SPACE AND TECHNOLOGY – DEVELOPMENT AND EFFICIENCY OF RETAIL TRADE

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Abstract

The paper sets out from the business space (selling space, shop warehouse space etc.) and technology in the retail trade as factors of development of the retail trade in a particular country. As important factors of retail trade effects, space and technology can be analysed from marketing and from logistic points of view (in the sense of implementation of modern business conceptions). The importance of space and technology is also observed in the analysis of principal development directions in the formation of retail operating units.

On the basis of the chosen indicators and accessible statistics for selected European countries (and in particular for the Republic of Croatia), the author analyses the development of retail trades in respect to the reached relative size of selling space and the used technology. Additionally, for selected countries, there is also an analysis of the efficiency of retail trade in relation to the used selling surfaces. Based on the performed analysis, it can be concluded that, in addition to the relative size of the selling space, indicators relating to the use of modern technologies and logistical solutions should also be used as indicators of development of retail trade. This would allow for a better explanation of insufficient efficiency of retail trade for the total economic development of the observed countries.

Key words: retail trade, selling surface, business logistics, retail supply chain, Republic of Croatia

1. INTRODUCTION

Based on accessible literature, the paper first brings an analysis of the retail trade and its importance, and then continues with the analysis of space and technology as elements of the business process in the retail trade from the points of view of marketing and logistics. This is followed by basic remarks about the main development tendencies in the formation of retail operating units and retail companies from the point of view of their size (selling surface) and from the point of view of the implementation of modern technologies and business conceptions. The analysis of indicators of development and of the effects of retail trade, on the basis of accessible statistics, is performed for the Republic of Croatia and for selected European countries: Austria, Finland, Italy, the Netherlands, Germany, Norway, Czech Republic, Hungary, Poland and Slovakia. Indicators are presented in tables and graphically.

The purpose of this paper is to indicate the importance of selling space and technology in the functioning of international retail chains, i.e. of retail supply chains, which also affects the efficiency of retail trade.

2. RETAIL TRADE, SELLING SPACE AND TECHNOLOGY

The object of research in this paper is the development of retail trade from the points of view of space and technology. Therefore the first step is the definition and analysis of the concepts “retail trade”, “retail chain” and “retail supply chain”, followed by the definition of the concepts “space” and “technology” as elements of business processes, in order to arrive at selected development and efficiency indicators of the retail trade that are connected with space and technology.

2.1. Retail Trade in the Supply Chain

Retail trade includes all transactions in which buyer intends to consume the product through personal, family and domestic use (Dibb, Simkin, Pride, Ferrel,1995, p. 334). Therefore, it concerns sales of goods or services to a household personally or the activation of this household in the retail trade (Mason & Mayer, 1990, p. 5).

Everything stated above leads to the conclusion that the concepts "retail trade" and "retail" can be used as synonyms. In this paper the term "retail" will be used in the meaning of selling merchandise (and services connected with these goods) to the final buyer, the consumer, regardless of which business entity performs this activity.

It is therefore important to emphasize that retail is the selling of goods and services to the final consumer (Cox&Brittain, 1990, p. 3). However, in modern conditions of trade marketing it is often said that retail consists of marketing activities formed with the purpose of achieving satisfaction of the final consumers and profitable retaining of these consumers on the basis of a program of continuous improvement of quality (Hasty&Reardon, 1997, p. 10).

In that sense, today we can say that the retail trade comprises a number of activities that add value to the product and service sold to consumers for their personal or family use (Levy&Weitz, 2007, p. 21).

The object in our analysis are retail companies (or retail groups) which can also deal in wholesale trade. The retail chain is a company doing business with many retail units under collective ownership and it usually has centralized decision-making regarding the definition and implementation of its strategy. Some retail chains are divisions of larger corporations or holding companies (Levy&Weitz, 2007, p. 62).

In many research works it has already been emphasized that retail chains are important because of their size, because of the possibility of further expansion and because of the introduction of new technologies. Advantages of international retail chains lie in the fact that they have concentrated their functions, so that they are much larger than the national retail chains in the countries in which they are doing business. The largest European retail chains operate in a number of countries (both in Europe and on other continents). So, for example, Carrefour is present in 36 countries, the Metro Group in 33 countries, Tesco in 13 countries, Schwarz-Gruppe in 25 countries, Rewe Group in 13 countries, Auchan in 14 countries, Leclerc in 6 countries (xxx 2011, 2010 The 250 Global Retailers).

