers in the selected market. Data collection took place from February to April 2022. The research sample consists of a total of 252 respondents, of which 135 are women and 117 are men. The largest share of respondents falls in the age group of 19 to 29 years olds (108 respondents, almost 43% of all respondents). 98.4% of respondents are in the productive age (15 to 64 years), the rest are respondents in the post-productive age (65 and over). The youngest respondents are 16 years old, the oldest respondent is 69 years old. In the context of social status, most respondents are employed - 121 respondents (48% of respondents). The second largest category consists of students (almost 22% of respondents), the third largest group consists of entrepreneurs and self-employed persons (more than 14% of respondents). Almost 16% of respondents are unemployed, parents on parental or maternity leave and the smallest share is formed by pensioners.

The research made use of the tools of frequency statistics, correlation analysis and difference analysis for statistical analysis. The data collection consisted of twenty-nine items, which were divided into six factors as shown in Table 1. For each item, the respondent was able to express his level of satisfaction (the Likert scale). The results were further processed by means of analysis of differences and relation, where, based on the analysis of the sample, non-parametric tests were proved necessary.

**Table 1.** Factors affecting customer satisfaction

| Analysed factor | No. of items |
|---|---|
| Comfort | 4 |
| Tangibles | 7 |
| Quality of service | 6 |
| The staff | 4 |
| Ticket office services and price | 5 |
| Overall satisfaction | 3 |

*Source:* own elaboration

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Table 2 presents the analyzed variables, i.e. the factors that were used in the analysis. The first factor, comfort, contains four items (cleanliness, safety, seat availability and vehicle space), the factor tangibles contains seven items (modern amenities, availability of information, staff, availability of information, on-board catering facilities, catering facilities at the station and stops and other station and platform amenities). The quality of service factor contains six items (frequency of trains, additional services, timeliness of arrival and departure, reliability of trains, internet connection and website). The staff factor contains four items (staff knowledge, staff behavior, quick service, and conflict resolution). Ticket office services and the price consist of five items (ticket office opening hours, ticket office waiting times, number of ticket offices, ticket purchasing process and ticket price). The last factor, overall satisfaction, consists of three items and is constructed on the basis of an expanded overall satisfaction factor (two additional items – likelihood of recommending railway transport to friends, future use of railway transport and satisfaction with railway transport).

**Table 2.** Factor evaluation (5-point Likert scale)

| Variables | Avg. | Median | Std.Dev |
|---|---|---|---|
| **Comfort** | | | |
| Cleanliness | 3.24 | 3 | 1.13 |
| Safety | 3.56 | 4 | 1.19 |
| Seat availability | 3.24 | 3 | 1.17 |
| Vehicle space | 3.16 | 3 | 1.13 |
| **Tangibles** | | | |
| Modern amenities | 3.12 | 3 | 1.24 |
| Information boards | 3.66 | 4. | 1.13 |
| Polite staff | 3.95 | 4 | 1.13 |
| Staff availability | 3.44 | 4 | 1.16 |
| Catering on the train | 3.28 | 3 | 1.13 |
| Catering at the station | 3.55 | 4 | 1.17 |
| Station amenities | 3.36 | 3 | 1.15 |
| **Quality of service** | | | |
| Train frequency | 3.07 | 3 | 1.17 |
| Additional services | 3.20 | 3 | 1.04 |
| Timeliness | 2.79 | 3 | 1.15 |
| Reliability of trains | 2.94 | 3 | 1.15 |
| Internet quality | 2.56 | 2 | 1.25 |
| Web | 3.68 | 4 | 1.04 |
| **Staff** | | | |
| Knowledge | 3.81 | 3 | 1.13 |
| Behavior | 3.81 | 4 | 1.19 |
| Service and feedback | 3.60 | 3 | 1.17 |
| Conflict solving | 3.61 | 3 | 1.13 |
| **Ticket office services and price** | | | |
| Opening hours | 3.69 | 4 | 1.07 |
| Waiting period | 3.47 | 4 | 1.08 |
| Number of ticket offices | 3.54 | 4 | 1.10 |
| Ticket purchasing process | 4.13 | 4 | 1.09 |
| Ticket price | 3.54 | 4 | 1.32 |
| **Overall satisfaction** | | | |
| Recommendation | 3.44 | 4 | 1.13 |
| Future use | 3.64 | 4 | 1.12 |
| Overall satisfaction | 3.54 | 4 | 1.13 |

