

Identification of the criteria determining the attractiveness of post offices in city Zilina

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Abstract Customer's preferences in the choice of a particular device is in many cases due to the attractiveness of this device. This means that customers are willing to travel longer distances to larger business centres with higher attractiveness. This is also the case for postal offices. Because postal operators are trying to maintain their customers, they also have to respond to these criteria that determine the attractiveness of the device providing of the required postal services. However, the attractiveness of the device can be perceived differently by customers. Therefore, the aim of the article is to find out these attractiveness criteria for individual post office customers, which in the future can help in selecting sites for the next post-creation or revocation of an existing mail.

Keywords availability, attractiveness criteria of post offices, marketing research

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1. Introduction

The postal market is a very specific sector of the industry. Therefore, it is more demanding to keep customer loyalty despite the innovations and opportunities that the current means of information and communication technologies allow. Nowadays, the message can be sent electronically and, therefore, we as humans start to slowly forget about the traditional sending of letters which is time and financially more demanding than, for example, regular e-mail. On the other hand, as the volumes of letters decline and the amount of the packages sent increases, it is necessary to adapt to this trend. In the postal market, there is a great deal of competition between individual postal operators. Also, it causes more significant issues to react and adapt to current trends to universal providers of postal services as they are facing the higher legislative demands.

Every business providing universal postal service is obliged, to a certain extent, to ensure the availability of postal services in the defined area for individual customers. However, this availability may not be consistent with the real needs of the customers of the postal company in a particular territory. For these differences, it is necessary to identify customers' requirements and align them with the setup requirements for the availability of postal services, resulting in the satisfaction of both parties.

2. Background

In general, availability indicates the potential of interaction opportunities. Similarly, it is possible to mention the easiness of spatial interaction or potential contact with the activity or the offer, or the attractiveness of a point in the network, given the number of additional points and the cost of achieving these points over the system. [1] Availability is specific to the type of user and the purpose of the communication. Different interpretations of the concept of availability are possible. Accessibility was first perceived only as a physical measure, but with time being based on practice needs, accessibility was also perceived as a concept of utility and potential opportunity. Among the most significant work on accessibility, which is a useful and potential opportunity, it is possible to include a study by Jones, who in his paper from 1975 analyses availability in terms of satisfying needs [2], and by Hodgart, which provides scenarios for addressing issues of location of civic amenities based on availability measurements. [3]

Availability in the postal sector is defined from two different points of view, time-related and space-related. Time availability refers to the number of days in the week when the postal service is provided, as well as the timetable for the public in brick and mortar postal places. Spatial availability reflects the density and distribution of postal network access and contact points, for example also post offices [4] The issue of the spatial accessibility of the postal service, or post

offices in the network of postal operator was researched by, for example, Krizan, who together with Tolmaci in 2008, evaluated the availability of post offices in the city of Bratislava in the network of urban public transport, the road network and the pedestrian network through perceptible accessibility rates. [5] Furthermore, Madlenak et al. in 2016 points to determining the optimal location and deployment of postal offices through allocation models. [6] Spatial accessibility of postal services or postal units located within the postal network in 2018 was also focus of Mostarac together with Kavran and Feleter, who in their studies analysed the availability of postal facilities according to the current criteria for determining the density of access points in the Republic of Croatia. [7]

3. Aim

The spatial availability of the postal service for the user (customer) is generally one of its most important quality characteristics. The customer perceives this accessibility as an opportunity to use the required postal service at the branch of the postal company that is the most attractive to him. The attractiveness of premises providing postal services can be perceived differently by customers. This means that the customer chooses a facility located either in the territory near his / her residence, in the area where he/she is most often resident, in the area where nearby shopping centres or facilities are providing other communication services such as for example transport services. By these criteria determining the attractiveness of the individual postal facilities, it is possible to optimize the postal network within the defined territory, which each post operator is striving to do. This is mainly because availability is also associated with extra costs, as are staff costs and the cost of renting very limited used post offices. Therefore, this article aims to identify criteria that determine the attractiveness of the individual postal facilities regarding the customer, namely in the town of Zilina, to avoid unnecessary expenses in this defined territory.

