Empirical Paper

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Geomarketing as an important element of a food retailer's business model: A managerial view

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Abstract: The aim of the study is to explore how geomarketing becomes a key element in managing the business model (BM) of an established retailer on the food market. The survey sample comprised 244 stores, whose managers were questioned by means of a semi-structured interview in 2021. Cluster analysis was used to assess 40 statements from the managers about the BMs of the current store. The resulting clusters indicate, among others, that large retailers devote more and more attention to the analysis of a territory, and their decision-making deepens even more due to the use of a multi-format strategy on the food market. The article contributes to the discussion about the market within geomarketing research in terms of both theory and practice at a time when the population's income is expected to decrease due to several crises, for example, health-economic and energy, on the food market.

Keywords: the retail trade, food market, geomarketing research, cluster analysis
JEL Classification: D91, L21, M31

1 Introduction

A business model (BM) is not only a system of components but also a function of relationships between the components. In addition to the relationships between the components of a company's BM, there is also a relationship between the BM and its environment. A good BM always tries to take advantage of any opportunities from the area in which it is implanted and at the same time tries to mitigate the effects of risks arising from this location. The geographical, economic, and other realities associated with consumer behavior are the subject of specific analyses by retail managers and should be integrated into economic, strategic, and managerial considerations. Each territory as a geographical area has its natural, cultural, and economic specifics [Debarbieux, 2003, p. 912].

Methods of distribution are developing dynamically, thanks primarily to the Internet, which leads, on the one hand, to innovations in the management of B2C relations [Douard and Heitz, 2004; Wieczerzycki, 2021] and, on the other hand, to the management of the corresponding information about an organization's BM on the retail food market. Marketing as a practice is deeply rooted in specific market contexts, spatially distributed, and dependent on complex forms of coordination among different actors and heterogeneous bodies of expertise [Araujo, 2007]. For instance, Sorescu et al. [2011] introduce in their study that retailers encompass a broader range of activities in expanding the boundaries of their target markets and developing

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new ways for interacting with customers and channel partners. For this reason, geomarketing supports general marketing in targeting and qualifying the market, defining media activities for the development of customer loyalty, and managing the development of retail business networks. The geomarketing approach is founded on ways of researching and understanding economic phenomena caused by contemporary world exchange. However, in any case, geomarketing is only one of the disciplines of research in the field of economics. Yang et al. [2022] introduce in their study that customers desire a seamless shopping journey through a brick-and-mortar store, online, mobile, and other channels. This is forcing retailers to take more of an omnichannel approach to improve services, particularly in physical retail. Based on this example, it can be stated that the role of marketing in the construction of markets is essentially performative [Araujo, 2007]. In this context, the management of the customer relationship has two aims on a market [Dourad and Heitz, 2004]: (a) to develop and manage profitability with each customer and (b) to determine the business potential of customers based on a multidimensional analysis. In other words, although geomarketing is one of the decision-making techniques that managers know very little about [Latour and le Floc'h, 2001], it is essential to combine it with other market research techniques to provide the managers with reliable information. For this reason, the study uses empirical research mediating the managers' points of view, similar to the study of Do Vale et al. [2021], in the identification of a BM based on geomarketing as a key element of an innovative BM for retail unit formats. Geomarketing using market data enables the creation of a value offer, which subsequently influences the quality of interactions with customers and other stakeholders. This results in added value in the form of creating a higher level of shopping convenience, thus enhancing the positive customer experience and supporting perceived customer satisfaction from the viewpoint of the quality of the retail network versus competitors. This means bringing value for the retail customer based on the given working BM. The deconstruction approach proposed by Schweizer [2005] at the level of micro analysis of a business provides many opportunities for the creation of new businesses. Schweizer [2005] likewise states that each part of the value chain can serve as the source of value creation and new BMs.

The aim of the present study is to explore how geomarketing becomes a key element in managing the BM of an established retailer on the food market – follows from this context. To achieve the aim, a combination of cluster analysis and geomarketing data on stores of different sizes is used, by which the role of geomarketing is characterized in terms of the perception of store managers of the BM of current food retailers as an element of the driving force of innovation of the existing BM. This can be labeled as the theoretical contribution of the article to the discussion of retail BMs from the studies of Do Vale et al. [2021], Sorescu et al. [2011], and Schweizer [2005], on which the presented study is based. A practical contribution may then be output for practice that follows the identification of geomarketing as a basic element of a retailer's BM in the context of its importance with respect to the relationship of the BM and the store format. This may have value in the management of the retail network of stores. This suggests that based on geomarketing, the BM of a retailer characteristic for a given market area with regard to its store format is identified using a map, by which a different process of value creation for the end customer can be stated.

The article is structured in five sections. The first two sections, the Introduction and Literature review, introduce the implications for BMs in retailing in terms of geomarketing. Subsequently, the Materials and methods section explains Bratislava as a study area and geomarketing data in the scope of its combination with cluster analysis for the needs of carrying out a manager's decision. Then, the Results section analyzes the relationship of geomarketing data relating to store formats with data from a survey conducted among store managers in the context of BMs in retailers established on the market. The Discussion section concludes with the theoretical and managerial implications of the findings concerning the profiling of the major BMs based on geomarketing as the key element of innovation of the BM.