*Source:* own elaboration

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The first of the established research hypotheses focused on the existence of a statistically significant difference in the perception of the analyzed rail transport variables between men and women. At the baseline level, the largest difference was observed for the comfort factor, where the difference reached the value of 13.01 (approximately 10.83% less value for women than for men). The smallest difference was observed for the staff factor, the difference being 1.36 (approximately 1.20% lower for women than for men), with all average values being higher for men than for women. Overall, the difference in the average values of the factors is low. To verify the assumption that the sample has a normal distribution, the research made use of the Shapiro-Wilk test, which showed a violation of normality at the significance level $\alpha = 0.05$. It follows that the file does not have a normal distribution. The set was subjected to a nonparametric Mann-Whitney U test the aim of which is to find a statistically significant difference between 2 independent variables.

**Table 3.** Difference in the perception of factors – Mann Whitney U test

| | **Comfort** | **Tangibles** | **Quality of service** | **Staff** | **Ticket office** | **Overall satisfaction** |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 6085.000 | 5537.500 | 6110.500 | 6186.000 | 5901.000 | 5984.500 |
| p-value | .714 | .135 | .755 | .875 | .456 | .565 |

*Source:* own elaboration

Based on the results of the Mann Whitney U test presented in Table 3, it could be stated that there is no statistically significant difference between men and women, because for each factor the p-value is higher than the set significance level $\alpha = 0.05$. Therefore, this hypothesis is refuted.

**Table 4.** Difference in the perception of factors – Kruskal Wallis test

| | **Comfort** | **Tangibles** | **Quality of service** | **Staff** | **Ticket office** | **Overall satisfaction** |
|---|---|---|---|---|---|---|
| Kruskal Wallis | 1.356 | 0.520 | 0.608 | 1.130 | 1.510 | 1.321 |
| p-value | .508 | .771 | .738 | .568 | .470 | .517 |

*Source:* own elaboration

The aim of the second hypothesis was to find out whether there is a statistically significant difference in the perception of the analyzed rail transport variables depending on the availability of another mode of transport. Here, three groups were analyzed and compared. Due to the nature of the normality of the group, the Kruskal Wallis test was applied. The results are presented in Table 4. Based on the results of the Kruskal Wallis test, it could be said that there is no statistically significant difference between the groups of respondents, because for each factor the p-value is higher than the set level of significance $\alpha = 0.05$. Therefore, this hypothesis is refuted.

**Table 5.** Relationship of factors – Spearman's coefficient

| **factor** | **Comfort** | **Tangibles** | **Quality of service** | **Staff** | **Ticket office** |
|---|---|---|---|---|---|
| Comfort | 1 | .733 | .668 | .602 | .505 |
| Tangibles | .000 | 1 | .713 | .651 | .582 |
| Quality of service | .000 | .000 | 1 | .604 | .535 |
| The staff | .000 | .000 | .000 | 1 | .600 |
| Ticket office and price | .000 | .000 | .000 | .000 | 1 |

*Source:* own elaboration

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The last hypothesis assessed the statistical significance of the relationship between selected qualitative variables and overall satisfaction in the examined conditions. Due to the abnormal distribution of the set, the nonparametric Spearman coefficient was applied. Table 5 shows the correlation coefficients (above the main diagonal) and the p-values (below the main diagonal). A strong direct correlation was recorded between the factors of tangibles and quality of services, the correlation coefficient reached 0.713, at a p-value of 0.000. The lowest dependence between the two variables was recorded for the factors comfort and the ticket office and price. The correlation coefficient reached the value of 0.505, with a p-value of 0.000 (lower value than the significance level $\alpha = 0.05$).