Retail trade is an integral part of the so-called value creation chain. Namely, every product or service has its value creation chain. Depending on the assortment it is doing business with, a retail company is the integrator of different value chains.

In that sense creation of value is the result of a target oriented chain of activities within and outside of the company which – depending on the angle of observation – are marked as: business process, value creation process, or as the logistic chain, chain of supply, i.e. supply chain (Berning, 2002, p. 7), or else as "logistic network"(Mandel, 2011, p. 15).

Today it is pointed out that managing the supply chain means "complete integrated planning and management of processes in the entire value chain with the aim to optimize the satisfying of buyers' needs" and that "managing the supply chain includes complete tasks of logistic coordination in the logistic network" (Kämpf, Növig, Yesilhark, 2008, p. 2).

In present-day supply chains, for example in the grocery sector, retail chains are most powerful, and manufacturers depend upon them (Dujak, 2012, pp. 41– 44). When a large retailer (retail chain) dominates in the supply chain, the expression "retail supply chain" can be used.

For a particular country, retail supply chains are also important from the foreign exchange standpoint, because the entry of a large international retail chain automatically means the entry of the entire supply chain, regardless of which manufacturers of goods and providers of services (from which countries) will become members of such canals. Namely, in the present-day conditions processes of internationalization and globalization of business operations are developing.

Retail trade takes place in operating units – shops, but there is also the out-of-shop retail trade (for example online retail trade). The retail operating unit is, therefore, important not only from the point of view of the contact with final buyers, but also from the point of view of its linking into supply chains.

One of the operating unit forms could also be the image of a retail operating unit as shown by applied variables of market strategy (Müller–Hagedorn, 2005, p. 81), i.e. by the marketing strategies of the retail company.

The formats of operating units are products of the retail company's strategy and they support the picture that the buyers have of a retail company; and the planned formation of a strategy of the formats of operating units is an important prerequisite for the success of that company (Ahlert&Kenning, 2007, p. 111). Of course, retail companies develop particular formats of their operating units in order to achieve competitive advantage.

2.2. Space and Technology as Factors of Retail Effects

The realization of retail effects (sale of goods and services) requires the running of certain working processes, of certain activities. The running of working processes in the trade requires elements that can generally be listed as follows (Segetlija, 2006, p. 125): (a) human resources (personnel), (b) property (assets), and (c) organization.

Business space is a specially important factor in retail trade.

The main forms of space in a retail company are (cf. Lerchenmüller, 2003, p. 219):

- selling space
- showroom
- warehouse space
- manipulation area
- space for administration
- space for social activities
- traffic area
- car parks
- other auxiliary surfaces.

The useof space demands investment into its construction and the necessary infrastructure, as well as investment into its incorporation into wider complexes. This also generates other expenses such as rent, amortization and the like. Of course, the usage of space brings about additional costs (heating, cooling, illumination, water, cleaning, and maintenance). While in towns the prices of the ground and fees for its utilization are constantly growing, outside of towns these prices are considerably lower (but it is necessary to invest in the infrastructure).

The possibilities for cost saving when space is in question include better design of buildings and appliances, better utilization of space, as well as better rent contracting, setting up of more efficient and economical devices and appliances, choice of more favourable energy tariffs, etc.

The quality of space in a retail operating unit depends both on its location as an instrument of marketing (e.g. accessibility of the selling space or its division and decoration within the shop), and on the work performed in that space (e.g. displaying goods, manipulating goods, arranging goods on shelves and the like). Therefore, space plays a double role: a role in the sense of marketing and another role in the sense of logistics.

In the retail trade, however, it is not the selling space but the selling surface that is measured. The official statistic defines the selling surface as follows (Sales Capacities in Retail Trade in 2009):

„ Sales space is a floor area (expressed) in m^2) of a facility in which the sales of goods takes place, including an in-door exhibition area (shop window), that is:

- the total area onto which customers are allowed to enter, including change rooms,
- cash desk counter and window area,
- area behind a cash desk to be used by cashiers.