2 Literature review

A company usually begins its consideration of operating in a given market by selecting one of the parts on which it wants to implement a market exchange [Araujo, 2007]. It evaluates this part according to its potential

based on data showing the existing differences between individual parts of the market and the specifics of each of them [Cliquet, 2003]. Based on such a market deconstruction analysis, it can then estimate its expected profit with respect to its own organizational structure and market framework demarcated by social relations on the supply side (stakeholders of the retailer) and the demand side (final consumers of the retailer). According to Diaz Ruiz [2022], theories are performative in marketing because they frame how managers ought to act. This is reflected in approaches to creating the organizational structure of a retailer, which tries for the highest possible efficiency of an organization. Sorescu et al. [2011] emphasize that retailers have a distinct advantage over manufacturers in that they are not bound by a set product portfolio; rather, they have a higher flexibility in determining their product assortment and can typically respond to changes in demand faster than manufacturers. Likewise, in approaches, for instance, based on social relations, they also identify market exchanges and market-making practices [Araujo, 2007] in the building of a business's BM.

A BM is considered the main driving force of an enterprise, regardless of its field of operation; it is essential for the performance of any organization [Magretta, 2002, p. 92]. According to Dauchy, a BM is the result of strategic thinking and an operational scheme for how to do business better [Dauchy, 2013, p. 64]. Other authors [Detchessahar et al., 2003, p. 1–8] define a BM in relation to electronic commerce as a way by which business, logistics, and information resources are combined with the aim of creating value. No generally acceptable definition of a BM can be found in the academic literature [Kita et al., 2023a]. The diversity of the concept of a BM varies from the highest level, which aims to define the place of the BM in the strategic aim, through a multidimensional concept that includes the components of the model and their potential relationships and the logic of how the enterprise creates, delivers, and captures value, as well as the way that they are organized in a network of stakeholders. Many authors agree that a BM expresses the value offer of the enterprise, its resources, and competencies, as well as the management mechanism that unites the company stakeholders [Zott and Amit, 2010, p. 216–226]. Based on the considerations of the BM, the selected principal studies (Table 1) on retail BMs can be cited, emphasizing the originality of the company's activity, depending on the selection of elements based on their market strategy.

Table 1. The selected principal studies on retail BMs

Reference	Elements of BMs	Contribution to theory of BMs
Rudolph [2000]	Degree of centralization of management, levels of standardization of store formats, the share of own brands in the offer, And expansion rates	Typology of retailers based on offer (content retailer, channel retailer, global discounter)
Schweizer [2005]	Value chain constellation, competitive advantage/market power of the company, and revenue model	Typology of BMs: integrator, orchestrator, layer player, and market-maker
Zott and Amit [2010]	Content, structure, and governance	NICE design themes in BM: novelty, lock-in, complementarities, and efficiency
Sorescu et al. [2011]	Value appropriation based on operational efficiency, operational effectiveness, and customer lock-in Value creation based on customer efficiency, customer effectiveness, and customer engagement	Innovative ways to implement the design themes into fast fashion model, self-service model, "name your own price" model, leverage complementarities, and adjacency model Leverage exclusive products, enduring consumer relationships via multichannel processes, innovative format which facilitates the shopping experience, rely on stakeholders to determine the optimal depth of assortment and supporting services, and rely on added value tie-ins
Pels and Sheth [2017]	Market adaption, mission focus, radical innovation, and inclusive ecosystem	BM matrix (bottom-up/top-down) to serve low-income consumers in emerging markets

Source: Own processing based on Rudolph [2000], Schweizer [2005], Sorescu et al. [2011], Pels and Sheth [2017].
BM, business model.

