International Journal of Scientific Research and Management (IJSRM)
||Volume||10||Issue||06||Pages||EM-2022-3564-3579||2022||
Website: www.ijsrm.in ISSN (e): 2321-3418
DOI: 10.18535/ijsrm/v10i6.em01

Determinants of shopping centre preferences: Cali, Colombia

Ana M. Álvarez-Cano[1], Lilian A. Carrillo-Rodríguez[2], Johann A. Ospina-Galindez[3]

[1,2,3]Professor, Universidad Autónoma de Occidente

Abstract
The tendency to choose a shopping centre has motivated the interest in the development of this study, which aims to identify the factors of commercial attraction (place of residence, socio-economic level, transport system and reasons for visit) that determine preferences when going to a shopping centre. This study focuses on the five main shopping centre in the city of Cali, Colombia. Since most previous studies on this topic conducted in this region are limited to a qualitative scope, this study has a quantitative focus. Methodology: A survey of 516 people was carried out at consumers´ homes, and a generalised linear model with multinomial logit was adjusted. Findings: Socio-economic level, educational level, marital status, distance and leisure are determinants of visitors' shopping centre preferences. These results are expected to help the entrepreneurs across these businesses upon implementing marketing strategies that are targeted to specific market segments that allow the strengthening of their natural market and to attract a potential market. These findings could be used in other types of business, research and by academics in the retail and marketing research areas.

Keywords: Determinants, preferences, shopping centres, generalised linear model, multinomial logit.

Introduction

Open-air shopping centres have extended their role in the community, being recognised not only as commercial areas focused on traditional shopping but also as complex service centres providing entertainment and leisure (Csaba and Askegaard, 1999; Gasca-Zamora, 2017; Kozinets *et al.*, 2004; Mittal and Jhamb, 2016), which also gives rise to new urban agglomerations (Palacios Roberto, 2016). Today they are highly organised social spaces with appropriate environments and structures to generate experiences (Frat and Venkalesh, 1993; Gasca-Zamora, 2017; Pine *et al.*, 1999) that motivate visitors to stay longer, invest more money or recommend them to others (Mohammad and Ahmad, 2012). However, this growth has generated commercial overlap (Huff and Rust, 1984) among the shopping centres that share primary demand, saturating some geographical areas, as is the case with some European countries where accelerated growth has stabilised since 2017, reaching maturity stage (Cushman and Wakefield, 2019).

In Latin America, although shopping centres continue to grow, they are already commercially overlapping in geographical areas of greater concentration. Therefore, these businesses are sharing their primary demand, which has motivated the design of strategies to attract visitors from different lifestyles, socio-economic levels and located in geographical areas of secondary and tertiary influence. Moreover, they are transforming their morphology, sizes, functions and innovating what they offer in order to create spaces where consumer practices are diversified and themed (Gasca-Zamora, 2017). In other words, commercial attraction factors are changing, from the offer of products that satisfy utilitarian needs such as security, search for special offers and convenience to the satisfaction of hedonic needs, such as entertainment, freedom, an appreciation of modernity and self-identity (Farrag *et al.*, 2010).

However, in the city, no studies have been identified that show whether these are the factors that attract consumers from all geographical areas and socio-demographic strata in the region studied, based on the spatial purchasing behaviour of visitors to shopping centres. Therefore, the research question is: **What factors (place of residence, socio-economic level, means of transport and reasons for the visit) determine the preference for visiting a shopping centre?**

To choose the variables to be included in the measurement scale, the theoretical models proposed by De Juan Vigaray (2005) and Díez de Castro (1997) were taken as a reference, as well as recent studies on the commercial attraction factors exercised by shopping centres. Data were collected from a sample of 516 people who visited the shopping centres in the last month, through the application of a personal survey and the unit of analysis was selected from a quota sampling (Jiang, 2010).

The five main outdoors shopping centres in the city of Cali –selected because they have the highest number of sales and visitors– were taken as the object of study: Unicentro (UNI), Cosmocentro (COS), Chipichape (CHI), Jardín Plaza (JPL) and Palmetto (PAL). The city of Cali, capital of the Department of Valle del Cauca, with 2,228,000 inhabitants, is Colombia's third biggest city.

The result of the empirical study allowed to determine that not all people visit exclusively shopping centres located in their primary area of influence, represented by a 15-minute commute (Brunetti *et al.*, 2004). Among the main findings, high socio-economic level, higher educational level and distance were fundamental factors in deciding to go to a shopping centre that has exclusive stores such as Jardín Plaza. Therefore, these results constitute a reference for academics and researchers in the development of measurement scales. Furthermore, they are expected to help entrepreneurs in these businesses upon implementing marketing strategies aimed at specific segments (Prashar *et al.*, 2019), in order to strengthen their natural market and attract potential markets.

Theorical Framework

Commercial attraction, understood as 'the capacity of a commercial area to attract a large number of buyers' (De Juan Vigaray, 2005), has been studied by different disciplines (Más Ruíz, 1996), starting with geography, which was responsible for studying the effect of the distance between the place of production and the market. Later on, economists were interested in determining the time saved in travel from the place of residence to the commercial area. In addition, psychology showed that the internal factors of an individual also influence the choice of the point of sale. Studies called 'spatial purchasing behaviour', which consist of identifying demographic, social, behavioural and psychographic factors, analyse how the decision to go shopping to a given point of sale is affected (Kosiak et al, 2006).

According to the foregoing, the different models that have been developed to know the variables that determine that consumers go to a shopping centre are organised in three approaches (De Juan Vigaray and Rivera,1999). First, the approach of Wee and Pearce (1985) considers within the utility function only the centres 'evoked' by the different consumers. In this model, the measure of 'attraction' is reflected in three different ways: through shopping trips, through the expenses made on these trips and through a combination of both. A second approach highlights the work of Gautsch (1981) who proposes to add this type of variables to the Huff model, the relative frequency of shopping trips made, time and distance. In the third approach, commercial attraction factors are analysed from the standpoint of demand, thus showing the models of shopping behaviour (Abutaleb et al, 2019). This allows analysis from factors internal and external to the shopping centre.

Specifically, internal factors are marketing, variety and selection, environment and facilities and convenience (Mittal and Jhamb, 2016). Marketing is represented by the variety of products (Ismail El-Adly, 2007), product packaging, quality of goods (Ahmad, 2012), adequate display, reasonable price and promotion (Palacios Roberto, 2016; Tandon *et al.*, 2016); variety and selection (González-Hernández and Orozco-Gómez, 2012) are represented by brand availability, product availability and exchange facilities; environment and facilities are represented by the parking lot, service environment and spaces (Abutaleb et al, 2019) and environment and location; and convenience is represented by trained sales staff and convenient shopping hours.