4. Data and methodology

Information on criteria and requirements determining the attractiveness of service providers can be obtained through the systematic search, collection, processing, analysis, and presentation of the necessary information called marketing research. [8] This complex process of gaining knowledge about the particular situation is based on a couple of essential steps. These steps are to define a research problem, to determine the research goal, to set up research assumptions, orientation analysis of a situation, methods and techniques of data collection, determination of sample size, data collection, processing and data analysis, presentation of research goal. [9]

4.1. Determining the research problem, goal and assumptions

The research problem of the presented marketing research is to identify the criteria determining the attractiveness of the access and contact points of the public postal network of the universal postal service national provider from the customer's perspective in the town of Zilina. Access points and contact points of the public postal network are not only post offices buildings but also mailboxes, self-service facilities, mail employees and other places designed to collect or deliver postal items. [10] To specify within this marketing research, we have identified as the postal access and contact points of the public postal network that understands only the post offices of a national universal postal service provider. Following this problem, we set out two fundamental research objectives:

1. Finding the criteria determining the attractiveness of post offices in the town of Zilina from the customer.
2. Finding the current state of spatial availability of post offices in the town of Zilina.

The research prerequisites that we subsequently worked on into details and verified in our marketing research are:

- At least 1/2 of respondents will consider an attractive post office location within the centre of Zilina where a particular branch of the post office is located.
- A minimum of 1/3 of respondents will prefer post offices located near parking facilities compared to branches without parking facilities.

4.2. Orientation analysis of the situation

Within our orientation analysis of the situation, we have found that attention has been already paid to the issue in various works, but only marginally. None of them considered the identification of the specific criteria of the post office's customers determining the attractiveness of individual post offices in the city of Zilina. Therefore, the required information was to be obtained through primary research. The target group of marketing research is a sample of 81,041 inhabitants of Zilina (December 31, 2016), who are also the core and primary sample for our study. The minimum number of respondents required to obtain the results of the study with the maximum tolerable error range indicating the tolerated error amount that we set to ± 0.05 was unknown to us and had to be calculated. Next, we worked with 95% reliability, which has a table value of 1.96 and tells us how confident we can be with assumptions, and also with the variability of the basic set p with a set value of 0.5 from which we can further calculate the value of the standard deviation also set up to 0.5. In this research, the three-category data processing was developed. As a criterion for quota selection, we chose the distribution of the population of Žilina by gender, age and education. By age, we divided the town's population into six categories: up to 25 years including, up to 35 years including, up to 45 years including, up to 55 years inclusive, up to 65

years inclusive, 66 years and over. By education to primary, secondary and university education.

4.4. Determination of sample size

To calculate the minimum sample size of the respondents, we used the following formula:

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

where N is the basic set of research (81 041 inhabitants of Zilina), $t_{1-\frac{\alpha}{2}}^2$ represents the table value for 95% reliability, parameter p represents the variability of the basic set, Δ is the maximum allowable error range, and a parameter of σ represents deviation calculated according to the formula:

$$\sigma = \sqrt{p * (1 - p)} \quad (2)$$

Based on the above formulas, the minimum number of respondents resulting from the population of the town is 383. Before the collection of primary data by electronic query was conducted, the questionnaire was pre-tested on a sample of 15 respondents. In the pre-test, the most frequent answer was found. Therefore the number of respondents changed to 210, representing a representative sample of the inhabitants of Zilina.

5. Result

A total of 225 respondents were involved in the research, out of which seven questionnaires were rejected because they were inadequate regarding knowledge of the locations for post office buildings in Zilina. The remaining 218 respondents were 130 female and 88 male. The highest number of respondents had completed a secondary education - 123, a university education got 85, and primary education was mentioned by 10 respondents. All 218 respondents were aware of the location of at least two post offices in the town of Zilina. Another parameter of quota selection affecting respondents in choosing a more attractive post office was the age structure of respondents, which represents the following data: up to 25 years - marketing research included 98 respondents, up to 35 years we counted 50 respondents, up to 45 years 19 respondents, up to 55 years 27 respondents, up to 65 years, 17 respondents and 7 respondents were 66 years old or older.

5.1. Presentation of research results

When questioning the attractiveness criteria that affect customers in selecting a particular post office, respondents had listed five types of options that could be expressed based on a range of values from 1 to 5. The values on the scale represented as follows: 1 - it affects the most, 2 - it is influential, 3 - no influence, no effect, 4 - slightly does not affect and 5 - does not affect at all. The individual data collected are shown in the following Table 1.