The main topics from literature research on BMs allow a BM in retail to be defined as an integrated specific system for mobilizing the resources and competencies of an organizational unit, its product offering (goods and services), the activities of the retailer, and processes aimed at creating value for the customer, the company, and other stakeholders. Casadesus-Masanell and Ricart [2010] stated that a firm's BM is a reflection of its realized strategy. This means that a BM in retail may contain one or several formats, as well as activities and a management mechanism supporting the store format and the interdependencies between the mentioned elements. A multichannel distributor may have more than one format, but all these formats must be integrated into a cohesive BM that protects and develops the retailer's brand [Maciejewski and Krowicki, 2022]. Coherence between formats, activities, and management is of exceptional importance. Understanding how these elements are connected to form an integrated system ensures that a change to any one of them helps the synergy they create collectively. If, for example, market conditions or technological advances cause a change in distribution, the first step in reconfiguring the BM is to examine the connection of this change with the store format and its activities in the locality, with the goal of optimizing value creation under the given conditions. In this context, we can mention Verhoef et al. [2015], who state that for a retailer with both offline and online outlets, BM elements, for example, the Internet and well-conceived customer databases, allow tracking consumers through many stages of the purchase process. This, however, requires the retailer to be economically strong, so that in view of its direct relationships with customers and suppliers, it can act as a coordinator of bilateral platforms, serving as an ecosystem in which the value is created for the customer and subsequently captured by the retailer itself, as well as its partners. A number of BMs can be studied in the literature. It is quite difficult to decide which is the right one, as there are infinite answers and combinations of models. Moreover, the models need to take into account the importance of the retail format as it evolution over time and space. As Reynolds et al. [2007, p. 647] note, neither retail formats nor BMs are static entities. Retailers develop new formats, manage existing formats, and discard formats over time, as a consequence of many contributory factors in the retail environment. Retail formats and retail BMs are evolving continuously, attracting interest from a wide range of stakeholders, from consumers to developers to investors. It follows from the above that a BM is formed by mutual dependencies between elements, that is, it is not a simple sum of its elements; their interplay is a necessary condition for its successful implementation. Consequently, this study explores the following research question (RQ): Are there groups among stores with characteristic features with respect to the monitored factors? Answering this question means first identifying the elements of a BM that most retail managers adopt in their retailer's BM. Then, the format of the store for which geomarketing is the driving force in the development of the retailer's sales network in view of the search for new locations within a territory is subsequently identified. The new added value for the retailer will lie in this, in the perception of the consumer in creating a positive shopping experience [Kita et al. 2023b], thus demonstrating the overall performance and viability of the BM of the retailer organizing its own ecosystem.

3 Materials and methods

3.1 Study area

The study area is the city of Bratislava, located in the south-eastern part of Slovakia near the borders with Hungary and the Czech Republic (Figure 1). It is the capital of Slovakia with a population of almost 0.5 million. The city has undergone significant changes over the past decades [Korec and Ondoš, 2021]. It is now a multifunctional city with supra-regional retail and service facilities that are spatially differentiated [Šveda et al., 2020].

Different retail outlets were analyzed with respect to their classification according to location [Križan et al., 2017]: edge of center, out of center, out of town. Their selection was related to several factors, such as spatial distribution with respect to population density or attractiveness. The density of the retail network decreases away from the center, which corresponds to the sample of retail outlets analyzed. Due to the