Other researchers have focused on defining buyers' profiles, classified into recreational and economic/convenient (Bellenger *et al.*, 1977), by the type of activity performed, leaving a gap with respect

to the reasons why a person is willing to travel a long distance or spend more time in transport to visit the shopping centre that can meet their needs.

As a result of this review, we conclude that, although similarities are observed in the results of the studies, there are also strong differences in defining the factors of commercial attraction. Therefore, for the development of the model proposed, the following variables were taken into account: socio-demographic characteristics; geographical distance and travel time; and reasons for the visit (Farrag *et al.*, 2010).

Socio-demographic Characteristics

Preference for a certain shopping centre is highly related to the buyers' socio-demographic characteristics (Garg and Atwaru, 2017) and it influences their attitude (Sohail, 2015). The variables that most frequently configure the profiles are age, gender, family situation, social class and educational level. In line with this orientation, Akpinar *et al.*, (2017) argue that shopping centres determine the best location based on geomarketing analysis techniques, and by analysing the socio-economic context of the surrounding population. These references allow for the following hypotheses to be formulated:

H1: Socio-demographic factors affect visitors' preferences for a particular shopping centre.

Distance and Travel

Distance was the first variable considered in studies of commercial attraction. For this purpose, the law of retail gravitation used by Reilly (1931) was used to establish that 'two cities draw trade from any intermediate city or town in the vicinity of the breaking point, in direct proportion to the population census of the two cities and inversely to the square of the distance from these two cities to the intermediate town'. The limitations of this study give rise to Huff's (1963) alternative probabilistic model based on the premise that the usefulness for a consumer 'i' of moving to a centre 'j' depends directly on the attraction weight of the facility. In 1981, the characteristics of shopping centres and forms of transport were added to the model (Gautsch, 1981). Moreover, Martín Méndez and Ojeda López (2017) indicate that the geographical location of shopping centres is a competitive advantage for attracting visitors. Finn *et al.* (1994) found that the time spent shopping depended on distance; thus, individuals living in areas closer to shopping centres purchase more. Therefore, we elaborated the following hypothesis:

H2: Distance and travel affect visitors' preference for a particular shopping centre.

Reasons for Visiting a Shopping Centre

According to the studies reviewed, the reasons that greatly influence people's decision to buy in a shopping centre include service atmosphere (Ortegón-Cortázar and Royo-Vela, 2017), space availability, convenience represented by a variety of services (Mittal and Jhamb, 2016) and the opportunity to carry out leisure, entertainment and shopping activities (Tandon *et al.*, 2016). Shops, food courts, restaurants, cinemas, children's play areas, interactive entertainment, social areas, relaxation spaces and special offers areas are now major components of any shopping centre (Terblanché, 1999). With the growing number of shopping centres, buyers tend to be more selective and likely to prefer shopping centres that are more attractive and have a wide variety of shops and products that match their preferences (Khei Mie Wong *et al.*, 2001). The supply of services, parking lots and child friendliness of the shopping centre are attraction factors according to Wong and Nair (2018). This leads to the following hypothesis:

H3: Reasons for visiting affect visitors' preference for a particular shopping centre.

Methods

Data

Before conducting the survey, the commercial centres studied located in the city of Cali were characterised through the collection of secondary data and unstructured observation. Subsequently, primary data were collected by means of a personal survey aimed at people over 18 who had visited the shopping centre within the six months prior to the survey. The structured questionnaire was prepared using the results of the

literature review and the final version is the result of a previous validation carried out with a group of shopping centre users and an expert committee.

The instrument is measured by applying a Likert scale, in order of importance, from 1 to 5, where 5 is very important, 4 is important, 3 is indifferent, 2 is a little important and 1 is unimportant. The questions related to the variables determining purchasing habits, such as place of origin, means of transport and travel time were multiple choice questions. The survey also included questions to identify respondents, such as: gender, age, educational level, socio-economic level and marital status.

Non-probability sampling was applied by quotas, classified by sex and age. The sample consists of 516 people with a 5% error margin.

In order to measure the variables that determine the spatial consumer behaviour of shopping centre users, data were grouped by category and presented in frequency distribution tables and bar charts. In addition, all indicators of central tendency and variability were used. Similarly, a bivariate statistical analysis was conducted to look for possible relationships between the different variables analysed and to explain their behaviour.

An expert committee validated the instrument, understood as the degree to which the content of the instrument reflects a specific proficiency of what is to be measured. Moreover, reliability, understood as the degree to which its repeated application to the same phenomenon generates similar results (Hernández et.al, 2003), was obtained through the application of Cronbach's Alpha coefficient. This yielded an alpha of 0.9, which indicates that questions are highly consistent. Due to the nature of the research, which aims to measure the relationship between the factors of commercial attraction, the behaviour and socio-demographic characteristics of visitors who come to shopping centres, the instrument built is deemed relevant and reliable.

Characteristics of the sample

The target population is, on average, 39 ± 17 years old. Most respondents are women: 52.33% belong to socioeconomic level 3 (45.74%); 45.93% of respondents are single with a high-school educational level (32.95%) and (23.26%) have university education. In addition, the association between the variables (gender, socioeconomic level, marital status and education) and the shopping centre preference was studied. Significant associations were found concerning socioeconomic level ($p < 0.01$), marital status ($p = 0.02$) and educational level (value $p < 0.01$). This shows, exploratorily, that there is an influential factor in the preference for the shopping centre, according to the foregoing characteristics (see **Table 1**). **Table 2** shows the results of the association between the reason for visiting the shopping centre and the preferred shopping centre. A significant association is highlighted in the purchasing activity ($p = 0.06$).