The sales area does not include offices, warehouses and preparation rooms, workshops, staircases, toilets and other auxiliary rooms. In cases that sales takes place on several floors, the sales area is expressed as a sum of areas of all floors".

Specific business processes take place in a specific space following specific technology (in the retail trade these are sales-purchase and other business processes). It can be generally said that the tasks of a company are realized by means of different technologies (cf. Sikavica & Novak, 1999, p. 78). There is therefore a connection between technology and organization. However, technology may also be observed as an exogenous strategy factor of a company, as an uncontrolled variable.

Since the chosen technology affects the organization of business processes in the retail operating unit, size and format of the selling surface must be in conformity with the chosen technology or organization.

In re-examining the appropriateness of its strategic orientation and its harmonization with the development of its surroundings, the retail company should combine the technology, as the exogenous factor, with the sales method as the internalfactor. In thatrespect, the starting point is *Abell's* scheme which in the understanding of marketing strategies results from the realization that is not enough to simply list the products (objects) on the one side and state the market on the other side; instead it is necessary to further divide the business fields into: target groups, types of existing needs, i.e. functions, and technologies that will allow for the execution of the functions or, in other words, the satisfying of the needs of the targeted market segments (Müller – Hagedorn, 2005, p. 44 55).

Technologies in the retail trade are important for the chosen sales methods in respect to: (a) taking up the contact between the buyer and retailer, and (b) the service and charging method. This means that newer technologies enrich the sales methods.

As a complementary strategy to the retail trade with permanent location (the so-called stationary retail trade) the electronic trade or e-commerce constitutes a multichannel distribution and as such it is considered to be the success factor in the future (E–Commerce, 2005, p. 1).

As a newer sales method, Internet or the electronic retail trade has a considerable development potential, and therefore it is a serious option for every retail company. Nevertheless, it is considered that the Internet won't fully suppress the classic selling methods in foreseeable time and that markets will be, more or less, defined by the so-called multichannel strategies.

The growing importance of e –commerce is additionally supported, among other factors, by the expansion of the Internet in the sense of covering the whole territory and by the consumer behaviour in the use of media (Ewert&Kallenbrunnen, 2014, p. 42).

However, the fast development of purely Internet retailers shows that the stationary shop has not yet used all potentials of e-commerce to its favour. One of the reasons for that could be the too fast development in that line of work, because new possibilities, innovations and interaction are constantly discovered, and many stationary retailers are too occupied with their daily businesses and are unable to follow these trends. Still, new information and communication technologies have made it possible to create new formats of retail operating units (Ewert&Kallenbrunnen, 2014, p. 43).

Depending on the level of observation, retail technologies can be classified into: (a) technologies on the shop level, (b) technologies on the company level, and (c) technologies in relations between companies. These technologies mostly relate to modern information systems and their use in the implementation of certain business conceptions.

Among many information and communication technologies that have been introduced in the consumable goods industry, the following technologies crystallized themselves as most important: electronic data interchange (EDI), the line coding and scanning (optical reading) technology, Radio Frequency Identificationtechnology (RFID), and supplies management systems. (Klock, 2010, p. 36 ff).

2.3. Marketing and Logistic Views of Space and Technology in the Retail Trade

The analysis of selling surfaces in particular countries shows that these surfaces are constantly growing. One of the main reasons for such fast growth of selling surfaces is the retailer's effort to meet as many needs and wishes of his buyers as possible through a comprehensive offer of articles. Since the retail trade must choose article for its assortment, the selling space may become a "bottleneck". Aside from this, in the usage of sellingspace the retailer must also deal with the problem of determining the place on the shelf for each article (cf. Klock, 2010, p.10).

Determining places on the shelves for particular articles is the task of the modern business conception of "category management (CM). That is, modern information and communication systems have made it possible to successfully connect activities along the logistic chain thus allowing for cooperation between the retail and production company.

Based on such conditions, new business conceptions have been created. Within the CM conception there is co-operative management of selling actions, assortment and product development, and selling surfaces management is also dealt with (Klock, 2010, p.35).