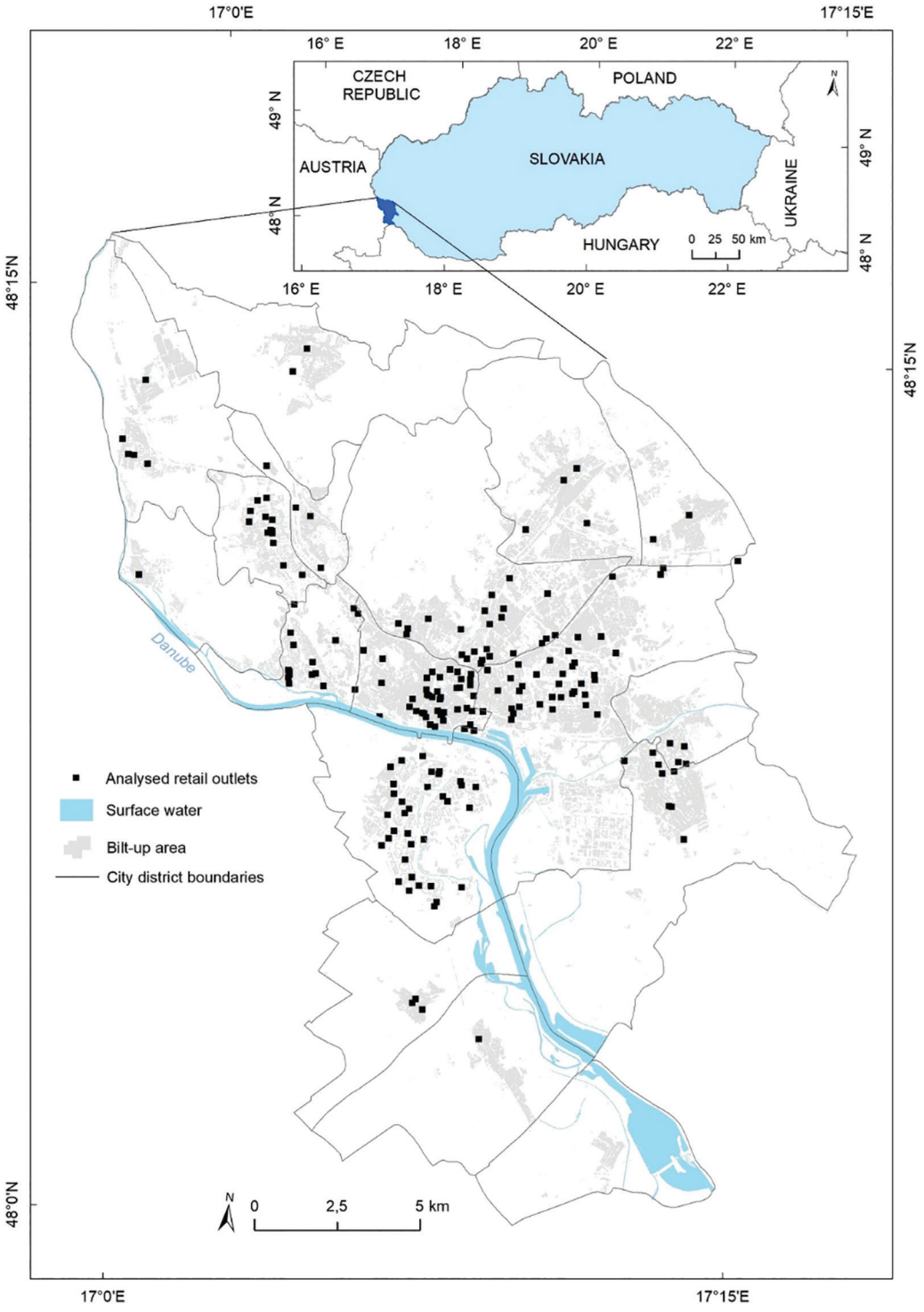

Figure 1. Study area.
Source: Own processing.

city's border location, the retail network needs to be viewed from this perspective. Cross-border shopping in Austria is a common consumer behavior in Bratislava [Kita et al., 2020].

According to Burt et al. [2015], markets in retailing have an important local context. Then, the BM reflects retailers' considerations for planning and evaluating the activities of a given market as a major issue to be

performative. Geomarketing answers many questions that arise in the area of marketing. It is not limited to a simple illustration, maps, or specific phenomena in distribution, such as the existence of a store's customers within a certain residential unit. The principle of geomarketing consists in the processing of data relating to the inhabitants of a given geographical area and displaying them. Expertise predominantly does have a visual nature in geomarketing, but so does a significant decision-making benefit for the manager.

3.2 Collected data

Reviewing a market from the point of view of geomarketing, we try to bring about commercial effects for retailers by shaping the positive purchase experience of consumers through a BM. Similar to Diaz Ruiz [2022], we predict that a manager's understanding of the world has consequences when interpreting complex situations in the creation of a company's BM, privileging some elements as relevant and others as irrelevant in the creation of value for consumers. Therefore, we used semi-structured interviews as the data collection method. Each interview lasting about 15–20 min involved one manager. The assessed elements formed the basis for identifying the key elements of retail store formats in the territory of Bratislava of the following size types: up to 100 m^2, to 400 m^2, to 700 m^2, and over 700 m^2.

Therefore, first, store managers of the retail chain or semi-operators in the case of independent retailers were involved in the survey. Both groups of managers were approached to obtain information on their ability to identify the BM of the retail firm. All interviews were organized by the marketing agency using the computer-assisted personal interviewing (CAPI) transcribed and provided for evaluation. Second, all data from the retailers corporate websites of the interviewed managers' firms were exploited to better identify the level of company integration and also to determine the sample and enrich the results of this research.

3.3 Combining cluster analysis and geomarketing

The principle of geomarketing is simple: use geolocation data to optimize knowledge about the investigated problem. According to Grekousisa and Hatzichristos [2013], clustering techniques are the core of geomarketing systems, and the clustering methods they use are of great importance for their final success. Geomarketing relies on GIS, the most important element of which is geographic data. The analysis of such data is all the more complicated because they have a spatial character, which also offers new possibilities for the application of other statistical methods. By combining geolocation data and cluster analysis, these data can help better clarify the strategic decisions of retail unit formats and specifically deepen their commercial vision concerning the market, respectively a given location. Therefore, cluster analysis was used in the context of RQ. Řezanková et al. [2009] introduce that this method deals with the similarity of data objects. On the one hand, cluster analysis resolves the division of a set of objects into several unspecified groups (clusters) such that objects within the individual clusters are as similar as possible and objects from different clusters are as different as possible [Ozimek et al., 2023]. On the other hand, geomarketing-visualized clusters enable a manager in a given geographical zone to anticipate a competitor's behavior in the market, so that the marketing directed toward any particular customer can be promptly recognized and reviewed accordingly [Grekousisa and Hatzichristos, 2013]. For evaluating this RQ, geomarketing segmentation using cluster analysis was employed, followed by classification using decision tree algorithms.

Geographic information systems (ArcGIS) were used to visualize the primary data and the results of the cluster analysis. The first step was to geolocate the data. Subsequently, the Euclidean distance between stores to each other and between stores in the city center was measured in the GIS environment. Measuring the Euclidean distance yields comparable results to network analysis for intra-urban environments [Bilková et al., 2017]. The results were subsequently considered in the clustering and cartographically visualized.