Table 1. Behaviour of socio-demographic variables per shopping centre

			Shopping centre					
Characteristic								***p* Value**
	Chipichape	**Palmetto**	**Cosmocentro**	**Unicentro**	**Jardín Plaza**	**Único**	**Total**	
Age (Average± SD)	41±17	39±15	37±16	41±19	33±16	41±17	39±17	
Gender								
Female	106 (20.54)	33 (6.40)	29 (5.62)	47 (9.11)	33 (6.40)	22 (4.26)	270 (52.33)	0.744
Male	86 (16.67)	33 (6.40)	24 (4.65)	50 (9.69)	37 (7.17)	16 (3.10)	246 (47.67)	
Socio-economic level								
3	65 (12.60)	38 (7.36)	44 (8.53)	40 (7.75)	20 (3.88)	29 (5.62)	236 (45.74)	
4	58 (11.24)	17 (3.29)	7 (1.36)	21 (4.07)	17 (30.29)	5 (0.97)	125 (24.22)	**<0.01**
5	58 (11.24)	11 (2.13)	2 (0.39)	19 (3.68)	23 (4.46)	2 (0.39)	115 (22.29)	
6	11 (2.13)	0 (0.00)	0 (0.00)	17 (3.29)	10 (1.94)	2 (0.39)	40 (7.75)	
Marital Status								
Single	78 (15.12)	25 (4.84)	28 (5.43)	52 (10.08)	40 (7.75)	14 (2.71)	237 (45.93)	
Married	72 (13.95)	20 (3.88)	13 (2.52)	34 (6.59)	28 (5.43)	13 (2.52)	180 (34.88)	
Cohabitating	18 (3.49)	12 (2.33)	10 (1.94)	5 (0.97)	2 (0.39)	4 (0.78)	51 (9.88)	**0.002**

Separated	12 (2.33)	4 (0.78)	1 (0.19)	3 (0.58)	0 (0)	5 (0.97)	25 (4.84)	
Widow	12 (2.33)	5 (0.97)	1 (0.19)	3 (0.58)	0 (0)	2 (0.39)	23 (4.46)	
Educational Level								
None	0 (0)	3 (0.58)	1 (0.19)	1 (0.19)	1 (0.19)	3 (0.58)	9 (1.74)	
Primary school	13 (2.52)	7 (1.36)	4 (0.78)	10 (1.94)	0 (0)	3 (0.58)	37 (7.17)	
Secondary school	72 (13.95)	21 (4.07)	21 (4.07)	23 (4.46)	14 (2.71)	19 (3.68)	170 (32.95)	
Technician	26 (5.04)	20 (3.88)	15 (2.91)	19 (3.68)	13 (2.52)	6 (1.16)	99 (19.19)	**<0.01**
University (student)	48 (9.3)	8 (1.55)	5 (0.97)	28 (5.43)	28 (5.43)	3 (0.58)	120 (23.26)	
Professional	29 (5.62)	6 (1.16)	6 (1.16)	12 (2.33)	11 (2.13)	4 (0.78)	68 (13.18)	
Postgraduate	4 (0.78)	1 (0.19)	1 (0.19)	4 (0.78)	3 (0.58)	0 (0)	13 (2.52)	

Source: Self-made.

Model

Table 2. Behaviour of the reason for visiting according to shopping centre

Characteristics	Shopping centre							*P Value*
	Chipichape	Palmetto	Cosmocentro	Unicentro	Jardín Plaza	Único	Total	
Leisure								
Yes	179 (2.52)	56 (10.85)	50 (9.69)	89 (17.25)	62 (12.02)	38 (7.36)	474 (91.86)	0.086
No	13 (2.52)	10 (1.94)	3 (0.58)	8 (1.55)	8 (1.55)	0 (0.00)	42 (8.14)	
Shopping								
Yes	175 (33.91)	57 (11.05)	48 (9.30)	77 (14.92)	59 (11.43)	30 (5.81)	446 (86.43)	0.060
No	17 (3.29)	9 (1.74)	5 (0.97)	20 (3.88)	11 (2.13)	8 (1.55)	70 (13.57)	
Errands								
Yes	135 (26.16)	52 (10.08)	36 (6.98)	69 (13.37)	53 (10.27)	27 (5.23)	372 (72.09)	0.738
No	57 (11.05)	14 (2.71)	17 (3.29)	28 (5.43)	17 (3.29)	11 (2.13)	144 (27.91)	

Source: Self-made.

The first exploratory data analysis was sought to observe the individual behaviour of the variables included in the model, through a descriptive analysis using relative frequencies in the categories of each of the qualitative variables and grouping the measurements of the quantitative variables. Subsequently, the association between socio-demographic variables and the shopping centre preference was evaluated using the Chi-2 test in the case of expected frequencies greater than 5 and the exact Fisher test when expected frequencies are less than 5. Finally, in order to analyse whether there is a significant change due to the travel and distance according to the shopping centre preference, the Kruskall-Wallis test was used. The tests were contrasted with a significance level of 5% and all the statistical analysis was performed in the R software version 3.01 Team (2014).

The theoretical aspects of the modelling methodology are presented below. The model of multinomial logistic regression, also known as model with polytonic response, is a generalisation of the binomial logistic regression model (Mc Cullagh, 1983) through which it is intended to estimate the probability that the individual may present a specific event, given a set of variables that explain the particular characteristics of individuals. In the case of the multinomial model, the endogenous variable has more than two alternatives to consider as possible responses; therefore, the appropriate probability distribution to model this phenomenon is multinomial distribution. It should be noted that multinomial logistic regression differs from conditional and ordinal logistic regression: in conditional regression the explanatory variables refer to attributes of the alternatives, varying their values for each of them, while they may or may not vary for each individual. In addition, only one vector of parameters is estimated, whereas in the multinomial case, there are as many vectors as there are categories minus one.

In order to estimate the parameters in the multinomial logistic model, the function of linking the multinomial distribution to the exponential family, referred to as logit transformation, is used:

$$log\left(E(Y_i)\right) = log\left(\frac{p_{ij}}{p_{ig}}\right) \quad (1)$$

Where ^{p}ij is the probability that the individual *i* belongs to category *j*, p_{ig} corresponds to the probability of the same individual in category *g*, which is defined as the reference category, of the variable with multinomial distribution *Y*. Because the foregoing, function (1) takes values continuously between $-\infty \;\; y \;\; \infty$, it is reasonable to think about making $\left(E(Y_i)\right)$ depend linearly on regressors[1].

$$log\left(E(Y_i)\right) = log\left(\frac{p_{ij}}{p_{ig}}\right) = \beta_{0j} + \beta_{1j}x_{i1} + \cdots + \beta_{1p}x_{ip} \quad (2)$$

Where,
i: is the number of observations.
p: is the number of independent variables.

From the research question, the following statistical hypotheses are raised:

1. H0: Socio-economic factors do not affect the preference for a shopping centre.
   H1: Socio-economic factors affect the preference for a shopping centre.
2. H0: The reasons for visiting a shopping centre do not affect the preference for a shopping centre.
   H1: Reasons for visiting a shopping centre affect the preference for a shopping centre.
3. H0: Distance and travel do not affect the preference for a shopping centre.
   H1: Distance and travel affect the preference for a shopping centre.

