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# Modelling frequency of visits to the shopping centres as a part of consumer's preferences: case study from the Czech Republic

Frequency of  
shopping  
centre visits

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## Abstract

**Purpose** – Effective management of shopping centres requires a good understanding of the consumers' behaviour and preferences as well as meeting the demand-side needs. The purpose of this paper is to elucidate the factors affecting the frequency of shopping centres' visits, providing implications for shopping centre managers from the perspective of a Czech consumer.

**Design/methodology/approach** – The study was carried out in one of the Czech shopping centres in Brno due to its potentially standardisable common characteristics derived from the observation in the scatter plot. The standardized questionnaire survey on consumer shopping behaviour was conducted on a sample of more than 1,000 customers. The linear probability model and the logit model were applied to estimate impacts of included sociodemographic variables on the outcome.

**Findings** – The findings on the frequency of visits give an overview of the sociodemographic and spatial determinants increasing the visit regularity. From the managerial point of view, the importance of customers' activities and purposes is highlighted.

**Practical implications** – The implications can be provided to managers challenging to demand management and considering the investment projects. We come up with certain suggestions in terms of market segmentation, based on sociodemographic characteristics and shopping behaviour.

**Originality/value** – The paper provides insights into the preferences of the Czech consumers and extends the previous analysis of shopping behaviour by developing the statistical properties and demonstrating the variables and their influence on the frequency of visit.

**Keywords** Shopping centres, Management, Consumers' behaviour, Frequency patterns, Regression analysis, Central Europe, Czech Republic

**Paper type** Research paper

## Introduction

The shopping centres have become a phenomenon all over the world in recent years. Contemporary large-area shopping centres started to emerge as early as in the mid of 50s in the USA, and very soon this trend began to spread rapidly into other economically developed countries (particularly in Europe). In the Czech Republic as well as in other post-socialist countries, the shopping centres were not established until the latter half of the 90s, and their



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real expansion started only in the last decade, which is more than forty years later than in the economically developed Europe (Spilková, 2012; Kunc *et al.*, 2012a).

The appearance of the shopping centres as we know them nowadays has experienced a very dynamic development; it is fascinating to observe their development (Burt, 2010; Kunc and Krízan, 2018). The transformation of the shopping centres resulted in the fact that the centres do not focus only on the sale of products and services to their end-users. On the contrary, in the context of modernization of the society and setting up new cultural values, the shopping centres have become the places where people meet, spend their free time and consumer demand is satisfied. Thus, it is a unique solution of leisure time spending, offering enough space for the satisfaction of aesthetic (visual) as well as sociable needs (Crosby *et al.*, 2005; Guimarães, 2018). In general, we conclude that shopping centres have a considerable impact on day-to-day life, and they significantly influence development of the local region. Due to its importance for regional development, it is beneficial to observe how the shopping centres have changed over the years, and what offering trends and factors focused on marketing, management, attractiveness or tenant mix influence their operation (Teller and Schnedlitz, 2012; Kunc *et al.*, 2016; Marjanen *et al.*, 2016; Lowe *et al.*, 2018). On the grounds of these findings, we can predict their further development.

However, for the future predictions it is essential to draw attention also to new trends and changes in the area of demands related to the consumers' mobility to shopping centres and outlets, identification of their stimuli for shopping and other additional services satisfying their needs (Timmermans, 1993; Lamey *et al.*, 2018). Consumers' behaviour is influenced by many factors changeable in terms of time and space, and it may be regarded as a relatively complex social phenomenon (Krízan *et al.*, 2016). Thus, the consumers' behaviour cannot be simplified and summarized into a general model, since it is also formed concerning a retail life cycle, and a life cycle of a consumer and his/her preferences (Teller and Reutterer, 2008).

Shopping behaviour and consumers' preferences of shopping centre visitors are closely linked to the attractiveness of a shopping centre. The attractiveness of shopping centres is a crucial part of shopping centres' management and has a significant impact on its success. The attractiveness of the centres includes several elements creating the image and uniqueness (Banerjee, 2012). From this point of view, the appropriate tenant mix can attract consumers and increase sales (Garg and Steyn, 2015). To enhance the unique features, it is necessary to follow new trends (e.g. new forms of marketing communication, increasingly dynamic forms of entertainment and leisure, digitization, use of smart technologies, specialized food courts, services, etc.) reflecting the needs of society and contributing to the attractiveness.

The tenant mix is quite frequently mentioned in the professional literature; it became a fundamental aspect of the operation, attractiveness and profitability of the shopping centres, which must be addressed at the top management level (Teller and Elms, 2010; Dawson and Lord, 2012; Kunc *et al.*, 2016; Marona and Wilk, 2016). The tenant mix can be defined as a combination of business facilities occupying the space in the shopping centre, and the cluster of which generates perfect incomes, rentals, services and financial capability of the centre (Kaylin, 1973). In other words, a proper tenant mix can be defined as cooperation of several stores with the aim to improve the operation of the whole centre (Pitt and Musa, 2009).

Before 1990, the shopping habits of the Czech population were influenced and regulated for long decades by centrally controlled socialistic economy within the domestic trade which, among others, strictly determined the selling points as well as the products sold in them. The shopping centres have become a key signifier of modifications of consumer behaviour in the Czech Republic, as well as in other post-socialist countries. A visit to a shopping centre has become an attraction, entertainment, a form of leisure and even a specific form of a social event not only for young people but also, for example, for senior citizens (Spilková, 2012; Krízan *et al.*, 2018). Generally speaking, understanding the patterns of the consumers' behaviour is a vital issue of entrepreneurship in the contemporary approach to retail, in

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respect to location as well as organization and operation of retail outlets at all their levels in terms of size and type of service (Underhill, 2004; Krížan *et al.*, 2018).