3.4 Sample

The original sample consisted of 250 retail outlets operating in Bratislava, but six retail units had to be excluded due to incomplete responses and identification of anamnestic data. Based on this, it can be concluded that the primary survey base consisted of 244 store managers of Bratislava retailers of the following sizes: up to 40 m^2 (21.31%), to 100 m^2 (20.90%), to 400 m^2 (18.85%), to 700 m^2 (18.85%), and over 700 m^2 (20.08%). Most of the retail stores (65.57%) offered food and non-food. Small retailers in small formats were mainly specialized food stores (34.43%). The sample suggests the ongoing concentration on the food market, where the retail chains represent 77.87%, independent retailers represent 17.62%, and independent retailers integrated into the Metro wholesaler network comprise 4.51%. Cumulatively, independent retailers mainly use stores up to 100 m^2 (73.63%). The most popular stores in the food market were shown to be hypermarkets and supermarkets operated by the Tesco and Schwarts chains; that is, they use a multi-format strategy compared to the Billa and Kon-Rad chains, which use only a supermarket form, or Delia and Malina, which use small retail stores formats of up to 40 m^2 of area. The stores are subsequently divided into the urban districts of District 1 (18.44%), District 2 (21.72%), District 3 (19.67%), District 4 (21.31%), and District 5 (18.85%). The general perception of the elements of retailers' BMs by store managers is illustrated through the decision trees in Figures 2 and 3.

4 Results

Segmentation through cluster analysis was used for evaluation. The cluster analysis was based on 40 items – questionnaire questions. Then, classification was made using decision tree algorithms showing clusters by location in Figure 4. Given the nature of the data, the two-step method carried out in SPSS for Windows statistical software was selected as the method of cluster analysis. The division into four clusters (viz., A – 32,1%, B – 22,9%, C – 26,9%, and D – 18,1%) was shown to be optimal. The resulting silhouette coefficient, with a value of almost 0.5, indicates a good quality of the resulting clustering. The value of the ratio of size (1.78), which shows the comparability of the size of the resulting clusters and thus meets all recommendations, also underlined the quality.

We chose the parameter expressing the assignment of individual stores to the resulting clusters as the explained parameter within the classification. In the first phase of the classification, we selected the data related to the monitored factors as explanatory variables, then, in the second phase, the identification data of individual stores (size, type, location) was selected. In both cases, we used decision tree algorithms for classification; particularly, in view of the nature of the data, we chose the Classification and Regression Tree (CRT) algorithm for creating classification trees.

Figure 2 shows the resulting tree created in the first stage of classification processing. Its quality is very high, with the risk estimate value at only 0.068, which indicates that 95.2% of the objects were classified correctly.

It is evident from the tree structure that stores in cluster C are not involved in humanitarian aid. In contrast, stores in clusters A, B, and D do get involved in humanitarian aid as needed. The stores in cluster A are further characterized in that they do not use the system of geolocation of consumers. Unlike them, stores in cluster B do use this system, but they also evaluate the development of consumer purchases for the purposes of future pricing. Although stores in cluster D use the consumer geolocation system, they do not evaluate the development of consumer purchases for the purposes of future pricing. If some stores in cluster B do not engage in humanitarian aid, it is characteristic for them that, unlike stores in cluster C, they use data for rapid responding and forecasting demand, but mainly, they introduce new technologies to optimize inventories. Figure 3 shows the tree resulting from the second stage of classification.

Thanks to the data added on individual stores, the types of stores in the individual clusters could be better specified using statistical tests (as well as classification trees). The most significant factor for determining the assignment to a cluster is the size of the store. It can generally be stated that