**Table 5.** Relation to overall satisfaction – Spearman's coefficient

| **factor** | **Overall satisfaction** | |
|---|---|---|
| | Corr. Coef | p-value |
| Comfort | .636 | .000 |
| Tangibles | .703 | .000 |
| Quality of service | .676 | .000 |
| The staff | .638 | .000 |
| Ticket office services and price | .651 | .000 |

*Source:* own elaboration

With regard to the correlation between the major factors with the overall satisfaction factor, it was observed that all the selected factors correlate with the factor of overall satisfaction, with the p-value of all the factors being less than the significance level $\alpha = 0.05$ as presented in Table 5. The strongest correlation was recorded between the overall satisfaction factor and the tangibles factor, with the correlation coefficient reaching 0.703 (strong direct correlation). The second strongest correlation coefficient was found between the factor overall satisfaction and the factor quality of services, where the coefficient reached the value 0.676 (mean direct correlation). The weakest correlation coefficient was found between the factor of overall satisfaction and comfort, where the coefficient reached the value of 0.636 (mean direct correlation). All correlation coefficients reached a value greater than 0.600. Based on the obtained results, the statistical hypothesis of the existence of this correlation is accepted.

## 4. Discussion

The aim of this paper was to assess the significance of the relationships between the selected analyzed variables of the satisfaction of railway passengers in the selected market. Based on the hypotheses we were able to confirm the relationship between the factors of customer satisfaction with the transport and overall satisfaction, as well as the relationship between the factors. This finding correlates with the research of Le-Klähn et al. (2014), which focused on the correlation between public transport factors. Interestingly enough, Le-Klähn's research also did not confirm a significant relationship between the characteristics of the respondent and the evaluation of selected factors (in terms of characteristics shared by both studies). Minelgaite et al. (2020), whose research also focused on public transport, examined the levels of satisfaction and its impact on the use of railway transport in the countries of the European Union. Using regression analysis, the research arrived at a weak degree of negative dependence between the factors and gender. As for the Slovak Republic, a weak but statistically significant correlation between the frequency and reliability of trains, amenities at stations and the level of satisfaction was observed. The significant correlation was confirmed by Felleson and Friman (2012) in their publication on the satisfaction with public transport services. The publication claims that in order to improve the public transport, it is not only necessary to increase the quantity of services provided, but it is also important to improve the quality of services provided as it is the quality that is reflected in the overall assessment of customer satisfaction. The research by Linh and Sanh (2016) focused on public transport in Vietnam, in particular vehicle comfort (especially vehicle cleanliness) and timeliness (in our case, timeliness and frequency of trains), and found a

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correlation between gender and satisfaction assessment. Research on rail transport in India by Agarwal (2008), which consisted of six satisfaction factors divided into 47 items plus the overall rail satisfaction factor, also correlates with the hereunder findings, as it showed that quality of services and staff behavior have a clear impact on the overall customer satisfaction in rail transport. Given the average evaluation of service quality factors (significantly lower than average) and staff factor (higher than average), this finding is relevant for future research on this issue.

## Conclusions

Based on the above analysis and the previous survey of existing theoretical sources, it was possible to fulfill our research goal, that aimed to assess the significance of the relationships between selected analyzed variables of satisfaction of passengers with the services provided by the national railway carrier of the Slovak Republic. We were able to verify the established hypotheses and determine their significance. The gender of respondents did not prove to be a significant factor, however, the individual factors proved to be statistically significant. The prevalence of respondents from the younger age group and thus the heavy focus on one market segment proved to be a significant limitation of the research. Another limitation of the research was its focus on only one market, on the basis of which we are not yet able to generalize the results outside the given geographical area, only to use them as a basis for the formulation of future research plans. This research is therefore a partial source of findings in the context of a broader perspective of the research plan dealing with the issue. However, these limitations open up the possibilities of future research, where these aspects could be consolidated. The firther research could include respondents from several markets and with a wider sample age interval. Another level of future research is its extension to other factors that were not part of this research, as well as a partial examination of these factors separately and more in depth. An interesting view is also possible factors comparisons between countries.

## References

Agarwal, R. (2008). Public Transportation and Customer Satisfaction. *Global Business Review*, 9(2), 257–272. https://doi.org/10.1177/097215090800900206

Antosko, M., Korba, P., Sabo, J. (2015). One runway airport separations. Informatics, geoinformatics and remote sensing, SGEM 2015. International Multidisciplinary Scientific GeoConference-SGEM, pp. 241-248.