For the sophisticated planning and realization of the marketing and management, the shopping centres' managers collect various data about clients and use them for the complex understanding of the consumer structure. From this point of view, the paper provides insights into the preferences of the Czech consumers and extends and deepens the previous analysis of the behaviour of shopping centres visitors after 30 years of post-socialist transformation. Based on the extensive research, the paper deals with modelling the frequency of shopping centre's visits, using a linear probability model and LOGIT model, and considers the frequency as an important part of shopping preferences. It provides useful data for managers by developing the statistical properties and demonstrating the variables and their influence on the frequency of visits. Based on these data, the shopping centre management may use the so-called customer relationship management system; whereas, the aim is not only to win a customer but also to keep his/her loyalty by taking account of his/her needs (Dyché, 2002).

### Theoretical background

*Consumer's behaviour and preferences: focus on the frequency of visits*

There are several possibilities of how to view consumer behaviour. Kotler and Armstrong (2004) point out that the market is created following the behaviour of the end consumers who purchase goods and services to satisfy their own needs. Koudelka (2006) views the shopping behaviour of consumers as a process, which includes the behaviour connected with an immediate purchase or use of the product, as well as the environment by which the consumer is influenced.

One of the aspects of shopping behaviour is the loyalty of the shopping centre customers. Bárta *et al.* (2009) note that loyal customers do not need many incentives to be persuaded in visiting the shopping centre. In addition, the satisfied and loyal customers create as much as 80% of the income of the centre. In connection with the loyalty of customers, also other studies conducted by a number of authors (for example Golden and Zimmerman, 1986; Muhammad and Wee, 2002; Kotler and Keller, 2012) confirm that in terms of costs, it is more efficient for shopping centres to keep the existing customers rather than to struggle for winning new ones. The existing customers are more loyal to the brand or shopping centre, and they are also willing to spend more money.

Marketing has become an essential tool for an effective approach to the customers, as well as for a better understanding of the market (Bárta *et al.*, 2009). One of the factors within the marketing activities is the consumers' decision-making which is based on the desire to have similar behaviour as the others; however, on the other hand, the emphasis is also placed on a specific individualization and attempt to be different (Kotler and Armstrong, 2004; Kita *et al.*, 2017). The process of segmentation, which comes first, precedes market targeting. Kotler (2003) describes the segmentation as a distribution of the market into smaller pieces, whereas each of them is fitted with a unique marketing strategy, and as a result, adjustment of the offered products is better. These segments may be in a demographic form (gender, age, education, race and religion), geographical form (towns/cities, regions, states and nations), behavioural form (brand loyalty, shopping frequency, user status and so on) and social/psychological form (social class, lifestyle, etc.). Based on the created segments, it is possible to create a marketing mix for individual categories, which can be defined as a set of marketing tools used by the company to achieve marketing targets in the target market (True, 1999; Kotler, 2003). Understanding the consumer's behaviour, habits or preferences helps the management to use the correct type of marketing mix, and in this way to increase the turnout and competitiveness of the shopping centres.

One of the most frequently observed markers related to the visitors of (not only) shopping centres is the frequency of visits, according to a day, week, month or other frequency of visits

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(Roy, 1994; Moe and Fader, 2004; Teller and Reutterer, 2008; Teller *et al.*, 2012; Kunc *et al.*, 2012b; Križan *et al.*, 2016; Blut *et al.*, 2018; Lee, 2018). In many cases, consumers' mobility and their spatial distribution and behaviour are analysed. The frequency of visits to individual stores in a given shopping centre is usually monitored. Such analytical-statistical studies, based on large-scale data analysis, are considered to be an important tool for shopping centre marketing strategies and can help to make the centre more attractive through appropriate business planning (e.g. Jansen and Koerts, 1984; Larson *et al.*, 2005; Yoshimura *et al.*, 2016).

It has been found that there are considerable differences in the frequency of visits, average expenditure, number of visited shops during one visit and the ability of *retention* for a visit. To optimise the visit rate, the *utility-maximizing models of the optimum frequency of shopping* are developed. In general, the frequency of visits is not so frequent. On the other hand, consumers spend more time and more money in the shopping centres; it is a so-called "clientele effect" (Bacon, 1995; Teller and Reutterer, 2008). Marketing strategies of tenants or managers must thus take into consideration consumer's preferences in terms of frequency of visits by various population segments, for whom they create a personalised advertisement (Pan and Zinkhan, 2006; Gentina and Bonsu, 2013; Ailawadi and Farris, 2017). Commonly, analysed population groups are divided according to gender, age, education, income, job position, place of residence and commuting, etc., but also e. g., concerning clientele and visitors' satisfaction in general.

Pan and Zinkhan (2006) attempted to prove customer patronage by performing a meta-analysis of empiric findings on predictors of retail clientele. This dependent variable, retail patronage, included two dimensions, one of which was the frequency of visits (in other words, how often the consumers visit this store). Among independent variables, we can find demographic, behavioural, localization or marketing markers. Moe and Fader (2004) studied differences between frequent and infrequent visitors; alternatively, statistic dependency between increasing or decreasing frequency of visits and visitors' satisfaction. The results of the research have indicated the most suitable target segment and better awareness of the fact which customers are more probable to realize purchases.

Pyry (2016) or Gentina and Bonsu (2013) focused in detail on gender specifications. Pyry (2016) mentions a popular form used by teenagers—active doing nothing and hanging around, which are often pleasantly ineffective or even dull activities; nevertheless, they allow them to participate and interact with the surrounding conditions and environment. Such behaviour in the shopping centres is, more or less, tolerated by the management since these young people are believed to become potential customers in the future. The other authors mentioned above have found out that the position of centrality (Chodorow, 1978) becomes the most important factor while explaining the frequency of shopping with friends at adolescent boys who are focused on themselves and have a large level of self-control; in contrast to girls who have different orientation and seek reciprocal interlinking.