Results

For the purpose of exploring the relationships between the response variable (preferred shopping centre) and the independent variables (gender, age, socioeconomic level, number of children, marital status, educational level, travel to the shopping centre and distance to the shopping centre), a descriptive analysis of the variables mentioned was carried out to evaluate relationships and behaviours in a univariate and bivariate manner. **Table 3** shows the operationalisation of the study variables to be included in the model.

Table 3. Operationalization of the modelling variables.

Variable	Category	Type	Scale	Units
	1. Chipichape			
	2. Palmetto			
Shopping centre	3. Cosmocentro	Qualitative	Nominal	-
	4. Unicentro			
	5. Jardín Plaza			
	6. Único			
Gender	1. Female	Qualitative	Nominal	-
	2. Male			
	1. 1			
	2. 2			
Socioeconomic level	3. 3	Qualitative	Ordinal	-
	4. 4			
	5. 5			

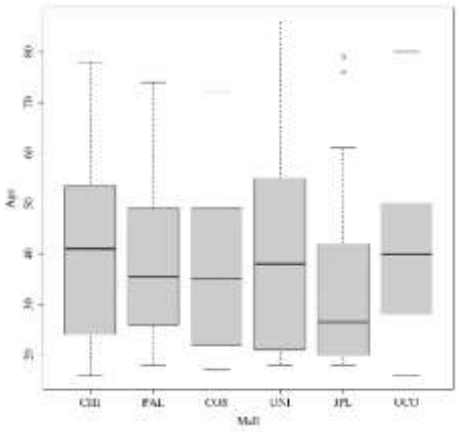
[1]Transforming E(Yi) media is an alternative approach to transforming Yi and in many ways more precise. A transformation of the response, such as those of the Box-Cox family, has to meet several objectives. On the one hand, it is desired that the response variable approaches normality. On the other hand, variance should be homogeneous and the dependence of the regressors should be linear. This approach of making the regressors depend linearly on the mean of the response variable is much more flexible. One can then choose the function of the mean that is closest to it and specify separately the distribution of the response variable around its mean. The approach thus enjoys enormous flexibility (Núñez and Tusell, 2005).

	6. 6			
	1. Single			
	2. Married			
Marital status	3. Cohabiting	Qualitative	Nominal	-
	4. Separated			
	5. Widow			
	1. None			
	2. Primary School			
	3. Secondary School			
Educational level	4. Technician	Qualitative	Ordinal	-
	5. University			
	6.Professional			
	7.Postgraduate			
Age	-	Quantitative continuous	Ratio	Years
Number of children	-	Quantitative discrete	-	-
Travel	-	Quantitative continuous	Ratio	Minutes
Distance to Shopping centre		Quantitative continuous	Ratio	Meters
	-	Qualitative	Nominal	-
Leisure reasons		Qualitative	Nominal	-
Shopping reasons		Qualitative	Nominal	-
Errands reason				

Source: Self-made.

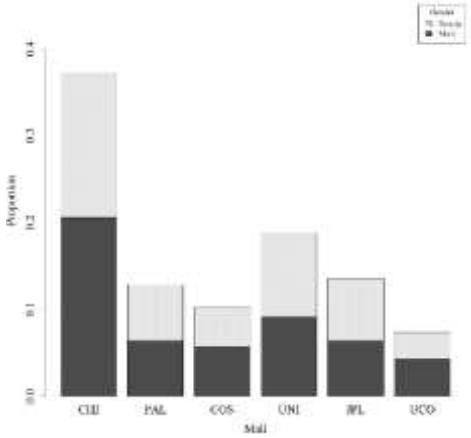
Figure 1 does not show a trend towards shopping centre preference based on age; **Figure 2** emphasises that men prefer going to Chipichape and Unicentro; **Figure 3**, **Figure 4, Figure 5 and Figure 6**, respectively, show that socioeconomic level 3, married people without children and with a high-school educational level, visits the shopping centres without shopping centre preference prevailing.

Figure 1. Behaviour of age per shopping centre



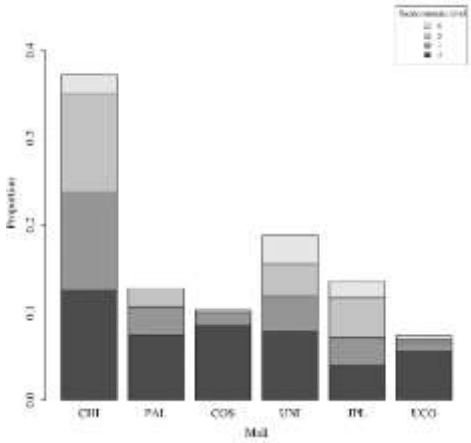
Source: Self-made.

Figure 2. Behaviour of gender per shopping centre



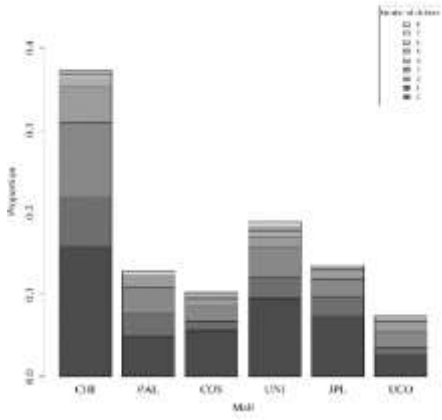
Source: Self-made.

Figure 3. Behaviour of socioeconomic level per shopping centre



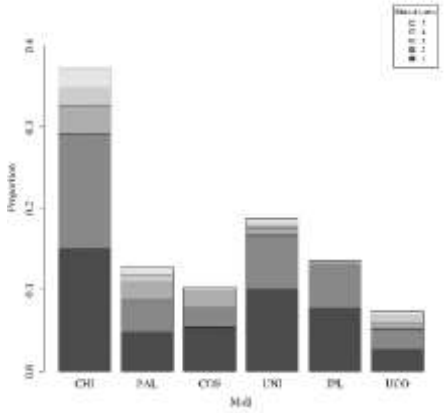
Source: Self-made.

Figure 4. Behaviour of number of children per shopping centre



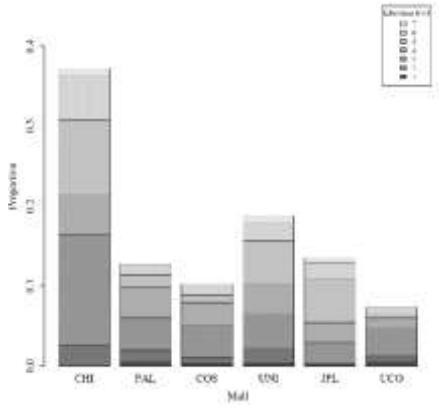
Source: Self-made.

