

# **ANALYSING GEOGRAPHIC PROXIMITY ON E-SALES SUCCESS: A CASE STUDY OF VATERA AUCTION PORTAL**

*Csaba József Kovács*

## **ABSTRACT**

*Many academic researchers examine interactions between offline and online spaces on the field of marketing. Despite this fact, only few of them are using geo-data to gain better understanding of physical distance and proximity in home selling process for higher selling success. Regional science, as an interdisciplinary field, can help extend our knowledge of electronic marketplaces, and is able to support the business sector to fully exploit selling potential. The aim of the paper is to demonstrate that physical distance has deep impact on selling success, not only for the traditional retail sector, but even in virtual space. In this case study, I examined locations of sellers and buyers of the leading Hungarian auction portal.*

## **KEYWORDS**

*E-marketplace. Marketing geography. Online auction. Shopping. Sales.*

## **JEL CLASSIFICATION**

*R12, M31.*

## **INTRODUCTION**

Online marketplaces connect buyers with sellers, and effectively intermediate the process of purchasing (Zheng, 2006). These platforms offer users an opportunity to exchange a wide variety of goods and services on a competitive market, which made them one of the most turbulent and lucrative spaces of e-commerce. It is not an exaggeration to state that they have completely changed the way in which the retail sector works.

Empirical studies clearly show that geography matters even for online marketplaces due to several reasons (e.g., Hortacsu et al., 2006; Stockdale–Felstead, 2011; Schlägel 2011; Lendle et al., 2016). On the one hand, material products have to be delivered to the place of consumers. Furthermore, some types of products need a personal check before making the decision to purchase. On the other hand, all regions have their own consumption behaviour that makes marketing segmentation necessary in each territory (Huff, 1963). The main aim of

this paper is to analyse geographic distribution patterns of successful sales transactions, and demonstrate the importance of physical proximity in the selling process of online auction portals.

## 1 THEORETICAL BACKGROUND

### 1.1. The place of marketing geography in regional science

Marketing geography is a relatively young sub-discipline of regional science, which aims to examine the spatial structure of the retail sector. Meanwhile, the history of marketing geography in more mature economies dates back to the middle of 20<sup>th</sup> Century, and has become a widely applied sub-discipline, whereas in post-Socialist countries of Eastern Europe, there are still few academic researchers who are working on geographic aspects of commerce and marketing (Sikos, 2009).

Although research in the field of marketing geography is beneficial for both academics and the private sector, the retail sector was never among the mainstream research areas in regional science. In the last decades, the main focus of regional research was on physical infrastructure and foreign investments in Hungary. Plenty of academic papers were published in relation with the diffusion of communication and the transport network system.

Only few research papers can be found in the academic literature of marketing geography, but some of them have significant importance in examining the Hungarian retail sector. For example, the evolution of shopping centres in Budapest (Sikos– Hoffmann, 2004), the impact of national borderlines on the retail sector in the Slovakian-Hungarian border region (Kovács, 2008) or shopping behaviour of customers (Vasné Egri–Gyanó, 2013). In recent years, internet access became available to citizens in almost all Hungarian settlements, and this fact inspired regional researchers to publish papers in the topics of online economic activities (e.g. Kovács, 2013, Pál, 2014). Until now, there was no research paper about the geographic aspects of Hungarian online marketplaces at a local level.

### 1.2. Evolution of distance-related analysis in the private sector

Hutschenreuter et al., 2016 categorised distance-related business research into 6 main dimensions in their academic paper: cultural, institutional, geographic, economic, psychological and other. Thus, all dimensions have a significant impact on marketplaces, the most frequently examined category among them is cultural distance by far. In this paper, the main focus is on the effects of geographic distance.

Observation of economic activities and geographic distance dates back to the 19<sup>th</sup> Century. The first attempt to incorporate the effects of physical distance was by the Thünen model of agricultural land (1826), and it is considered the foundation work of local theory. In this model, von Thünen simulated the structure of land uses depending on distance from the central marketplace. Despite this work, location theories focused on the place of production, and paid little attention to the place of consumption until the 1930's. The Christaller-model (1933) was original in this sense, and had great effect on the evolution of marketing geography. However, it was unable to describe flows and customers' interactions effectively in the retail sector.