Many of the previous studies indicate that people who frequently make purchases are more probable to do their shopping in any shopping area since it is allowed by their shopping habits and possibilities. In consequence of this fact, frequent visitors often become a preferred target segment for marketing strategies, which has been proved also in the analyses carried out in the developed countries (Jarboe and McDaniel, 1987; Roy, 1994; Mägi and Julander, 2005; McEachern and Warnaby, 2006; Gentina and Bonsu, 2013; Blut *et al.*, 2018), as well as those from the post-socialist Central European countries (Nagy, 2001; Kunc *et al.*, 2012b; Križan *et al.*, 2014; Spilková, 2015). The conceptual implications, as well as strategic recommendations of the below presented and discussed the survey, are connected with the analysis of the frequency of visit (week vs month frequency) to a selected retail outlet – shopping centre, in combination with sociodemographic parameters of visitors and elementary space bonds (place of residence vs workplace).

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### *Consumer's behaviour and preferences: a Central European perspective*

In the context of current economic and political conditions within Central Europe, the issue of shopping behaviour was solved under different perspectives. As the behavioural aspects regards, the attention was focused on selected segments of consumers, e.g. on teenagers' and seniors' shopping behaviour (Križan *et al.*, 2018). Some studies highlighted the perspective of consumers for measuring the attractiveness of the Czech and Slovak shopping centres (Križan *et al.*, 2014; Kunc *et al.*, 2016). However, the researchers in the Czech and Slovak Republic focused mainly on the spatial aspects of shopping behaviour (Klapka *et al.*, 2013; Kunc *et al.*, 2012a; Križan *et al.*, 2014, 2018; Maryáš *et al.*, 2014), using spatial interaction modelling, gravity models and with regard to commuting for retail shopping. Similarly, the Polish and Hungarian scientific literature used the shopping centres' phenomenon as the subject of geographical research (Nagy, 2001; Zerebecka, 2005; Rochmińska, 2016).

The shopping centres' research with economic and managerial implications is not in the Central European area as common as the geographic perspective. Worth mentioning in this respect is the research analysing the impacts brought about by the economic crisis on Hungarian shopping tourism (Michalkó *et al.*, 2014) or the examination of shopping behaviour in Hungary under the changing economic circumstances (Millan and Howard, 2007). Changes in the behaviour and lifestyle of shopping centres' visitors in Bratislava in the context of management and marketing are investigated by Grossmanová *et al.* (2016) or Križan *et al.* (2014). Among other things, the authors point out the growing importance of consumer behaviour in declining economic prosperity and the ever lower chance of surviving small businesses in connection to the further concentration of retail into large-scale concepts. Last but not least, the tenant mix structure for the current shopping centres in Upper Silesian urban area region, taking under consideration consumer's preferences and behaviour can be mentioned (Marona and Wilk, 2016). In the Czech Republic, similar studies can be found in limited numbers. Rather, sociologically oriented works appear, focusing on typical changes in the behavior of young people in shopping malls, with hints of marketing recommendations. (Spilková, 2012; Spilková, and Radová, 2011; Klapilová-Krbová, 2016).

### *Research framework, data and methodology*

Information and data needed for the basic analyses and evaluation of the state of the shopping centres have been taken from the professional literature search, from the websites of respected counselling companies, such as the International Council of Shopping Centres (ICSC), Cushman and Wakefield, GfK, and last but not least, from the Czech Statistical Office. Furthermore, some data have been taken from the web pages, or the annual reports, of individual shopping centres.

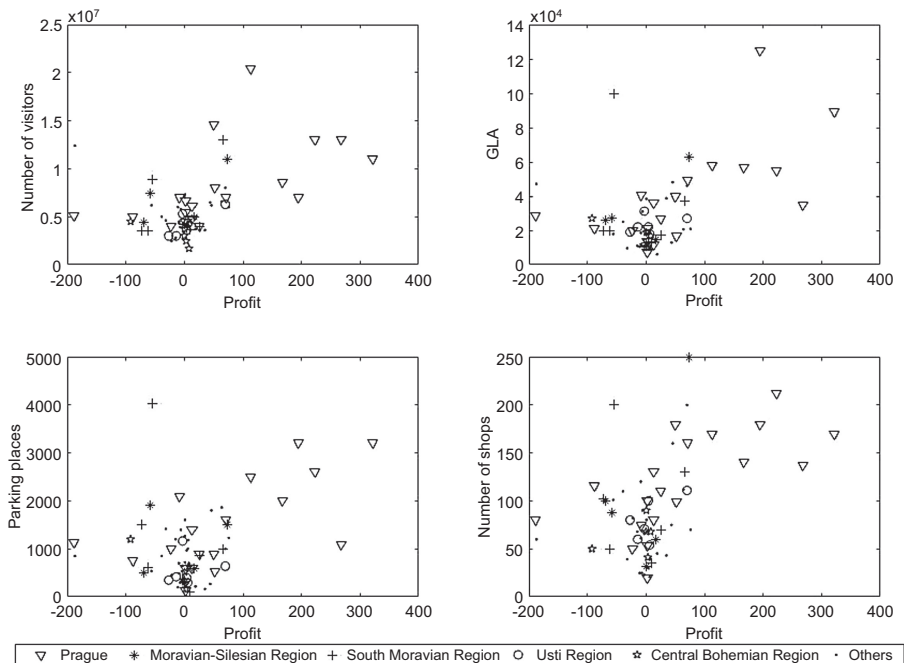
The research design has been conducted in two basic follow-up steps:

- (1) Identification and analysis of selected parameters of the shopping centres in the Czech Republic which corresponded to the international definition of ICSC, that defines a shopping centre as a centrally managed, purpose-built retail facility, comprising units and communal areas, with gross lettable area of over 5,000 sq. m. Factory outlets and retail parks are excluded (ICSC, 2018; Lambert, 2006). Eighty-five shopping centres complied with the stated definition, and 65 out of them (76%) allowed analysing the relevant data.
- (2) Selection and proving the adequacy of the choice of a model retail unit (shopping centre) where a questionnaire survey was conducted with the visitors in the form of a random selection.