Figure 5. Behaviour of marital status per shopping centre



Source: Self-made.

Figure 6. Behaviour of educational level per shopping centre



Source: Self-made.

Significant differences were found between the average travel time per shopping centre (*p*-value=0.0017). According to this, the average travel time and the highest relative variability (CV) were 25.83 minutes and 1.01% in Cosmoscentro, followed by Único with 18.29 minutes and 1.1%; that is say, many people were willing to spend more time on the average travel time to go to these two shopping centres. The shopping centres with less variability were Unicentro (0.63%), Chipichape (0.78%) and Palmetto (0.75%); that is to say, the people who prefer these shopping centres are those who are located close to them. In conclusion, people living in the north prefer to go to Chipichape and people living in the south prefer to go to Palmetto or Unicentro, while there are people who are willing to take a longer trip to go to Cosmocentro and Unique, as these two shopping centres offer greater variety of promotions to customers (see **Table 4 and Figure 7**).

In terms of distance travelled, significant differences were found between the average distance per shopping centre (p-value=0.0001). The lowest average distances were found in Palmetto and Chipichape with 2316.58 and 2674.48 metres, respectively, while the highest averages of distance travelled were found for Cosmocentro (4295.25 m) and Jardín Plaza (4063.51 m). If the relative variability of the distance travelled is analysed, it is shown that the highest were in Palmetto (1.17%) and Unicentro (0.89%), indicating that respondents prefer to go to these shopping centres despite having to take a longer journey to do so. If the low values of relative variability are analysed, Cosmocentro (0.69%) and Único (0.78%) stand out; thus, in terms of distance, the people who live nearby prefer to go these shopping centres (see **Table 4** and **Figure 8**).

In general, it is observed that people, in terms of travel time, do not mind going to shopping centres that are farther away, as long as they offer good promotions or have more affordable prices such as

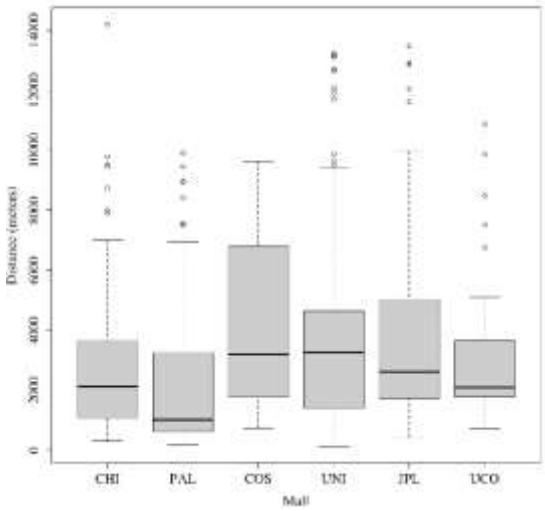
Cosmocentro and Único, where it was observed that the average time and relative variability of travel invested was higher. While in terms of distance travelled, Palmetto presented the lowest average distance but the highest relative variability, suggesting that people going to that shopping centre live both near and far from the place, while for Jardín Plaza and Unicentro, people living nearby prefer to go (see **Table 1**, **Table 4**, **Figure 7** and **Figure 8**).

Table 4. Behaviour of travel and distance according to shopping centre

Shopping centre	**Travel (minutes)**	**Distance (meters)**
Chipichape		
Average	15.54	2674.48
SD	12.06	2161.97
Median	10	2106.5
VC(%)	0.78	0.81
Palmetto		
Average	14.35	2316.58
SD	10.7	2699.25
Median	10	1001
VC(%)	0.75	1.17
Cosmocentro		
Average	25.83	4295.25
SD	26.14	2957.32
Median	20	3199
VC(%)	1.01	0.69
Unicentro		
Average	17.2	3915.76
SD	10.83	3471.92
Median	15	3252
VC(%)	0.63	0.89
Jardín Plaza		
Average	16.89	4063.51
SD	14.12	3466.75
Median	10	2606.5
VC(%)	0.84	0.85
Único		
Average	18.29	3112.66
SD	20.17	2438.56
Median	15	2086
VC(%)	1.1	0.78

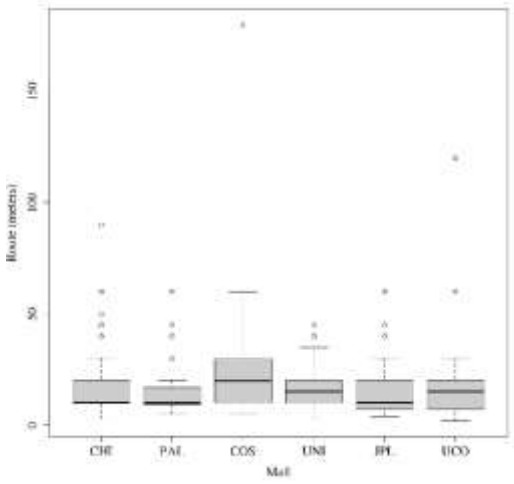
Source: Self-made.

Figure 7. Behaviour distance per shopping centre



Source: Self-made.