For this reason, Reilly's law of retail gravitation (1931) proved to be a more useful analytical tool in the traditional retail sector. Reilly assumes strong correlation between the mass (size) and attractiveness of marketplaces, following Newton's law of gravitation. This concept is widespread, and many other analytical methods rely on this concept nowadays.

The communication revolution in the second half of the 20<sup>th</sup> Century slowly decreased the importance of physical distance for economic activities, but the process has become faster and more radical after commercial internet became available for citizens in the 1990's. Some researchers in the new age of communication overrated consequences of declining telecommunication and transport costs, and thought it could lead to the death of distance (e.g. Cairncross, 1997, Friedman, 2005).

This hypothesis was never proven, and empirical studies repeatedly showed that geographic distance makes significant impact even on the virtual space (e.g. Wang et al., 2003, Tranos-Nijkamp, 2013). Research found that the dependence on geographic distance was significant in the retail sector as well, but to a smaller extent than in traditional offline marketplaces (Hortacsu et al., 2006). Lendle et al., (2016) came to the same conclusion, and calculated the effect of distance to be on average 65% smaller on e-Bay than offline, explained by the reduction of search costs.

## 2 OBJECTIVE AND METHODOLOGY

The main objective of my paper is to demonstrate how physical distance influences personal services, and determining selling rates on the Vatera auction portal in Hungary. The empirical research was based on a database downloaded in December, 2016, obtained with web data mining technique. The software collected data from the Vatera online auction portal, and said data contains 40 attributes of 16 835 auctions in the period between October and

December. All products were located in Komárom-Esztergom County. Unfortunately, in most cases, huge amounts of data had to be filtered out to avoid outliers in the analysis. Sellers who had extremely big numbers of uploaded products, who had their feedback for less than 25 transactions, or their positive feedbacks were below 90% on the Vatera auction portal were excluded. I applied basic statistical methods (such as count, proportion, average or standard deviation) for analysing the sample data, and visualized them on the map.

### 3 RESULTS AND DISCUSSION

On the map below, we can see the distribution of successful online transactions, according to the database of the Vatera online auction portal. It clearly shows the numbers of online sales are affected by geographic distance. In order to respond effectively to external factors, results were corrected with total purchasing power. Other relevant variables, such as population number, highest level of education, or GDP value correlated strongly with purchasing power, and for this reason, it was not necessary to use them to measure inequalities at NUTS-3 level. Counties were classified into 5 different groups, with natural breaks statistical method (Figure 1).