Chowdhury, M. S., Alam, Z., & Sharmeen, A. (2015). Measuring Commuters' Satisfaction: The Case of Railway Passengers in Bangladesh. *AU Journal of Management*, 13, 11–27. https://aujm.au.edu/index.php/aujm/article/download/12/2

Chauhan, V., Gupta, A., & Parida, M. (2021). Demystifying service quality of Multimodal Transportation Hub (MMTH) through measuring users' satisfaction of public transport. *Transport Policy*, 102, 47–60. https://doi.org/10.1016/j.tranpol.2021.01.004

Civelek, M., Gajdka, K., Světlík, J., & Vavrečka, V. (2020). Differences in the usage of online marketing and social media tools: evidence from Czech, Slovakian and Hungarian SMEs. Equilibrium. *Quarterly Journal of Economics and Economic Policy*, 15(3), 537–563. https://doi.org/10.24136/eq.2020.024

Civelek, M., Ključnikov, A., Fialova, V., Folvarčná, A., & Stoch, M. (2021). How innovativeness of family-owned SMEs differ depending on their characteristics? Equilibrium. *Quarterly Journal of Economics and Economic Policy*, 16(2), 413–428. https://doi.org/10.24136/eq.2021.015

Civelek, M., & Krajčík, V. (2022). How do SMEs from different countries perceive export impediments depending on their firm-level characteristics? System approach. *Oeconomia Copernicana*, 13(1), 55–78. https://doi.org/10.24136/oc.2022.002

Dvorsky, J., Belas, J. Jr., Cera, G., & Bilan, S. (2021). Disparities in the perception of business risks in connection with the achieved education of the owner/manager and doing business. *International Journal of Entrepreneurial Knowledge*, 9(1), 25-40. https://doi.org/10.37335/ijek.v9i1.123

Eboli, L., & Mazzulla, G. (2014). Relationships between rail passengers' satisfaction and service quality: a framework for identifying key service factors. *Public Transport*, 7(2), 185–201. https://doi.org/10.1007/s12469-014-0096-x

Farris, P., Bendle, N. T., Pfeifer, P. E., & Ph.D., D. R. J. (2010). Marketing Metrics: The Definitive Guide to Measuring Marketing Performance (2nd ed.). Wharton School Publishing.

Fellesson, M., & Friman, M. (2012). Perceived Satisfaction with Public Transport Service in Nine European Cities. *Journal of the Transportation Research Forum*, 47(3). https://doi.org/10.5399/osu/jtrf.47.3.2126

Gejdoš, P. & Šatanová, A. (2010). Ekonomika kvality. TU Zvolen.

Harvey, L., & Green, D. (1993). Defining Quality. *Assessment & Evaluation in Higher Education*, 18(1), 9–34. https://doi.org/10.1080/0260293930180102

Hill, N., & Alexander, J. (2017). The Handbook of Customer Satisfaction and Loyalty Measurement. Taylor & Francis.

Horák, J., Brabenec, T., Hejda, J., & Mareček, J. (2020) The sharing economy development analysis in the Czech Republic and other selected countries. *Ad Alta-Journal of Interdisciplinary Research*, 10(1), 109-114.

Hybel, J., & Mulalic, I. (2022). Transportation and quality of life. *Transportation Research Part A: Policy and Practice*, 157, 107–125. https://doi.org/10.1016/j.tra.2021.12.003

Kalinová, E., & Mílová, T. (2022). Loyalty cards as a form of sales promotion for retail chains and their impact on customers? *Littera Scripta*, 15(1), 1-18. https://doi.org/10.36708/Littera_Scripta2022/1/1

Ključnikov, A., Civelek, M., Vozňáková, I., & Krajčík, V. (2020a). Can discounts expand local and digital currency awareness of individuals depending on their characteristics? *Oeconomia Copernicana*, 11(2), 239–266. https://doi.org/10.24136/oc.2020.010

Ključnikov, A., Civelek, M., Polách, J., Mikoláš, Z., & Banot, M. (2020b). How do security and benefits instill trustworthiness of a digital local currency? *Oeconomia Copernicana*, 11(3), 433–465. https://doi.org/10.24136/oc.2020.018