Figure 8. Behaviour route per shopping centre



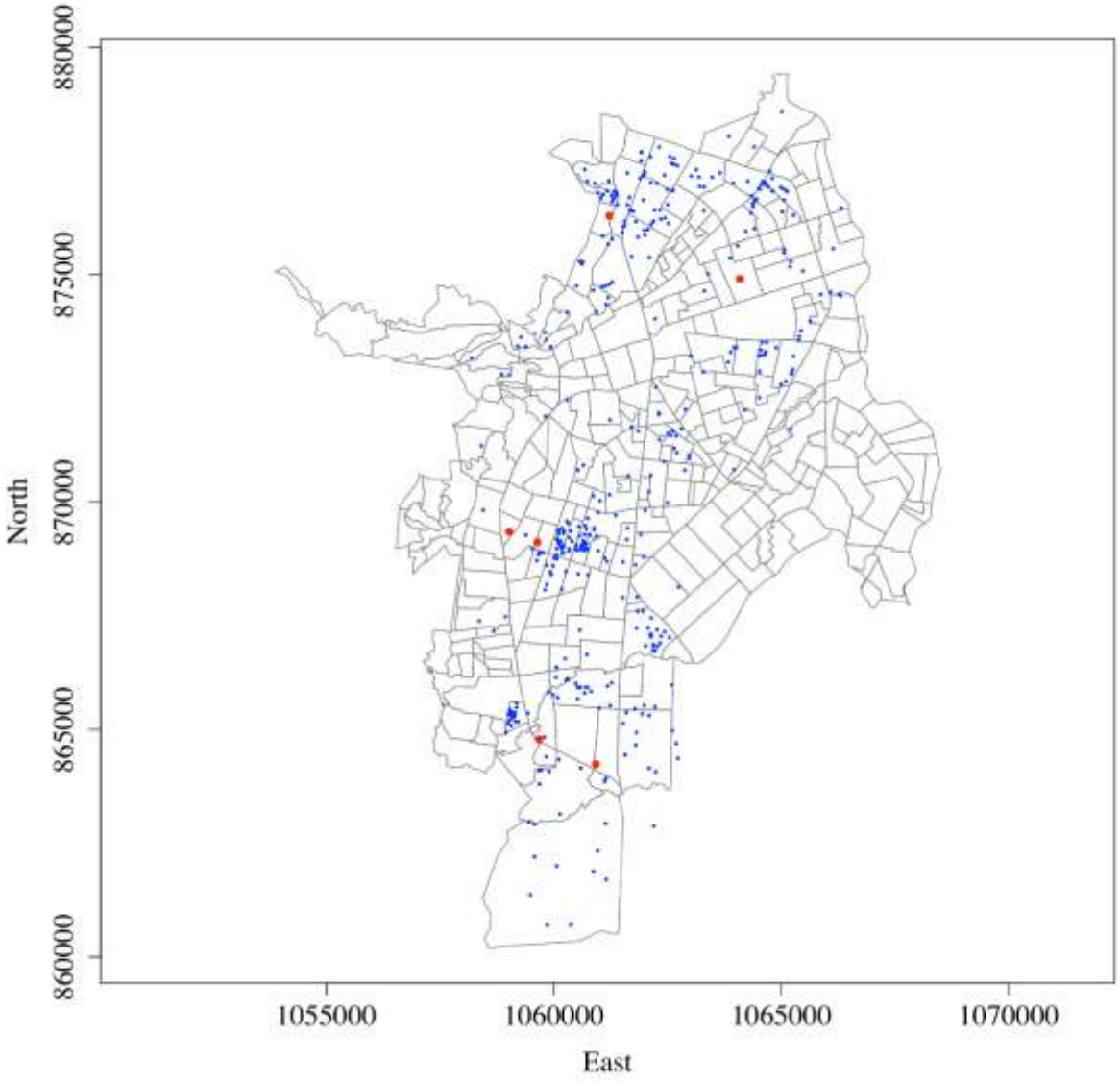
Source: Self-made.

Modelling

The results obtained from the adjustment of a multinomial logistic model are presented below, where the response variable is (Y: preferred shopping centre) and the dependent variables or factors associated with preference are (X_1: Gender, X_2: Socioeconomic level, X_3: Marital status, X_4: Educational level, X_5: Number of children, X_6: Travel, X_7: Distance, X_8: Leisure, X_9: Shopping and X_{10}: Errands). The category of reference for the response variable was shopping centre Único because it had the lowest proportion of preference with respect to other shopping centres.

To build the distance variable (metres) it was necessary to carry out a process of geocoding and georeferencing of the address of each person included in the study (n=532). Then, the distance from the place of residence to the preferred shopping centre (Chicpichape, Palmetto, Cosmocentro, Unicentro, Jardín Plaza and Único) was estimated. **Figure 9** shows the spatial distribution of people surveyed for the study (blue dots correspond to people surveyed and red dots to shopping centres).

Figure 9. Spatial distribution of people and shopping centres



Source: Self-made.

A final model was adjusted with the significant variables by category found in the initial model comprises: socioeconomic level, marital status, educational level and distance. The results of the final model are presented below with the parameters (B), their standard errors (SE), the odds ratio (OR) and the p-value. We then interpreted their parameters in terms of benefit quotient.

Table 5 shows the results of the fit of the final model, a prediction percentage of 58.3% of the preference variability using shopping centre Único as reference. In the case of Chipichape, socioeconomic level was a significant variable ($p = 0.002$), indicating that preference for this shopping centre is determined by high strata. For Unicentro, both stratum ($p = 0.001$) and distance ($p = 0.03$) were influential factors; that is to say, people from socioeconomic levels 4 and 5 prefer to go to this shopping centre and also care about the distance they have to travel to reach it. The preference for Jardín Plaza shopping centre was established by all the variables included in the final model, namely, socioeconomic level (value $p < 0.001$), marital status ($p = 0.005$), educational level ($p = 0.006$) and distance ($p = 0.018$). This shows that the people who prefer this shopping centre are people from high strata, generally single, highly educated and who care about distance; hence, the people who prefer this shopping centre are those who live nearby.

When we interpret the ORs of each variable, it is assumed that the rest of the independent variables remain permanent. We will interpret each of the independent variables in the different types of shopping centres, taking Único shopping centre as a reference. Socioeconomic level results will be presented considering an increase in one unit of socioeconomic level. As socioeconomic level increases by one unit, the advantage of preferring to go to Chipichape and Unicentro as opposed to going to Único is 2.27 and 2.609 times greater (see **Table 5**). As for the preference to go to Unicentro, the results are observed considering a distance increase of one metre, the preference to visit Unicentro instead of Único is 1 time more probable for each additional metre that the person must travel (see **Table 5**).

With respect to the preference to visit Jardín Plaza, with an increase in socioeconomic level by one unit, the preference to go to Jardín Plaza is 2,869 times greater than going to Único. Regarding marital status, the preference to visit Jardín Plaza is 0.517 times greater as people are in a less committed marital relationship, because the coefficient is negative (-0.66), indicating that single people prefer to go to this shopping centre. Finally, regarding distance, with a one-meter increase, the preference to visit Unicentro as opposed to Único is 1 time more likely for each additional meter that the person must travel; thus, people prefer to go to Unicentro as long as it is close (see **Table 5**).

Finally, regarding the results of the model with the factors associated with the activity that the person carries out when they go to the shopping centre, a significant contribution is made to the purchasing activity (p-value=0.015); that is, if the person goes shopping at a shopping centre it is 3.2 times greater than going shopping at Chicpichape as opposed to shopping at Único.