In fact, in the CM theory and practice space management is an activity inseparable from the assortment management, because retailers must choose from the variety of products offered to them by manufacturers or suppliers. Apart from the needs and wishes of the consumers, this choice also arises from the limitations imposed by the size of the selling space in retail trade (cf. Segetlija&Dujak, 2013, p. 89).

In the manufacturer – shop – consumer logistic system, information and communication systems are unavoidable precondition for the implementation of modern logistic conceptions, which aim at successful management of multipoint logistic systems and chains that surpass company boundaries. This means the management of supply chains. The attempt to integrate marketing and logistic efforts has led to the conception of efficient consumer response (ECR) and other conceptions based on ECR: the conception of collaborative planning, forecasting and replenishment (CPFR) and the conception of optimal shelf availability (OSA) (Klock, 2010, pp. 35 and 36).

2.4. Development of New Formats of Retail Operating Units

Together with new information and communication technologies, new formats of retail operating units have developed as well (Ewert&Kallenbrunnen, 2014, p. 43). As it has already been emphasized, these new formats of retail operating units certainly include e-retail trade (online retail trade, Internet retail trade). In fact, Internet retail trade is an integral part of new formats of retail operating units (Segetlija, 2010).

The appearance of e-retail trade has been accompanied by the appearance of the so-called multichannel trade. Multichannel trade in the widest sense describes mutual communication with buyers, business partners and the company's own collaborators and different ways of communication by means of the Internet technology (Ladwig, 2002, p. 16). The concept itself generally also includes non-technological ways of communication; however, here it is limited mostly to the use of Internet based solutions (Ladwig, 2002, p. 179).

Accordingly, formats of the operating units in Internet retail trade relate both to "pure" Internet retail trade and to the use multiple selling channels, so that there are the following business models (Gittenberger&Vogl, 2014, p. 6):

(a) pure Internet trade (pure player) with an online shop

(b) stationary retail trade with a shop and an online shop
(c) consignment trade (mail order and an online shop).

Such business models are described as multichannel retailing or multichannel distribution systems.

Business models relate to the use of modern information and communication technologies in the interaction with business partners. Namely, individual characteristics of trade operating unit forms differ both in the operating unit format as well as in the company's personality (type of operating unit). These characteristics amalgamate in the concept of "business model"(Merkel&Heymanns, 2003, p. 2).

Specific characteristics of modern retail trade relate not only to the use of modern information and communication technologies, but also to organizational and co-operational forms of retail companies in which competitive advantages come to expression due to the economy of size (large surface shops, affiliate companies and the like). These specific characteristics of modern retail also relate to successful management of processes, i.e. of value creation chains.

At the present day's level of development of online retail trade, it can be said that buyers are becoming a constituent part of a large "intelligent touch-point management"(Celko&Jánszky, 2014, p. 10). Digitally networked consumers have caused a true revolution in the trade. Today, networked consumers want to be able to buy goods everywhere and at any time (Die Chance Omnichannel, 2014).

This has led to the so-called omnichannel retailing. Omnichannel retailing can be described as the providing of an integrated and consistent buying experience for buyers who want to buy goods through all possible distribution channels (shops, web, mobile-devices, games, social networks, kiosks, direct mail, catalogues, blogs, calling centres, television) at any time (cf. Kalakota, 2012).

Omnichannel retailing has evolved from multichannel retailing primarily because the buyers/consumers have changed as well, having become more demanding. It is therefore considered that omnichannel retailing is sometimes cost ineffective (and even impossible) without RFID-technology (Hardgrawe, 2012).

What is important for omnibuyers when they are buying goods is the recognisability of the retailer's brand (they do not want to worry about potential channels). Here, a very important role is plaid by mobile-devices (especially by the so-called smartphones) (cf. Kilcourse, 2011).

3. ANALYSIS OF THE SELECTED INDICATORS OF DEVELOPMENT AND OF THE EFFICIENCY OF RETAIL TRADE

In the analysis of the development of retail trade from the spatial point of view it is common practice to use the indicator of selling surface per 1 inhabitant. This indicator willbe presented graphically for the year 2013 for the Republic of Croatia and the selected European countries. Furthermore, for the Republic of Croatia, the changes of this indicator will be presented for the period from 1984 to 2009.