Table 1. Attractiveness criteria of post offices

Attractiveness criteria	Value scales				
	1	2	3	4	5
Location of post office in the city center	93	63	38	11	13
Barrier-free access	36	73	56	24	29
Proximity of the stop of the transport services	57	79	45	15	22
Proximity of parking spaces	46	79	37	21	35
Proximity of shopping centers, hospitals, pharmacies, offices, ...	27	62	75	20	33

The answers given in this question were used to validate, respectively reject the research prerequisites and goals we set for our marketing research.

5.1.1. Presentation of the results of research assumptions

For the first research prerequisite, we have determined that at least 50% of respondents will consider the attractive location of post offices within the centre of Zilina where a branch of the post office is located, we have confirmed it. Taking into consideration the three-category processing, we got these results.

Women with completed primary education stated that three of them aged under 25 and one to 45 years feels affected by a location very much, one woman under 25 founds this allocation influential, and one woman also under the age of 25 stated that branch allocation does not affect her at all. The number of women with completed primary education was six.

The figures presented by women with completed secondary education of 74 women are shown in Figure 1.

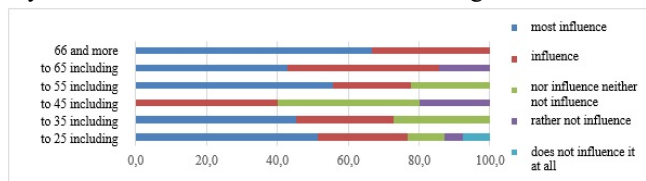


Figure 1. Results of the first research precondition for women who have completed secondary education.

The assumption most affects as follows: 6% of women over 66 years, 9% of women under 65 years, 14% of women up to 55 years, 14% of women under 35 and 57% of women under 25. The allocation of the post office branch affects 4% of women aged over 66, 14% of women under 65, 10% of women under 55, 10% of women under 45, 14% of women under 35, and 48% of women under 25 years. Rather, it does not affect women under the age of 65 and up to 45 for one in each category, and for two women under 25. Three women under the age of 25 do not feel affected by this at all.

Opinions of women with a completed university education, there were 50 of them, are shown in Figure 2.

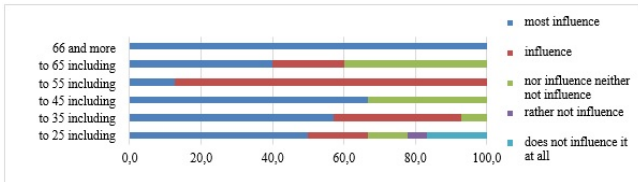


Figure 2. Results of the first research precondition for women who have completed university education.

This assumption affects the most 8% of women over the age of 66, up to 65 and up to 45 years, 5% of women under 55, 33% of women under 35 and 38% of women under 25 years of age. The allocation of the branch affects 6% of women under 65, 44% of women under 55, 31% of women under 35, and 19% of women under 25. The allocation of a branch slightly does not affect a woman under the age of 25. Three women under the age of 25 are not affected by this parameter at all.

The men with completed primary education stated that one of them under the age of 25 years feel extremely affected by the allocation of a branch, one male up to 45 and one male over 66 feels affected by this allocation, and one man aged 25 or under, have felt indecisive when considering branch allocation criterion. The number of men with completed primary education was four.

The figures quoted by men with completed secondary education in the amount of 49 is shown in Figure 3.

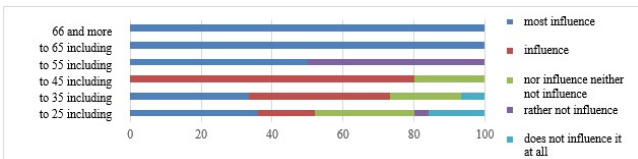


Figure 3. Results of the first research precondition for men who have completed secondary education.

The assumption does most affect 6% over the age of 66, 65 and 55 years, 29% of men under 35, and 53% of men under 25 years of age. The branch allocation affects 29% of men under 45, 42% of men under 35, and 29% of men under 25 years of age. Rather, it does not affect men under the age of 55 and up to 25 years of age one for both age ranges. Four men under the age of 25 and one under 35, feel not affected at all by the allocation of post office branch in centre of town.