Ključnikov, A., Civelek, M., Fialova, V., & Folvarčná, A. (2021). Organizational, local, and global innovativeness of family-owned SMEs depending on firm-individual level characteristics: evidence from the Czech Republic. Equilibrium. *Quarterly Journal of Economics and Economic Policy*, 16(1), 169–184. https://doi.org/10.24136/eq.2021.006

Ključnikov, A., Civelek, M., Klimeš, C., & Farana, R. (2022). Export risk perceptions of SMEs in selected Visegrad countries. Equilibrium. *Quarterly Journal of Economics and Economic Policy*, 17(1), 173–190. https://doi.org/10.24136/eq.2022.007

Kolková, A., & Ključnikov, A. (2021). Demand forecasting: an alternative approach based on technical indicator Pbands. *Oeconomia Copernicana*, 12(4), 863–894. https://doi.org/10.24136/oc.2021.028

Korba, P., Huňady, R., Hovanec, M., Rácek, B., & Pavelka, P. (2021). Fatigue life analysis of an aircraft brake component to prevent damage and ensure operational safety. *Engineering Failure Analysis*, 129, 105653. https://doi.org/10.1016/j.engfailanal.2021.105653

Kostiuk, Y., Kohútová, V., Straková, J., & Koleda, N. (2021). Added value in the transport sector at the time before COVID-19 pandemic: a comparison of the EU countries. *Entrepreneurship and Sustainability Issues*, 9(2), 303–315. https://doi.org/10.9770/jesi.2021.9.2(20)

Košč, I., Belas, J., & Slepecký, J. (2021). Examination of Selected Economic Perspectives in the Mining Industry. *Acta Montanistica Slovaca*, 26(4), 698-711. https://doi.org/10.46544/AMS.v26i4.09

Krajčík, V. (2022). Digitalization of SMEs and their perceptions regarding public interventions and supports of digitalization: Evidence from mining and iron industries. *Acta Montanistica Slovaca*, 27(1), 100-116. https://doi.org/10.46544/AMS.v27i1.08

Kučera, J., & Smolková, M. (2022). Online communication within a company: Case study of small company. *Littera Scripta*, 15(1), 34-56. https://doi.org/10.36708/Littera_Scripta2022/1/3

Le-Klähn, D. T., Hall, M., & Gerike, R. (2014). Analysis of Visitor Satisfaction with Public Transport in Munich. *Journal of Public Transportation*, 17(3), 68–85. https://doi.org/10.5038/2375-0901.17.3.5

Linh, L. T. P., & Sanh, H. M. (2016). Evaluating public bus transportation services in Ho Chi Minh city, Vietnam. *Can Tho University Journal of Science*, 04, 128. https://doi.org/10.22144/ctu.jen.2016.052

Machová, V., & Horák, J. (2020). Value Generators in forestry and logging. *SHS Web of Conferences: Innovative Economic Symposium 2019 – Potential of Eurasian Economic Union*, 73. https://doi.org/10.1051/shsconf/20207302003

Mattson, J., Brooks, J., Godavarthy, R., Quadrifoglio, L., Jain, J., Simek, C., & Sener, I. (2021). Transportation, community quality of life, and life satisfaction in metro and non-metro areas of the United States. *Wellbeing, Space and Society*, 2, 100056. https://doi.org/10.1016/j.wss.2021.100056

Melnikova, L., Cibereova, J., & Korba, P. (2016). Building a training airport for pilots. Informatics, geoinformatics and remote sensing conference proceedings, SGEM 2016. 16th International Multidisciplinary Scientific Geoconference (SGEM 2016), pp. 109-116.

Metzker, Z., Marousek, J., Hlawiczka, R., Belas, J.Jr., & Khan, K.A.(2021). The Perception of the Market and Operational Area of Business by Service Sector and Tourism Companies in terms of CSR implementation. *Journal of Tourism and Services*, 23(12), 217-236. https://doi.org/10.29036/jots.v12i23.328

Minelgaitė, A., Dagiliūtė, R., & Liobikienė, G. (2020). The Usage of Public Transport and Impact of Satisfaction in the European Union. *Sustainability*, 12(21), 9154. https://doi.org/10.3390/su12219154

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49(4), 41. https://doi.org/10.2307/1251430