Within the first step, we carried out a statistical analysis of the shopping centres (method of quadrant analysis), and evaluated the attributes of an average three-year gain/loss with the

number of visitors, gross leasable area, the number of parking places and the number of shopping units. These data come mainly from the official websites of individual shopping centres and their annual reports. The data were monitored and collected during the past few years. The profit of the centres is the average profit of three years 2015–2017, other data (e.g. number of visitors, shops and GLA) are from the end of 2017. These attributes are frequently used for evaluation of the attractiveness of a given centre (Teller and Reutterer, 2008; Teller and Alexander, 2014; Debek, 2015; Kunc *et al.*, 2016). Quadrant analysis (see the scatter plot – Figure 1) proved, on the one hand, high positive parameters with the centres located in Prague, the capital city; on the other hand, it showed their large eccentricity. The economic and purchase power of Prague residents is naturally reflected in the retail infrastructure. Therefore, the most economically successful and the most visited centres with the largest lettable area are located in Prague. Only a few regional centres can compete, to some extent, to shopping centres in Prague. Together with the Prague centres, they are not fully representative of our model. Simultaneously, we fulfilled also the second step of the primary research design; in other words, confirmation of selection of the model shopping centre where a survey with customers was conducted. It is a very successful, attractive, however not eccentrically located, shopping centre *Galerie Vaňkovka* (in English Vaňkovka Gallery), situated in Brno, the second biggest city of the Czech Republic.

Several empiric studies mentioned in the previous text are methodologically based on a questionnaire survey, which is the most common method of quantitative research (Flowerdew and Martin, 2004; Jackson *et al.*, 2011; Kunc *et al.*, 2012a; Krížan *et al.*, 2018). The presented survey was conducted in autumn 2017, using a standardised questionnaire, in the course of the whole week to detect weekdays as well as free weekend days; the inquirers



**Figure 1.** Quadrant analysis of selected attributes of the shopping centres in the Czech Republic

**Source(s):** Authors' processing

were trained students from the Masaryk University. It was a random selective quota-reduced collection within the demographic structure tied to the South Moravian Region average (gender, age and education) and the place of residence and workplace.

This research aims to elucidate the factors affecting the frequency of visit to shopping centres, providing implications for shopping centre managers from the perspective of the Czech consumers and their preferences. From this point of view, the demographic, spatial and behavioural factors, as well as the visiting purposes and realized activities were investigated. Based on the ascertained facts, it is crucial for the marketing strategy of the management to conduct a critical discussion on the survey results, and by means of descriptive statistic and modelling (linear probability model and logit model) to verify effects of factors, which influence the week/month frequency of visits. Finally, yet importantly, the authors attempt to perform synthesis and generalisation of the findings within the Central European area that is transforming, or to find relevant conclusions and recommendations.

### Frame of respondents

More than 1,000 respondents have been addressed, out of which 55% were women and 45% were men. The age structure is, considering the generally known facts, a particular image of the purpose to visit the shopping centre regarding the people in a certain age. Young people, mostly in the pre-productive age (up to 24), represent the strongest target group (one-quarter of respondents), in proportion to the age structure of the whole Czech population. No less important, and, to some point, the most financially independent group is represented by the people in productive age, mostly economically active (aged 25–59). The population segment with the smallest number was represented by the individuals beyond the productive age who are getting closer to the retirement age of 65. Basic attributes of the respondents are shown in Table 1.

### Measurement instruments

The following Table 2 depicts a selected collection of variables which were used in the questionnaire, and which were included in the analyses, evaluation and their primary coding. For a better overview, the explaining description has also been provided. The results were recoded into numerical values for the analysis, and some of the category variables were transferred to artificial variables so as the analysis carried out using models was relevant. Most variables were collected as a single choice possibility with two response options—specifically, the variables are *Week frequency*, *Month frequency*, *Work*, *Region*, *Gender*, *Shopaholic*, *Expansion and Education*. The variables *Age and Transport* were collected as a single choice possibility with multiple answer options. All questions with the single choice possibility were then recoded into the form of a binary variable. The variables *Purpose* and *Activity* were collected as multiple-choice possibility and subsequently recoded into binary variables. The single choice possibility questions were collected to define the individual

Gender	Age	Education	Place of residence
Men 45%	15–24 26%	Elementary 8%	Brno city 40%
	25–59 61%	Lower secondary 13%	Brno hinterland 60%
Women 55%	60 + 13%	Upper secondary 55%	- commuters to Brno 50%
		University degree 24%	- the others 50%
			(e.g., shopping, visiting Brno)

Source(s): Authors' processing

**Table 1.**  
Basic attributes of respondents



Variable	Description
Week frequency	One or more visits per week (0-no; 1-yes)
Month frequency	One or more visits per month (0-no; 1-yes)
Time	Travel time in minutes
Work	Work in Brno (0-no; 1-yes)
Region	Permanent residence in Brno-city or Brno-hinterland (0-no; 1-yes)
Purpose	Visiting purpose (1-work and shopping; 2-visiting of city centre; 3-work or personal meeting; 4-free time and fun; 5-other activity; 6-only shopping)
Activity	Activity in a shopping centre (1-food shopping; 2-clothes shopping; 3-sport shopping; 4-other shopping (books, electronics, etc.); 5-use of services (parking, ATM, Wi-Fi, etc.); 6-free time and fun)
Transport	Type of transportation (1-car; 2-public-transport (bus, train, tram); 3-eco-transport (bike, on foot))
Gender	Type of gender (0-man; 1-woman)
Age	Age range (1-15-24; 2-25-59; 3-60 and more)
Education	Achieved education (0-primary education or lower secondary school; 1-upper secondary school or university)
Shopaholic	Visiting other shopping centres (0-no; 1-yes)
Expansion	Demand for a wide range of products and for further expansion of the centre (0-no, no-opinion; 1-yes)

**Source(s):** Authors' processing

**Table 2.**  
Variables used in the survey and their description

groups firmly. The multiple-choice possibility questions were allowed to monitor the purposes of the visit and the activities of defined groups during their visit.