The data obtained by men with completed university education in the amount of 35 are shown in Figure 4.

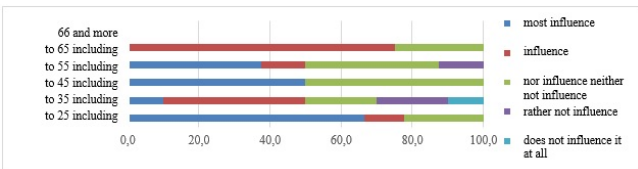


Figure 4. Results of the first research precondition for men who have completed university education.

Allocation of the post office in the centre most affects 25% of men under the age of 55, 17% of men under 45, 8% of men under 35, and 50% of men under 25. The allocation of the branch affects 34% of men under 65, 11% of men under 55, 44% of men under 35, and 11% of men under 25 years of age. Rather, it does not affect men under the age of 55 and up to

35 with one and two men for selected age categories. One man under the age of 35, when considering the allocation of post office branch within centre, feels not affected by it at all.

The allocation of post office branch in the centre really affects 63 women, partially affected there are 38 women, 17 women have not been able to decide, 5 women do not feel affected by this assumption, and 7 women from 130 women do not feel affected by it at all.

The allocation of post office branch within in the centre affects the most amount of 30 men, partially affect a total of

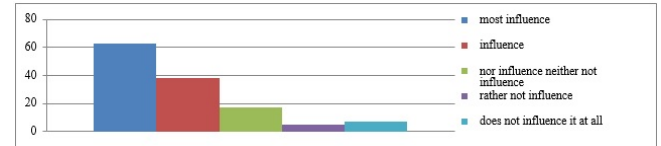


Figure 5. The first research assumption for women from 130 women.

25 men, a total of 22 men were not able to make a clear decision, 5 men do not feel rather affected by this allocation, and 6 men out of 88 men do not feel affected at all.

It shows that up to 78% of customers choose a branch based on its allocation in the territory, which suggests and

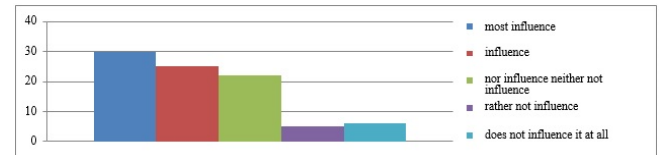


Figure 6. The first research assumption for men from 88 men.

confirms that our **first research assumption was correct.**

In the second research assumption, we have determined that at least 35% of respondents will prefer post offices located near parking places compared to branches without parking spaces. The results of this assumption are shown in Table 2 for women.

Table 2. Results of the second research assumption for women

Education	Women																	
	Basic					Secondary					University							
Age	Together	1	2	3	4	5	Together	1	2	3	4	5	Together	1	2	3	4	5
to 25 including	5	20	40	0	0	40	39	10	33	21	15	21	18	22	22	11	11	33
to 35 including	0	0	0	0	0	0	11	18	55	18	9	0	14	36	43	0	0	21
to 45 including	1	0	0	0	100	0	5	20	60	0	20	0	3	33	0	33	0	33
to 55 including	0	0	0	0	0	0	9	22	44	22	11	0	8	13	63	25	0	0
to 65 including	0	0	0	0	0	0	7	14	14	29	14	29	5	20	80	0	0	0
66 and more	0	0	0	0	0	0	3	0	33	0	33	33	2	0	100	0	0	0
Together	6						74						50					

The results of second research assumption are shown in Table 3 for men.

Table 3. Results of the second research assumption for men

Education	Men																	
	Basic					Secondary					University							
Age	Together	1	2	3	4	5	Together	1	2	3	4	5	Together	1	2	3	4	5
to 25 including	2	50	0	50	0	0	25	16	32	20	8	24	9	22	11	44	22	0
to 35 including	0	0	0	0	0	0	15	20	33	33	0	13	10	20	30	10	20	20
to 45 including	1	0	0	0	0	100	5	60	40	0	0	0	4	50	25	25	0	0
to 55 including	0	0	0	0	0	0	2	50	0	0	50	0	8	38	63	0	0	0
to 65 including	0	0	0	0	0	0	1	100	0	0	0	0	4	25	75	0	0	0
66 and more	1	0	0	100	0	0	1	0	0	0	0	100	0					
Together	4						49						35					

The values given for the 1 to 5 scale scores for specific age based on education are provided as a percentage of their relative abundance. Gaps with a value of 0 mean that the criterion does not have a respondent.