In the analysis of development of retail trade from the technological point of view, the following indicators will be used:

(a) shares (in %) of retailing by mail order or via Internet in the total retail trade (retail trade, except for trade in vehicles and motorcycles, division 47)
(b) shares (in %) of persons who have bought /ordered goods or services for personal use via Internet in the last three months.

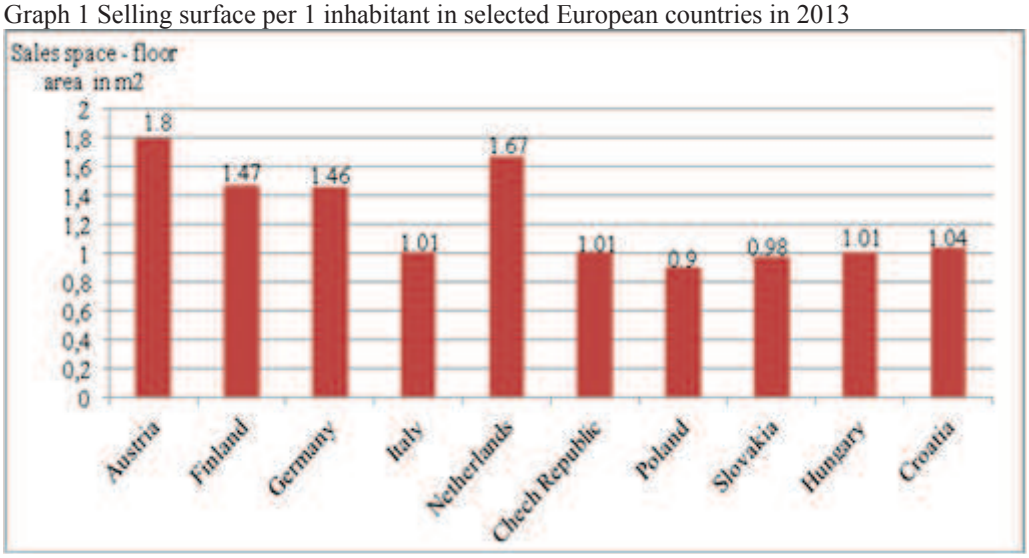
These indicators for selected European countries will be analysed and presented graphically.

For the analysis of the efficiency of retailing the usual indicator of turnover per l m^2 of selling surface will be used. As a new indicator of efficiency of selling surface, the indicator of the realized total gross domestic product (GDP) will be used for each of the countries per unit of selling surface (cf. Segetlija, 2011).

3.1. Selling Surface per 1 Inhabitant

Graph 1 presents the selling surface (of retail trade) per 1 inhabitant in selected countries.