Table 5. Factors associated to shopping centre preference (final model)

Shopping Centre	**Independent Variables**	**B (SE)**	**OR**	***p* Value**
Chipichape	Socio-economic level	0.820 (0.269)	2.270	**0.002**
	Marital Status	0.006 (0.156)	1.006	0.971
	Educational Level	0.286 (0.159)	1.331	0.073
	Distance (meters)	0.000 (0.000)	1.000	0.982
	Leisure	−13.23 (396.18)	1.80E-06	**0.015**
	Shopping	1.163 (0.48)	3.20E+00	0.720
	Errands	−0.143 (0.397)	8.67E-01	0.972
	Constant	−2.482 (1.164)	0.084	0.033
Unicentro	Socio-economic level	0.959 (0.281)	2.609	**0.001**
	Marital Status	−0.308 (0.185)	0.735	0.096
	Educational Level	0.276 (0.171)	1.318	0.107
	Distance (meters)	0.000 (0.000)	1.000	**0.030**
	Leisure	−13.236 (396.18)	1.79E-06	0.973
	Shopping	0.165 (0.479)	1.18E+00	0.731
	Errands	−0.025 (0.427)	9.75E-01	0.953
	Constant	−3.654 (1.240)	0.026	0.003
Jardín Plaza	Socio-economic level	1.054 (0.291)	2.869	**<0.001**
	Marital Status	−0.66 (0.237)	0.517	**0.005**
	Educational Level	0.500 (0.183)	1.649	**0.006**
	Distance (meters)	0.000 (0.000)	1.000	**0.018**
	Leisure	−13.68 (396.18)	1.15E-06	0.972
	Shopping	0.535 (0.529)	1.71E+00	0.312
	Errands	0.169 (0.459)	1.18E+00	0.713
	Constant	−4.909 (1.319)	0.007	**<0.001**

Source: Self-made.

Conclusions and Discussion

The logistic regression model is of great importance in the application because it enables the modelling of a qualitative variable in terms of a set of explanatory variables. As with the dichotomous case, the estimation

of the probabilities corresponding to each event or alternative considered are of great use in areas such as marketing, economics and health, since in many cases the purpose is to know how these probabilities vary in relation to the inherent characteristics in individuals. This technique is widely used in marketing studies because the variables are subjective. Similarly, in risk analysis, binomial and multinomial logistic regression play an important role because the intention is to characterise profiles of individuals that maximise the probabilities to be estimated. Therefore, there is a relevant interest in the set of explanatory variables because it is expected, where possible, that this set or a subset thereof significantly separates individuals according to the response variable.

As for the results of the descriptive analysis of the variables included in the model, it is concluded that people prefer to go to Cosmocentro and Único even if they are far away from their place of residence. However, people who live near shopping centres such as Chipichape or Jardín Plaza Unicentro prefer to go only to these shopping centres. In the case of Palmetto shopping centre, people variability was wider; that is to say, there is no marked tendency according to socio-demographic factors, travel time or distance. No significant variations were found in the probability of preference according to the client's activity. Finally, according to the fit of the model, it is inferred that people from the higher strata tend to go more to shopping centres such as Chipichape, Unicentro and Jardín Plaza. For shopping centres such as Cosmocentro and Palmetto, neither socio-demographic factors nor factors such as travel time and distance were influential. Finally, in the case of Jardín Plaza shopping centre, it was found that a high socio-economic level, a high level of education and distance to reach the site were fundamental factors for people to decide to go to this shopping centre.

In general, the significant variables by category found in the initial model are socioeconomic level, marital status, educational level, distance and leisure reason.
The study revealed a statistically significant relationship between the preference for visiting outdoors shopping centres in Cali and the socio-demographic factor (marital status, educational level and socioeconomic level), distance and reason for visiting variables. These results were also validated by Garg and Atwaru (2017).

References

1. Abutaleb, A., McDougall, K., Basson, M., Hassan, R. and Mahmood, M.N. 2019, "Towards a conceptual framework for understanding the attractiveness of rail Transit-Oriented Shopping centre Developments (TOSMDs)", *Urban Rail Transit*, vol. 5, no. 4, pp. 225-239. doi: 10.1007/s40864-019-00112-4.
2. Ahmad, A.E.M.K. 2012, "Attractiveness factors influencing buyers¡¯ satisfaction, loyalty, and word of mouth: an empirical investigation of Saudi arabia shopping centres", *International Journal of Business Administration*, vol. 3, no. 6, pp. 101-112.
3. Akpinar, M., Can, Ö. and Mermercioglu, M. 2017, "Assessing the sources of competitiveness of US states", *Competitiveness Review*, vol. 27, no. 2, 161–178. doi: 10.1108/CR-02-2016-0014. Retrieved from www.emeraldinsight.com/toc/cr/27/2
4. Bellenger, D.N., Robertson, D.H. and Greenberg, B.A. 1977, "Shopping centre patronage motives", *Journal of Retailing*, vol. 53, no. 2, pp. 29-38.
5. Brunetti, G., Collesei, U., Vescovi, T. and Sostero, U.A. 2004, "Librería como negocio. Economía y administración" (MF Miret (Translators)) *México, México*: Ed México, *FCE librería*.
6. Csaba, F.F. and Askegaard, S. 1999, "Malls and the orchestration of the shopping experience in a historical perspective, *NA*", *Advances in Consumer Research*, vol. 26, pp. 34-40.
7. De Juan Vigaray, M.D. 2005 *Comercialización y retailing*. Pearson Educación, México, México.
8. De Juan Vigaray, M.D. and Rivera, J. 1999, "Los determinantes de la atracción comercial", *Investigaciones Europeas de Dirección y Economía de la Empresa*, vol. 5, no. 2, pp. 15-34.
9. Diez de Castro, E. 1997, "Distribución comercial", *Segunda Edición. Madrid, España: Mc. Graw Hill*.