The conducted data analysis revealed the factors that influence the regular visiting of the *Galerie Vaňkovka*. Using a questionnaire survey and the follow-up econometric processing, determinants of regular week frequency and month frequency of visits (dependent variable *Week frequency* and *Month frequency*) have been determined. Dependent variables *Week frequency* and *Month frequency* were selected to find out if the determinants of visits of the *Galerie Vaňkovka* change with regard to frequency. This division can help to determine the characteristics of regular and less regular visitors and consequently help to target the optimal strategy for management. In view of the fact that the dependent variables are binary choice variables, linear model of probability (LMP) and a logit model were used (Pindyck and Rubinfeld, 1997). Thereafter, the quality and relevance of estimations will be assessed primarily according to the predicting power of both models.

Concerning the methodology of the research, we are aware of the existence of certain constraints related to the interpretation of the ascertained results, which are burdened with a certain level of generalisation. In terms of the choice of selected collection, this survey cannot be regarded as a representative image of the whole Czech population, however, the ascertained results still have, in terms of the selection of the shopping centre typical for the Czech environment and range of the researched sample, its informative and predictive value, and based on these results we can come to general conclusions.

The research questions are as follows:

- RQ1.* Does the shopping behaviour of respondents (activity and purpose of visit) influence the frequency of visits?
- RQ2.* How do the demographics (age, gender and education) and spatial variables influence the frequency of visits to the shopping centre?

RQ3. Does the frequency of visits to the shopping centre increase the additional demand of the customers for the potential centre expansion?

Frequency of shopping centre visits

### Results and discussion

For answering the research questions and verification of factors influencing the variability of the frequency of visits of the *Galerie Vaňkovka*, two types of models were used (LPM model and logit model) and the results are recorded in Table 3. The reference group is constituted by those individuals presenting the reference level of every variable. In both models, the reference group consists of men over 60 with a low level of education using a vehicle as a means of transport. Furthermore, in the reference group, we hypothetically consider that the men mentioned have permanent residence and work outside Brno and they have to commute to the *Galerie Vaňkovka*. For a better interpretation, their purpose and activity are set to zero (for the reason that each activity / purpose was operationalized as a single dummy variable and could be 0 or 1 in the regression model). This reference group is not primarily targeted in marketing management according to the internal documents of the *Galerie Vaňkovka*. For this reason, it can be expected that other groups will have no or positive influence on the estimated marginal effects. With both types of models, positive or negative implications on the dependent variable and statistical importance are interpreted in aggregate. If elsewhere in the text a specific value of growth by  $\bar{x}$ % occurs, it is an interpretation of the LPM model. For the logit model, the marginal effect can be interpreted only for the average value of the variable.

Dependent variable	Month frequency				Week frequency			
	LPM $\beta$	Sig.	Logit Marg. ef	Sig.	LPM $\beta$	Sig.	Logit Marg. ef.	Sig.
Const	0.208	0.002	–	0.000	0.094	0.170	–	0.000
Time/100	–0.001	0.001	–0.001	0.000	0.000	0.413	0.000	0.267
Region	0.011	0.736	0.026	0.560	0.017	0.627	0.021	0.555
Work	0.096	0.002	0.148	0.000	0.103	0.002	0.114	0.001
Purpose 1	0.094	0.008	0.151	0.001	0.091	0.012	0.079	0.029
Purpose 2	0.040	0.249	0.100	0.024	–0.038	0.299	–0.042	0.239
Purpose 3	–0.043	0.233	–0.026	0.594	–0.026	0.485	–0.030	0.433
Purpose 4	0.015	0.646	0.090	0.042	–0.027	0.437	–0.023	0.479
Purpose 5	–0.079	0.087	–0.012	0.843	–0.040	0.407	–0.045	0.336
Purpose 6	0.047	0.151	0.133	0.003	–0.019	0.581	–0.013	0.681
Activity 1	0.059	0.024	0.111	0.001	0.078	0.004	0.085	0.002
Activity 2	0.072	0.054	0.135	0.008	–0.090	0.019	–0.113	0.009
Activity 3	–0.017	0.529	–0.028	0.431	–0.031	0.270	–0.020	0.457
Activity 4	–0.027	0.297	–0.053	0.122	–0.046	0.082	–0.050	0.060
Activity 5	0.013	0.699	–0.001	0.989	0.056	0.111	0.056	0.137
Activity 6	0.014	0.593	0.027	0.425	0.006	0.813	0.005	0.851
Public-transport	0.009	0.751	0.020	0.607	0.070	0.023	0.080	0.009
Eco-transport	0.189	0.004	0.152	0.066	0.265	0.000	0.306	0.000
Age 15–24	0.087	0.081	0.134	0.026	–0.017	0.746	–0.022	0.660
Age 25–59	0.055	0.213	0.077	0.172	–0.037	0.412	–0.051	0.289
Gender	0.050	0.054	0.061	0.073	0.024	0.374	0.026	0.316
High education	0.432	0.000	x	x	0.091	0.001	0.095	0.001
Shopaholic	0.048	0.127	0.053	0.196	0.023	0.473	0.025	0.457
Expansion	0.086	0.001	0.123	0.000	0.140	0.000	0.141	0.000
R <sup>2</sup>	0.37		0.17		0.15		0.15	
Prediction	77.6%		74.3%		77.2%		76.6%	