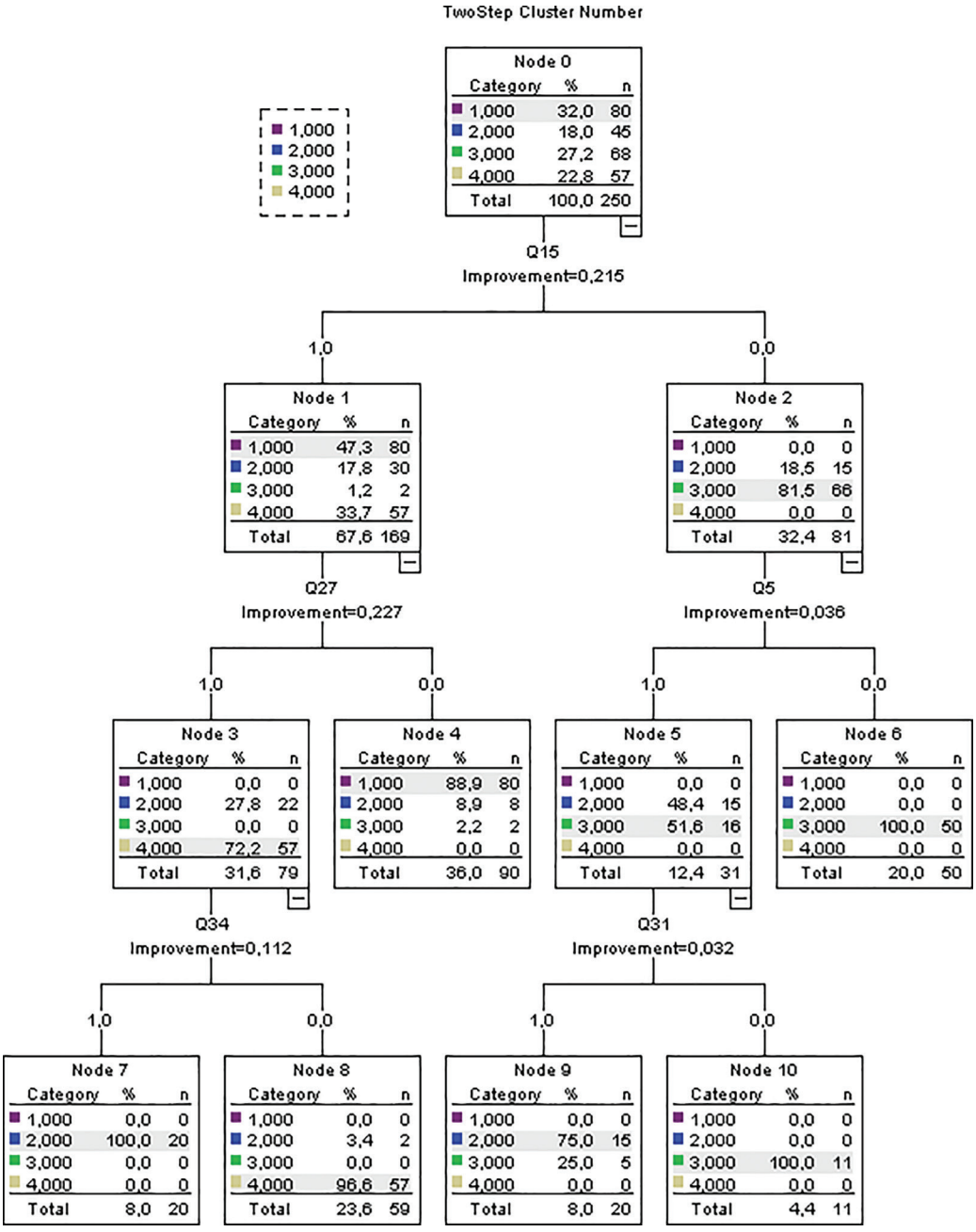

Figure 2. Decision tree based on the geomarketing element in the BM.

Source: Own processing. BM, business model.

- cluster A is characterized by stores with a sales area of over 700 m² (more than half of the stores). Stores with the largest sales area are concentrated in this cluster. The average distance from the city center to these stores is 4.5 km,
- cluster B is characterized by stores with up to 100 m² (86% of stores) of sales area, which are, on average, 3,342 m from the city center (at the same time, the stores have a greater distance to the nearest retail store than stores in cluster C),
- cluster C is characterized by stores with up to 100 m² (97% of stores) in sales area, which are, on average, >3,342 m from the city center (at the same time, these stores have a shorter distance to the nearest retail store than stores in cluster B),