10. Farrag, D.A., El Sayed, I.M. and Belk, R.W. 2010, "Mall shopping motives and activities: A multimethod approach", *Journal of International Consumer Marketing*, vol. 22, no. 2, pp. 95-115. doi: 10.1080/08961530903476113.
11. Finn, A., McQuitty, S. and Rigby, J. 1994, "Residents' acceptance and use of a mega-multi-mall: West Edmonton Mall evidence", *International Journal of Research in Marketing*, vol. 11, no. 2, pp. 127-144. doi: 10.1016/0167-8116(94)90024-8.
12. Garg, A.K. and Atwaru, Y.M. 2017, "Interaction between demographic profile of buyers, their behaviour, and mall factors: evidences from a shopping centre in South Africa", *Indian Journal of Marketing*, vol. 47, no. 11, pp. 7-23. doi: 10.17010/ijom/2017/v47/i11/119293.
13. Gasca-Zamora, J. 2017, "Centros comerciales de la Ciudad de México: el ascenso de los negocios inmobiliarios orientados al consumo", *EURE (Santiago)*, vol. 43, no. 130, pp. 73-96. doi: 10.4067/s0250-71612017000300073. Retrieved from https://scielo.conicyt.cl/scielo.php?pid=S0250-71612017000300073&script=sci_arttext
14. Gautsch, D.A. 1981, "Specification of patronage models for retail centre choice", *Journal of Marketing Research*, vol. 18, no. 2, pp. 162-174. doi: 10.1177/002224378101800204.
15. González-Hernández, E.M. and Orozco-Gómez, M. 2012, "A segmentation study of Mexican consumers based on shopping centre attractiveness", *International Journal of Retail and Distribution Management*, vol. 40, no. 10, pp. 759-777. doi: 10.1108/09590551211263173.
16. Hernández Sampieri, R., Fernández Collado, C. and Baptista Lucio, P. 2003 *Metodología de la Investigación, 2*. McGrawHill, México, México.
17. Huff, D.L. 1963, "A probabilistic analysis of shopping centre trade areas", *Land Economics*, vol. 39, no. 1, pp. 81-90. doi: 10.2307/3144521
18. Huff, D.L. and Rust, R.T. 1984, "Measuring the congruence of market areas", *Journal of Marketing*, vol. 48, no. 1, pp. 68-74. doi: 10.1177/002224298404800107.
19. Ismail El-Adly, M. 2007, "Shopping malls attractiveness: a segmentation approach", *International Journal of Retail & Distribution Management*, vol. 35, no. 11, pp. 936-950. doi: 10.1108/09590550710828245
20. Jiang, J. 2010 *Large sample techniques for statistics*. [*Nueva York, Estados Unidos*]. Springer Science & Business Media.
21. Khei Mie Wong, G.K.M., Lu, Y. and Lan Yuan, L. 2001, "SCATTR: an instrument for measuring shopping centre attractiveness", *International Journal of Retail and Distribution Management*, vol. 29, no. 2, pp. 76-86. doi: 10.1108/09590550110381535.
22. Kosiak de Gesualdo, G., Sánchez de Dusso, F., Sánchez Rossi, M.R., Alesandria, H.R. and Etchevarría, M.B. 2006 *Atracción comercial. El comportamiento de los consumidores en los centros comerciales de la ciudad de Santa Fe*.(Primera ed.). Universidad Nacional del Litoral, Santa Fe, Argentina.
23. Kozinets, R.V., Sherry Jr., J.F., Storm, D., Duhachek, A., Nuttavuthisit, K. and DeBerry-Spence, B. 2004, "Ludic agency and retail spectacle", *Journal of Consumer Research*, vol. 31, no. 3, pp. 658-672. doi: 10.1086/425101.
24. Martín Méndez, M.M. and Ojeda López, R.N. 2017, "Ventajas competitivas de un centro comercial a partir de sus recursos", *Equidad y Desarrollo*, vol. 1, no. 28, pp. 147-165. doi: 10.19052/ed.4232.
25. Más Ruíz, F.J. 1996, "Atracción de centros comerciales en el contexto de la elección discreta individual", *Primera Edición. Valencia, España: Instituto Valenciano de Investigaciones Económicas SA*
26. Mittal, A. and Jhamb, D. 2016, "Determinants of shopping centre attractiveness: the Indian context", *Procedia Economics and Finance*, vol. 37, pp. 386-390. doi: 10.1016/S2212-5671(16)30141-1. Retrieved from https://www.sciencedirect.com/science/article/pii/S2212567116301411
27. Mohammad, A. and Ahmad, K. 2012, "Attractiveness factors influencing buyers' satisfaction, loyalty, and word of mouth: an empirical investigation of Saudi Arabia shopping centres", *International Journal of Business Administration*. Sciedu Press, *3*(6), pp. 101-112.

28. Ortegón-Cortázar, L. and Royo-Vela, M. 2017, "Attraction factors of shopping centres: effects of design and eco-natural environment on intention to visit", *European Journal of Management and Business Economics*, vol. 26, no. 2, pp. 199-219. doi: 10.1108/EJMBE-07-2017-012.
29. Palacios Roberto, A. 2016, "Impacto socio-espacial de la implantación de centros comerciales en Bogotá D.C", *Perspectiva Geográfica*, vol. 20, no. 2, pp. 319-338. doi: 10.19053/01233769.4525
30. Pine, B.J., Pine, J. and Gilmore, J.H. 1999 *The experience economy: work is theatre & every business a stage*. Estados Unidos: Harvard, Boston Business Press.
31. Prashar, S., Singh, H., Parsad, C. and Vijay, T.S. 2019, "Segmenting Indian buyers on mall attractiveness factors", *International Journal of Services Technology and Management*, vol. 25, no. 1, pp. 18-35. doi: 10.1504/IJSTM.2019.096604.
32. Reilly, W.J. 1931 *The law of retail gravitation*. [*Nueva York, Estados Unidos*]. WJ Reilly Inc.
33. Sohail, M.S. 2015, "Gender differences in mall shopping: a study of shopping behaviour of an emerging nation", *Journal of Marketing and Consumer Behaviour in Emerging Markets*, vol. 1, no. 1, pp. 36-46.
34. Tandon, A., Gupta, A. and Tripathi, V. 2016, "Managing shopping experience through mall attractiveness dimensions: an experience of Indian metro cities", *Asia Pacific Journal of Marketing and Logistics*, vol. 28, no. 4, pp. 634-649. doi: 10.1108/APJML-08-2015-0127. Retrieved from https://ezproxy.uao.edu.co:2083/10.1108/APJML-08-2015-0127
35. Team, R.C. 2014 *R: a language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria; 2012. Open access available at: http://cran. r-project. org.
36. Terblanché, N.S. 1999, "The perceived benefits derived from visits to a super regional shopping centre: an exploratory study", *South African Journal of Business Management*, vol. 30, no. 4, pp. 141-146. doi: 10.4102/sajbm.v30i4.764.
37. Wee, C.H. and Pearce, M.R. 1985, "Patronage behaviour toward shopping areas: a proposed model based on Huff's model of retail gravitation, *NA*", *Advances in Consumer Research*, vol. 12, no. 592, p. 597.
38. Wong, S.C. and Nair, P.B. 2018, "Mall patronage: dimensions of attractiveness in urban context", *International Journal of Business and Society*, vol. 19, no. 2, pp. 281-294.