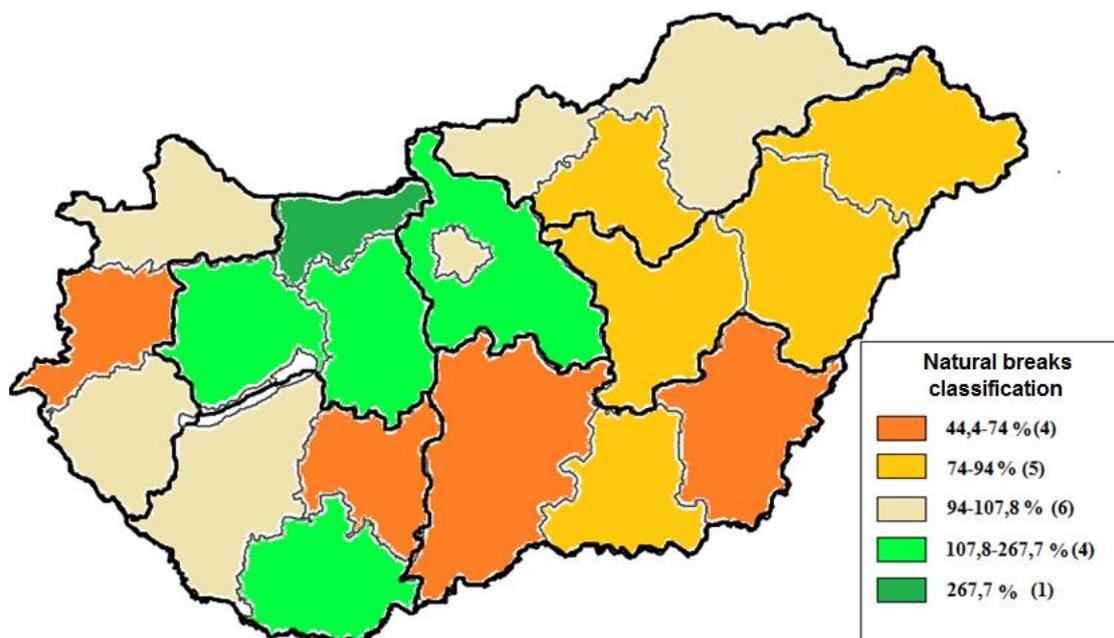


Figure 1 Distribution of Vatera purchases in proportion to purchasing power (N=2501)

Source: Custom processing according to Michael Bauer Research GmbH (2016)\*based on Hungarian Central Statistical Office data and Vatera data (2016).

\*Data analysed within the framework of Campus Mundi programme at Vienna University of Economics and Business (WU)

Results indicated statistically significant inequalities at this territorial level. In Komárom-Esztergom County, two and a half times more purchases were observed than it would be expected by the local purchasing power. Neighbouring counties also performed better than other counties, but their values were much more moderate. Baranya county, located in the southern part of Hungary, also has a high value compared to its purchasing power, but the composition of purchased products differs from that of neighbouring counties. There were less number of products which needed personal checks within the shopping process in proportion to all purchases.

Figure 2 provides us information about the distribution of product types. It explains how different categories of auctions are dependent on physical space, from the perspective of personal services.

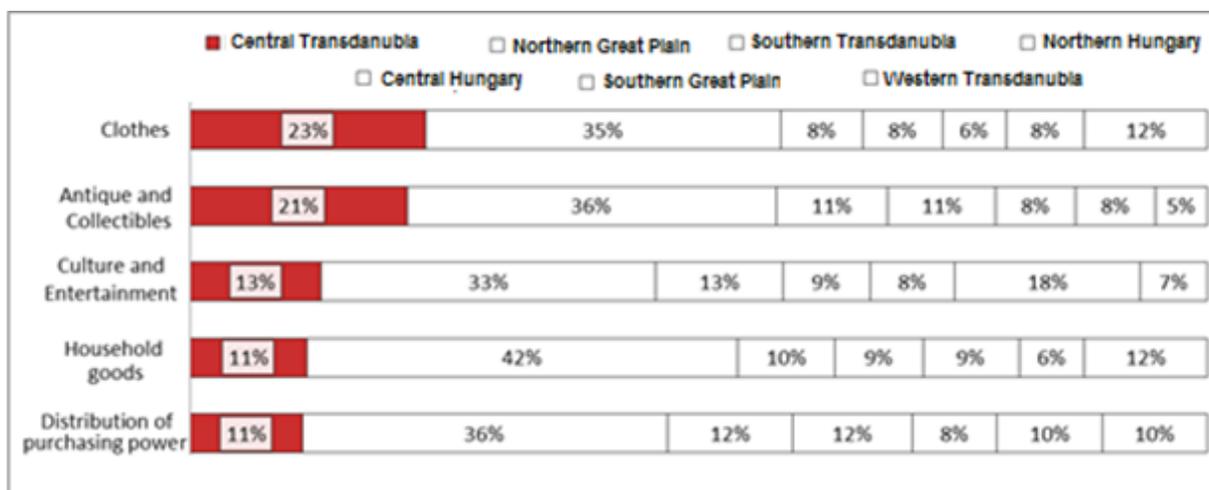


Figure 2 Distribution of purchases by product category (N=2501)

Source: Custom processing according to Vatera data (2016).