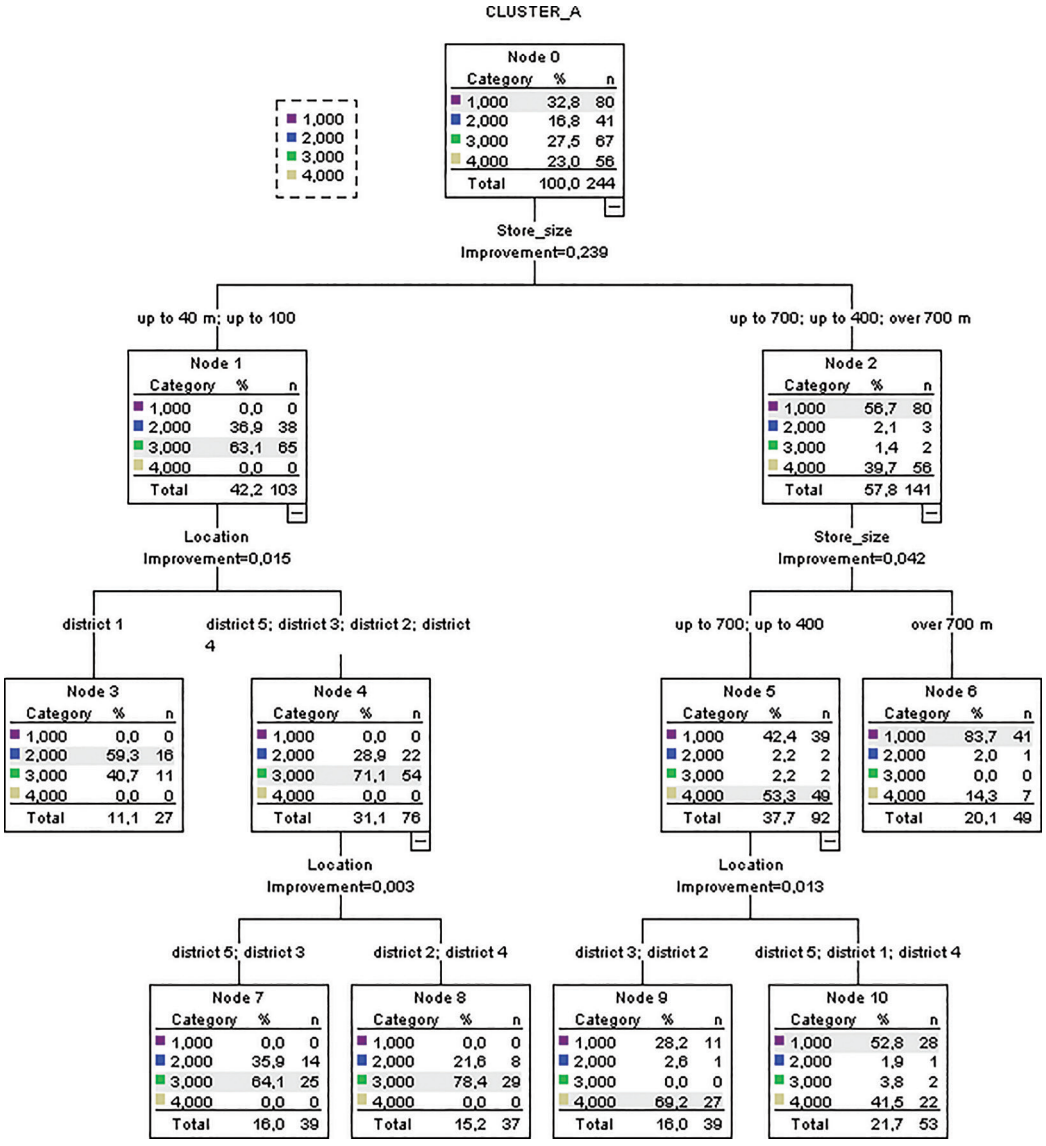

Figure 3. Resulting decision tree based on store format and location.
Source: Own processing.

— cluster D is characterized by stores with a sales area of 101–400 m² and 401–700 m² (87% of stores). These stores are characterized by having the greatest average distance from the city center (4,735 m).

The research carried out to confirm the validity of the RQ showed that it is evident that the most numerous group of stores in terms of location, that is, in the city center or outside the city center, are those up to 100 m² in size. These have the greatest possibilities of localization in the city (Figure 4). Stores of up to 700 m² and >700 m² have the greatest possibilities of being located on the geographically peripheral parts of the city; these are stores outside the wider city center or on the outskirts of the city.

It can be stated that customers in post-socialist countries mainly prefer medium-sized to large stores [Kunc et al., 2022], which is a sign of market concentration. In the case of small stores of up to 40 m², retail chains such as Żabka, Delia, and Malina are being promoted. Small stores of independent retailers of up to 40 m² in size will probably need to change their marketing strategy by offering original goods based on specialization (healthy foods, other business services, automation, and original non-domestic food) with hedonistic elements or to improve the supply chain with the aim of enhancing the shopping experience for customers.