Source(s): Authors' processing

**Table 3.** Modulation of factors influencing week and month frequency of visits

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In the first step, the attention was drawn to independent variables, which may influence the probability of regular visiting in terms of space allocation of the respondent. These are *Time/100*, *Region* and *Work* variables, which are connected with the individual's duty to travel. The results from LPM and logit models for both dependent variables show that the influence of *Time/100* variable (this variable measures the marginal influence of travel time while changing the travel time by 100 min) decreases the probability of regular visiting of the gallery, monthly as well as weekly. In other words, the more time spent on travelling, the lower the probability of the individual to visit the gallery. Naturally, this result is significant only for the month frequency of visits. A significant influence of variable *Region* on the dependent variable was not proven by any model.

On the contrary, variable *Work* proved to be statistically significant, which indicates whether the given respondent works in the Brno region. If the respondent stated that, he/she works within the city area, then the probability of his/her week frequency of visits goes up by 9.7% and month frequency by 9.9%. What is also significant here is the implication connected with the growing frequency of visits and the place of residence, alternatively with the workplace located directly in Brno.

The second step concentrated on determinants of the purpose of the visit. In this instance, the estimations of parameters with both frequencies show relatively different implications with some determinants. If the individual stated that the purpose of his/her visit was to drop by there on their way from work and to do shopping (*Purpose 1*), then both models show that the probability with both frequencies will go up by about 10%. For other purposes (*Purpose 2–6*), the statistically significant influence on variable *Month and Week frequency* has not been proven by LPM model. Slightly different results are given by the logit model estimation for *Month frequency*, which captures statistical significance for variables Purpose 2, Purpose 4 and Purpose 6 with a marginal effect in average values 10%, 9 and 13.3%. Only parameters with *Purpose 1* variable may be considered as statistically significant, i.e. the way from work and shopping. The results implicate the linking of simple purchases and other essential activities to frequency and repetition of visits.

The third group of determinants is represented by the variables monitoring the activity of respondents during the visit. From the point of view of the managerial decision-making, the benefits of individual activities indicated by respondents may be found attractive. From the resulting estimates, it can be stated that only Activities 1 and 2 have a statistically significant impact on frequency. Activities 1 and 2 have a positive impact on Month frequency. A slightly different result is for Week frequency. Activity 1 has still a positive impact on the frequency of visits, but Activity 2 has now a negative impact. Other activities (Activity 3–6) are not statistically significant. Higher week frequency of visits refer rather to more common activities (foodstuffs shopping, the possibility to park the car and spend free time in the centre), month frequency has stronger implication to the biggest magnet – *Galerie Vaňkovka*, which means the top world brands of apparel, apparel accessories or footwear.

The fourth group of factors that have an impact on the frequency of visits is the transport accessibility. The model shopping centre can be reached by car (our reference group), public-transport (tram, bus, train) or by using environmentally friendly means of transport—eco-transport (on foot, by bike). The results of estimations for a month frequency of visits show that the groups using public-transport or eco-transport have a higher rate of probability to visit the gallery, comparing to the groups coming by car. However, a statistically important difference, comparing to cars, has been proved only with the group using environmentally friendly means of transport. Similarly, the results of estimation for a week frequency of visits indicate that groups coming by public-transport have a higher rate of visiting probability comparing the groups coming by car. However, the result is now statistically significant. Again, the groups using the environmentally friendly means of transport have a higher visiting probability. These implications refer to the strategically favourable location of the

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*Galerie Vaňkovka*. It is situated near the city centre, between the train station and bus station, and in close proximity of the city public-transport, whereas it is not necessary to use a car as a primary means of transport (despite the fact that 1,000 parking places in the centre are nearly always fully used).

The last group of independent variables includes variables concentrating on the age, gender, education and behaviour of the respondent. Based on the statistical significance and with respect to the relationship between age structure and the frequency of visits, we can state that the probability of week frequency of visits was not different between groups segmented according to the age; the probability of month frequency of visits was different only between the age group 15–24 and the age group over 60, whereas the younger group, according to the LPM and logit models' estimations, visits the gallery more often. As for the respondent's gender, both estimates of the LPM and logit models based on points estimates show that women come more regularly than men; with week frequency of visits the probability increased by 2.4% (2.6%), and with the month frequency by 5% (6%). Again, in both models, the *Gender* variable is statistically significant only for a month frequency of visits. If the respondent claimed to have upper secondary or higher education (*High education* variable), the probability of regular month frequency of visits went up by 43% and week frequency by 9%. The variable is in all models statistically significant. The *Shopaholic* variable indicates the situation in which the individual stated that he/she also visits other shopping centres. This variable has no statistically significant impact on the probability of week or month frequency of visits. The last variable is the *Expansion* variable that expresses sufficient demand of the respondents for a wide range of products, and a potential for further expansion of the centre. If the respondent stated that he/she would prefer further expansion of the *Galerie Vaňkovka*, the probability of his/her week frequency of visits was by 14% (14%) higher than in case of month frequency which was by 8.6% (12%) higher. Based on such robust results we can deduce plenty of suggestions for the management of the centre; the target groups of consumers have been shaped (young people, especially women, economically active, with higher education). Furthermore, it has been proved that the expansion of the *Galerie Vaňkovka* would be appreciated mainly by the visitors with higher visiting probability, in other words, the loyal customers.

Table 4 summarises the results of our analyses and models. It brings an overview of statistically significant influences specifying the direction of each marginal effect in both models. Together with the text above and below, it answers to research questions (RQ1–RQ3) and helps authors discuss more or less expected links and dependencies, as well as the frequency of visits in the context of selected parameters (dependent variables).