In Central Transdanubia, the portfolio of successfully sold products is very different compared to other regions. Clothes (23%), and Antiques and Collectibles (21%) were represented in greater numbers within total sales than it could be expected due to purchasing power. These categories of products are more depended on personal meeting than household goods or books. More than half of the auctions belonged to clothes or antiques and collectibles categories.

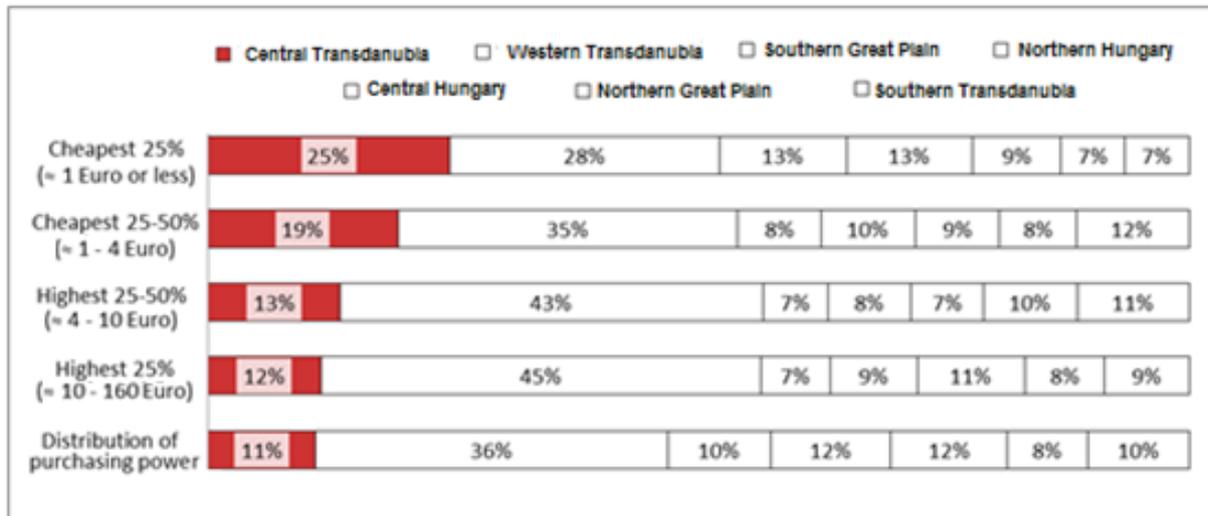


Figure 3 Uploaded products by price category (N=2501)

Source: Custom processing according to Vatera data (2016)

Figure 3 explains the trade-off relation between price and physical distance from the purchaser. There were significant differences between sold item categories. Percentages of first (under 1 Euro) and second (from 1 to 4 Euro) price categories were higher in the region products were uploaded in. These facts must be taken into consideration in a price sensitive market, where prices are usually very cheap.

## CONCLUSION

This study drew attention to the fact that the number of transactions and geographic proximity significantly correlate to each other, and we have to take that into consideration in business planning. Personal deliveries are among of the most popular ways of receiving the product, that makes physical distance especially important. According to the research study of Vatera (2017), every fourth purchase item was personally delivered in the last year. However, delivery services are getting even more popular. The proportion of Vaterafutár (their own delivery service) increased from 15% in 2016 to 22% in 2017, and this clearly upward trend is expected to continue.

On the one hand, the most frequently purchased products are strongly dependent on personal checking, such as clothes (26%), and antiques and collectibles (25%). On the other hand, the price of products made personal delivery services efficient. Most products were priced low on the auction portal, and the cost of delivery service made purchases too expensive. While the preferred price category was 15-30 Euros (5000-10000 HUF) average at Vaterafutár in 2017, most of the purchases on the Vatera auction portal were below this price.

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## CONTACT

*MA Csaba József Kovács*

*Szent István University in Gödöllő*

*Enyedi György Doctoral School of Regional Sciences*

*Páter Károly u. 1., H-2100 Gödöllő, Hungary*

*b.kovacs.csaba@gmail.com*