Park, J. Y., Mistur, E., Kim, D., Mo, Y., & Hoefer, R. (2022). Toward human-centric urban infrastructure: Text mining for social media data to identify the public perception of COVID-19 policy in transportation hubs. *Sustainable Cities and Society*, 76, 103524. https://doi.org/10.1016/j.scs.2021.103524

Petrakova, Z., Okręglicka, M, Manak, R., & Fialova, V. (2021). Generation disparities on the perception of SMEs business risks. *International Journal of Entrepreneurial Knowledge*, 9(2), 32-48. https://doi.org/10.37335/ijek.v9i2.145

Periokaitė, P., & Dobrovolskienė, N. (2021). The impact of COVID-19 on the financial performance: a case study of the Lithuanian transport sector. *Insights into Regional Development*, 3(4), 34-50. https://doi.org/10.9770/IRD.2021.3.4(3)

Petruf, M., Korba, P., & Kolesár, J. (2015). Roles of logistics in air transportation. *NAŠE MORE: znanstveni časopis za more i pomorstvo*, 62(3 Special Issue), 215-218. https://doi.org/10.17818/NM/2015/SI23

Rajbhandari, Y., Marahatta, A., Shrestha, A., Gachhadar, A., Thapa, A., Gonzalez-Longatt, F., ... & Korba, P. (2022). Load prioritization technique to guarantee the continuous electric supply for essential loads in rural microgrids. *International Journal of Electrical Power & Energy Systems*, 134, 107398.

Shen, J., & Li, W. (2014). Discrete Hopfield Neural Networks for Evaluating Service Quality of Public Transit. *International Journal of Multimedia and Ubiquitous Engineering*, 9(2), 331–340. https://doi.org/10.14257/ijmue.2014.9.2.33

Simionescu, M. (2021). Nowcasting Regional Unemployment Rate in Denmark Using Google Trends to Develop Mining Sector. *Acta Montanistica Slovaca*, 26(3), 498-511. https://doi.org/10.46544/AMS.v26i3.09

Szabo, S., Pilát, M., Makó, S., Korba, P., Čičváková, M., & Kmec, Ľ. (2022). Increasing the Efficiency of Aircraft Ground Handling—A Case Study. *Aerospace*, 9(1), 2. https://doi.org/10.3390/aerospace9010002

Šuleř, P., Horák, J., & Rowland, Z. (2021). Sale and valuation of a part of a business unit in the udentification of operating assets. *Ad alta-Journal of Interdisciplinary Research*, 11(1), 303-309.

Štefko, R., Jenčová, S. & Vašaničová, P. (2020). The Slovak Spa Industry and Spa Companies: Financial and Economic Situation. *Journal of Tourism and Services*, 20(11), 28-43. https://doi.org/10.29036/jots.v11i20.137

Turisová, R., Pačaiová, H., Kotianová, Z., Nagyová, A., Hovanec, M., & Korba, P. (2021). Evaluation of eMaintenance Application Based on the New Version of the EFQM Model. *Sustainability*, 13, 3682. https://doi.org/10.3390/su13073682

Vochozka, M., Vrbka, J., & Šuleř, P. (2020). Bankruptcy or success? the effective prediction of a company's Financial Development Using LSTM. *Sustainability*, 12(18), 7529. https://doi.org/10.3390/su12187529

Vochozka, M., & Machová, V. (2017). Enterprise value generators in the building industry. SHS Web of Conferences: Innovative Economic Symposium 2017 – Strategic Partnerships in International Trade, 39. https://doi.org/10.1051/shsconf/20173901029

Vokoun, M. (2018). Innovation in the Wholesale and Retail Sector in the Czech Republic 2008-2014. *Littera Scripta*, 11(1), 145-154.

Vrbka, J., & Vochozka, M. (2018). Development of the price of government bonds depending on basic macroeconomic indicators. *Globalization and its Socio-Economic Consequences*, 1935-1942.

Yilmaz, V., Ari, E., & Oğuz, Y. E. (2021). Measuring service quality of the light rail public transportation: A case study on Eskisehir in Turkey. *Case Studies on Transport Policy*, 9(2), 974–982. https://doi.org/10.1016/j.cstp.2021.05.005

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