As expected, the length of commuting has a negative effect on the probability of month visit. In line with expectations, the variable Time/100 is not significant at the week frequency of visits. In other words, people living in a faraway from Brno will not be motivated to visit *Galerie Vaňkovka* regularly. On the contrary, these consumers will visit the shopping centre occasionally and the dependency between the time of arrival and the probability of visit will be negative (as is the case of the month frequency of visits).

The variable *Work*, resp. the alternative work in Brno or outside Brno, has a positive influence on the increase in the probability of frequency on both monthly and weekly bases. If the consumer works in Brno, the assumption that he/she visits the shopping centre more often increases, even though he/she does not have to be a resident of Brno. This fact is supported by the immediate proximity of the two most important transport hubs, i.e. the main train and bus stations, which serve as a catchment area for the population of the surrounding towns and villages. Entirely in line with this finding is the statistically insignificant result of the variable *Region*, pointing out how the shopping centre is visited by Brno residents compared to non-residents. For the variable *Region*, there is no statistically significant difference in a regular visit of both Brno residents and non-residents.

Dependent variable	Month frequency		Week frequency	
	LPM	Logit	LPM	Logit
Time/100	–	–	x	x
Work	+	+	+	+
Purpose 1 – work and shopping	+	+	+	+
Purpose 2 – visiting of city centre	x	+	x	x
Purpose 4 – work or personal meeting	x	+	x	x
Purpose 6 – only shopping	x	+	x	x
Activity 1 – food shopping	+	+	+	+
Activity 2 – clothes shopping	+	+	–	–
Activity 4 – other shopping (books, electronics, etc.)	x	x	–	–
Public-transport	x	x	+	+
Eco-transport	+	+	+	+
Age 15–24	+	+	x	x
Gender	+	+	x	x
High education	+	+	+	+
Expansion	+	+	+	+

**Table 4.**  
Statistically significant  
influences

**Note(s):** + indicates a positive and significant impact on the probability of visits; – indicates a negative and significant impact on the probability of visits; x indicates an insignificant impact on the probability of visits  
**Source(s):** Authors' processing

As regards the variable *Purpose*, a visit for work and shopping purposes has made a significant impact. This finding is again in line with the previous statement that a substantial part of the consumers regularly visits the *Galerie Vaňkovka* within their journey to or from work. As regards other purposes, the significant influence of purposes 2, 4, and 6 proved only the logit model on the monthly base. These purposes (visiting the city centre, free time spending and fun, only shopping) are typically associated with leisure activities and tourism, so they logically affect only the less regular frequency of visits.

As expected, the activities as food shopping (for week frequency) and clothes shopping (for month frequency) have a significant positive effect on increasing the probability of week and month frequencies. Both activities are among the top long-term (clothes shopping) and developing (food shopping) attractiveness of the shopping centre, not only for young people. The last information about the variable *Activity* is the lower probability of week frequency in the case that the consumer searches for goods of a different character, e.g. books, electronics, etc.

The result of the variable *Public-transport* can be interpreted in the context of the previous claims. The choice of public-transport against the car has a significant impact on the week frequency of visit. In this case, the influence of the catchment area for non-residents working in Brno is likely to prevail. Similarly, the importance of residents choosing public-transport as a means of transport can also be considered. In the case of month frequency, the influence of variable *Public-transport* is negligible. It relates probably to the form of large monthly shopping in the centres on the outskirts of cities, which are primarily geared towards consumers arriving by car.

Differences in the probability of a visit are mostly insignificant among age groups. The only significant difference is shown by the models for the variable *Age 15–24*, where the probability of a regular monthly visit of younger people is higher. Similar results are also found for the variable *Gender*, where women visit the *Galerie Vaňkovka* monthly with higher probability than men. An interesting finding for management may be the fact that consumers with higher education (variable *High Education*) and the consumers interested in the planned expansion of the centre (variable *Expansion*) are most likely to visit the centre on both week and month frequency.

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## Conclusion

The paper deals with shopping behaviour and consumers' preferences of shopping centre visitors. It elucidates the factors affecting the frequency of shopping centres' visits. The findings are complex, generally analysing the whole population of consumers and their sociodemographic characteristics. Most importantly, it helps to gain higher accuracy in focusing on target groups, which should be targeted by the strategies, and it makes individual addressing easier, which is enabled by using more and more popular digital formats of communication and social and digital media and networks (Priporas *et al.*, 2017). These elements are increasingly used not only by the younger generation but also by other population segments for shopping and leisure (Spilková; Radová, 2011; Križan *et al.*, 2018). These facts have been proved also by our survey, which has pushed forward the critical discourse to the part of the demand, which means consumer behaviour, preferences and needs.

Nowadays, the management of attractive and successful shopping centres cannot exist without consumer trends monitoring, concentration on a customer (Ailawadi and Farris, 2017) and implementation of new marketing strategies (Kalinic *et al.*, 2019). These actions require a deep understanding of the shopping behaviour and consumers' preferences. The frequency of visits, i.e. the primary interest of our research, can be considered as a relevant behavioural outcome and a key performance indicator reflecting consumers' attraction to the shopping centre (Calvo-Porrá and Lévy-Mangín, 2018).

Managerial decision-making and marketing planning are complex processes, which have great dynamics and variability in time, and it is complicated to state any determinant proclamations. Nevertheless, based on the extensive questionnaire survey conducted in a typical representative of the shopping centres located in the city centre, we may deduce some implications and recommendations with the impact at the city and region not only in the Czech Republic but also in other Central European countries.