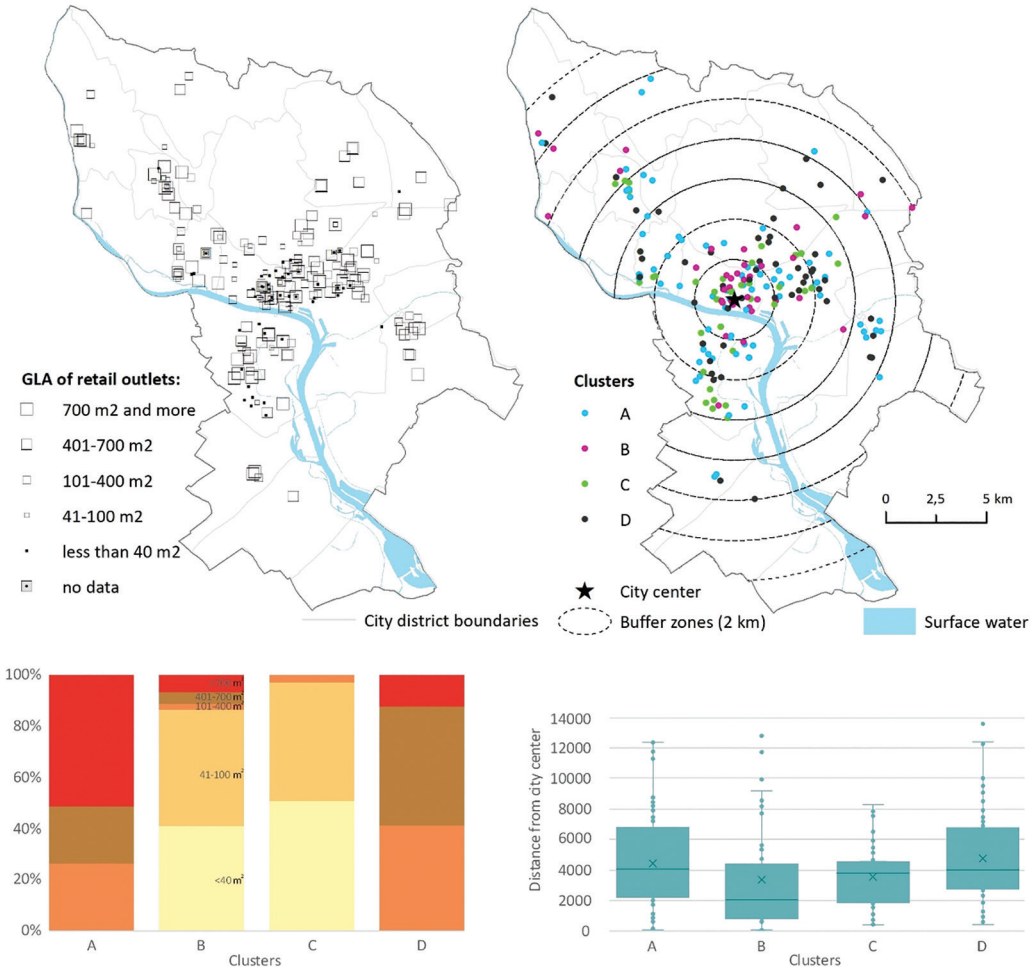

Figure 4. Mapping clustering retail BMs based on the format size of retail stores.
Source: Own processing. BMs, business models.

5 Discussion

Geomarketing as an innovative element of a BM is associated with the introduction of new technologies and online sales, which are more and more significantly reflected in the business results of each company at present. For this reason, the BM of small independent retailers must react by adjusting their organization and incorporating a change in their traditional distribution to an omnichannel approach. From the viewpoint of all retailers, geomarketing in the new BM influences business activity in terms of offering new products and compels them to think about new product sales strategies and to take into account different dimensions of operations or the supply chain. This leads to discovering new opportunities for achieving profit through the use of new information technologies, mainly for small independent retailers, since consumers prefer large-scale stores. In the digital era, the majority of innovations in retail BMs will be driven by technology, which requires changes in the thinking and behavior of retailers as well as new business goals and organizational changes [Schweizer, 2005; Do Vale et al., 2021; Ancillai et al., 2023].

Given the innovative nature of geomarketing, it is a subject of interest in both theory and economic practice. This is also confirmed by the study by Mostaghel et al. [2022], where geomarketing led to the development of new tools for improving the quality of several processes and consequently users' perceived utility and satisfaction. In this context of the use of technology, Pantano and Timmermansa [2014] state that in smart retailing, on the one hand, firms have to reinvent and reinforce their role in the new

service economy. On the other hand, consumers using technology improved the quality of their shopping experiences. It follows that retail activities are subsequently perceived and evaluated by customers primarily from the perspective of the functioning of one store or of the retail network of stores that ensure sales [El Amri, 2012, p. 5]. Despite this enormous potential for gain, Ancillai et al. [2023] introduce that companies are facing a so-called digitalization paradox, when they do not achieve the expected results, regardless of whether or not they invest in digital at all.

6 Conclusion

A BM in connection with geomarketing has a practical aspect associated with the digital revolution, where not all forms of retail will survive, which can be assessed as a predictive element of our analysis in an increasingly concentrated market. Furthermore, many existing independent retailers operate their physical stores. It is these entrepreneurs specifically who will need to change the way they think about their businesses to adapt to the fact that technology is the driving force of this revolution and affects almost every aspect of their BM. This means that the study can, for example, be further used from the manager's point of view when analyzing the performance of sales and furthermore, in the customer-centric conceptual framework proposed by Gauri et al. [2021], when customers decide between multiple formats or creation of loyalty programs.

In this case of geomarketing analysis with cartographic data, visualization may be considered a very effective interpretative research tool from a manager's viewpoint. Qualifying the existing market structures in this study is an effort at requalification and restructuring a retail BM based on geomarketing. The pandemic accelerated the tendency to use multi-format retail units and to come to terms with online marketing activities and digitalization, which are permanently increasing their importance for their activities [Kita et al., 2022]. The resulting clusters indicate that large retailers are devoting more and more attention to the analysis of a territory, and their decision-making will deepen even more due to the use of a multi-format strategy on the food market [Jánská et al., 2020]. From the viewpoint of small independent retail operations, this new market-changing activity will require better governance of their ecosystems for them to survive the vertical integration of retail chains. The presented study, specifically by using geomarketing in combination with other statistical methods, offers the opportunity to create added value and also allows the spatial aspects of marketing to be taken into account with regard to the selection of new locations for stores within the decision-support systems of marketing managers trying to maintain a competitive advantage over competitors. Douard and Heitz [2004] highlighted that the development of geomarketing is set to accelerate, driven by the growing importance of space in marketing decisions, the importance of geography in the analysis of consumer behavior, and the need for territorial knowledge in the corporate strategy. In the ongoing research, on the one hand, the role of geomarketing is joint within present East European cities is a remarkable spatial expansion, and qualitative characteristics lead to the formation of new functional and spatial structures between the central city and its surroundings, which is known as an urban region. On the other hand, the development of Internet shopping sites will lead to even greater importance being attached to the knowledge of the customer's place of residence and consumption, due to the loss of traditional contacts [Douard and Heitz, 2004].

It can thus be stated that digital development in retail means the use of digital technologies and data, as well as interconnections in the future, will contribute to the formation of new activities or to the development of existing activities in space and also create a new value offer of food for the consumer.

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