The scale for a Table 2 and 3 represent values from 1 to 5. The value 1 is for the respondent the most effective, 2 affects the respondent, 3 nor affects neither does affect the respondent, 4 rather does not affect the respondent, 5 does not affect the respondent's opinion at all.

As a result, in overall, men and women are affected by the proximity of parking spaces to 63% and therefore **the second research assumption was also correct** as the value exceeded expectations.

5.1.2. Presentation of research goal

The first set research goal was to find out the criteria determining the attractiveness of post office in the town of Zilina from the customer. According to the multi-attribute procedures, which give the values of customer importance and their subsequent analysis, a global perspective is created [10], we find out that the criteria that influence customers the most when choosing a more attractive branch are the allocation of post office with the index of 3.83 and the presence of the bus stop with an index of 3.61. Followed by option with a parking lot with an index of 3.37, access to a post office with an index of 3.29 and civic amenities with an index of 3.13. The scales 1-5 had weighted values in the reverse order, i.e., 5-1. This means that the criterion that most affects customers has the highest index.

The second research objective was to find out the current state of spatial availability of post offices in the town of Zilina. Based on the research it can be stated that the space accessibility of the post offices in the town of Zilina is bordered by the evaluation of level good. This is because specific post office branches locations are somewhat less attractive than others. These are mainly the post offices in Vlčince (Post office 8), Solinky (Post Office 7) and the customers lack the post office for the settlements of Hliny and Borik, which in the past were covered by the Post Office 6.

6. Conclusions

In regular life, purchases and customer visits are influenced by a variety of criteria that have a different impact on customers. The aim of this article was to identify these criteria and increase the traffic of certain facilities providing postal services in the city of Zilina. Criteria influencing the traffic of individual post offices in Zilina were obtained through marketing research. These criteria can also be considered as criteria for the attractiveness of the post. Based on

the results of our research, we can state that the most attractive are the mail that is in the city centre. This means that customers are more likely to visit post offices in the city centre where they can also provide other required services.

The criteria to determine the attractiveness of post offices from the customer's point of view can serve as a basis for improving the strategic deployment of Slovak Post offices that are already in existence. For the future if the population of Zilina has increased, the result would affect the number of post offices also resulting from the Postal Services Act.

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REFERENCES

- [1] T. Hollarek, T., J. Čorej, Komunikačná obsluha územnosprávneho celku, EDIS, Žilina, 2002, ISBN 80-7100-957-1.
- [2] P. M. Jones, "Accessibility, mobility and travel need: some problems of definition and measurement", in Transport studies, Oxford University, 1975.
- [3] R. L. Hodgart, "Optimizing access to public facilities: a review of problems, models and methods of locating central facilities", in Progress in Human Geography, 1978.
- [4] Online Available: <https://www.posta.sk/subory/561/poziadavky-na-kvalitu-2009.pdf>.
- [5] F. Križan, L. Tolmáči, "Meranie priestorovej dostupnosti pôšt na území mesta Bratislava (kvantitatívny prístup)", in Pošta, telekomunikácie a elektronický obchod, pp. 8-16, 2008.
- [6] R. Madleňák, L. Madleňáková, J. Štefunko, "Multiple approaches of solving allocation problems on postal transportation network in conditions of large countries", in Transport and telecommunication journal, pp. 222-230, 2016.
- [7] K. Mostarac, Z. Kavran, P. Feletar, "Determining accessibility of post network elements with application of gravity method", in Scientific multidisciplinary research journal, Po-dravina, pp. 63-73, 2018.
- [8] P. Kotler, Moderní marketing, Grada Publishing, Praha, 2007, ISBN 978-80-247-1545-2.
- [9] M. Příbová, Marketingový výskum v praxis, Grada Publishing, Praha, 1996, ISBN 80-7169-299-9.
- [10] A. Mateides, Spokojnosť zákazníka a metódy jej hodnotenia: koncepty a skúsenosti, EPOS, Bratislava, 1999, ISBN 80-8057-133-9.