To summarize the previous findings of our original research into managerial and marketing application plane, it is possible to develop some recommendations which are based on the answers to research questions. The results highlighted the importance of customers' activities and purposes for the frequency of visits (RQ1). The regularity of the frequency of visits is significantly associated primarily with work as a daily activity and with the place of work itself. The less regular frequency of visits, but still statistically significant, is associated with leisure activities and recreational shopping. A typical activity with an explicitly week frequency is the basic foodstuffs shopping, and with a month frequency, the clothes shopping. The answer to RQ2 can be summarized in the statement that the frequency of shopping centre visits is less significantly influenced by the demographic structure of visitors. Only the probability of a higher frequency of visits among young women with higher education can be indicated. Similarly, the planned expansion of the centre indicates the likelihood of a higher frequency of visits, especially for regular customers (RQ3).

In the case of marketing strategies planning oriented on a shorter (week) frequency of visits, the management of the centre could focus on a group of more educated consumers working in Brno and using public or other ecological means of transport. The frequency of visits could be increased through a strategy aimed at buying goods of regular (daily to weekly) consumption, such as food and other goods of daily use. However, it is not just about buying basic foodstuffs, here is a possibility for management to combine the long-term planned and still unrealized expansion of the centre, enhancing the current trends in the food segment, i.e. the conversion of the Albert hypermarket into a farmer's market, organizing thematic food festivals or further developing of traditional types of food courts (restaurants, classic fast foods, cafes, etc.), and especially the new ones, authentic, specialized and healthy slow food concepts (e.g. *UGO Salaterie, Sklizeno Food*). It was also evident during our

research that the centre's management responded to this trend which mainly affects younger and middle generations, families with children, and the typically economically active population. The tenant mix has changed with the fact that fashion, fashion accessories, footwear, and sports and leisure clothing are still prevailing, but the food segment is currently the most dynamic.

In addition to the standard focus on everyday visitors and more educated customers working in Brno, the shopping centre management should focus on groups of occasional visitors and tourists (shopping tourism), who visit the gallery monthly with the aim of more extensive shopping or spending their free time. The management can also target on groups of younger generations (Generation Y and Z), or women, preferring shopping with month frequency, typically clothes, footwear, fashion and accessories of the world's brands. It is a range of products that the management of a successful and competitive shopping centre cannot ignore. Last but not least, the marketing strategies should lead to the regular and loyal financially secure customers who are interested in a planned expansion of the centre premises, range of products, the establishment of top brands, etc.

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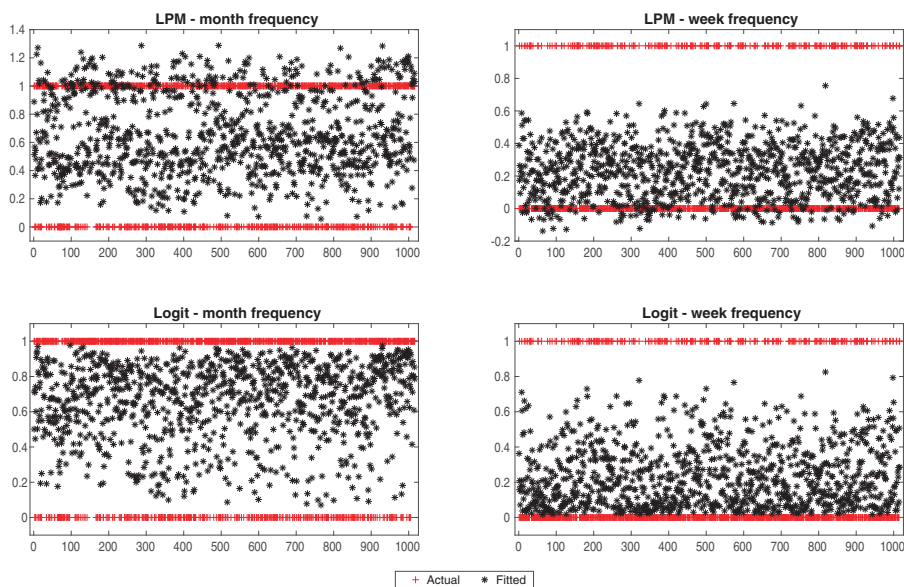
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### Further Reading

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### Appendix

The quality of the model is assessed according to their ability to predict their probability of visits based on their determinants. The prediction power, see [Table A1](#), is counted based on correctly predicted results. Since the equal values used by the model have not binary character, we were forced to choose a particular value of the criteria according to which the equal value was transferred to the value of zero or one. For the evaluation of the quality of the prediction, we selected value of the criteria of 0.5 – i.e. if the equal value was higher or equal to the value of 0.5 the prediction obtained value of 1; vice versa, if the equal value was lower than 0.5 the prediction obtained value 0. [Table A1](#) clearly shows that both models correctly predict more than 70% of real values. Since the selected value of 0.5 was a standardly selected value (the value of the criteria of 0.5 does not have necessarily mean the highest prediction abilities), the comparison is in [Figure A1](#) (Appendix) with the graphic depiction of equal and real values with



**Figure A1.**  
Graphic depiction of equal and real values with prediction ability with both models and frequency of visit

**Source(s):** Authors' processing

**Table A1.**  
Correctness of the predictions of models based on selected variables

	LPM (Month frequency)	Logit (Month frequency)	LPM (Week frequency)	Logit (Week frequency)
$\hat{p} \geq 0.40$	77.16%	73.92%	76.18%	75.49%
$\hat{p} \geq 0.45$	79.12%	73.92%	76.77%	76.57%
$\hat{p} \geq 0.50$	77.65%	74.31%	77.16%	76.57%
$\hat{p} \geq 0.55$	77.75%	73.92%	76.86%	76.86%
$\hat{p} \geq 0.60$	76.18%	73.04%	76.96%	76.86%

**Source(s):** Authors' processing

calculated prediction ability of a given model on the basis of different values of criteria (gradually selected values of 0.40, 0.45, 0.50, 0.55 and 0.60).

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