Graph 1 Selling surface per 1 inhabitant in selected European countries in 2013

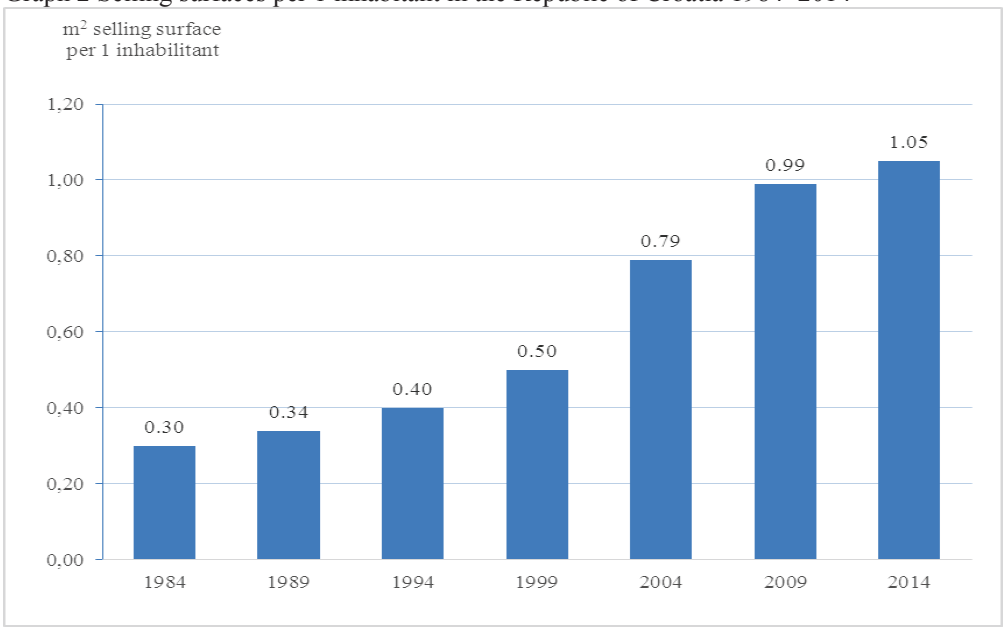


Source: GfK 2014, in: Einzelhandel Europa 2014, April 29, 2014

From graph 1 it is visible that economically and market developed countries (except Italy) have relatively larger selling surfaces. This is the result of the greater purchasing power and better retail offer. Furthermore, there are also some differences between individual economically and market developed countries. So Austria, for example, because of its density of shopping-centres, is more developed than Germany (Die Verkaufsflächendichte ist gestiegen – wie lange noch?, 2014). For the coming years these countries are expected to show stagnation in the development of selling surfaces.

In the Republic of Croatia in the last thirty years or so the selling surface per 1 inhabitant has increased by about 3.5 times. The changes in the selling surface per 1 inhabitant in Croatia from 1984 to 2014 are presented in graph 2.

Graph 2 Selling surfaces per 1 inhabitant in the Republic of Croatia 1984–2014



Notes: (a) without the selling surface of kiosks and petrol stations
(b) evaluation for 1994, 1999 and 2014

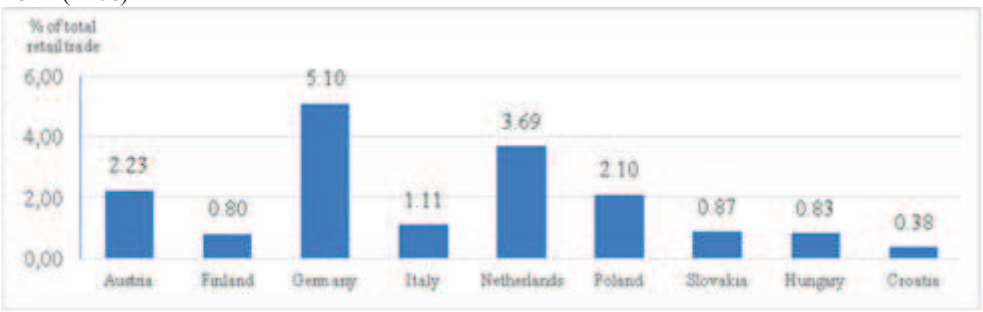
Source: (a) xxx (1991).Prodajni kapaciteti u trgovini na malo u 1989, Dokumentacija 809, *Republički zavod za statistiku, Zagreb* (Selling capacities in the retail trade in 1989, Documentation 809, *Republic Department for Statistics, Zagreb*, 1991)
(b) xxx (2006).Prodajni kapaciteti u trgovini na malo u 2004, Statistička izvješća 1293, *Državni zavod za statistiku, Zagreb* (Selling capacities in the retail trade in 2004, Statistical reports 1293, *Croatian Bureau of Statistics, Zagreb*, 2006)

(c) xxx (2011). Prodajni kapaciteti u trgovini na malo u 2009, Priopćenje br. 4.1.3. od 28.4.2011, *Državni zavod za statistiku, Zagreb*, 2011 (Selling capacities in the retail trade in 2009, Information no. 4.1.3. from April 28, 2011, *Croatian Bureau of Statistics, Zagreb*, 2011)
(d) xxx (2014). Einzelhandel Europa 2014, *GfK Studie zu den Handelsindikatoren 2013 und Prognose für 2014, April*2014 (Retailing in Europe 2014, GfK Study of Trade Indicators in 2013 and Forecast for 2014, April 2014).

3.2. Retail Trade through Mail and Internet

Graph 3 presents the shares of retailing through mail and the Internet in total retail trade (retail trade with the exception of motor vehicles and motorcycles, division 47) for the year 2011 in observed European countries. Due to the upswing of online retail trade, these shares are considerably higher in 2013.

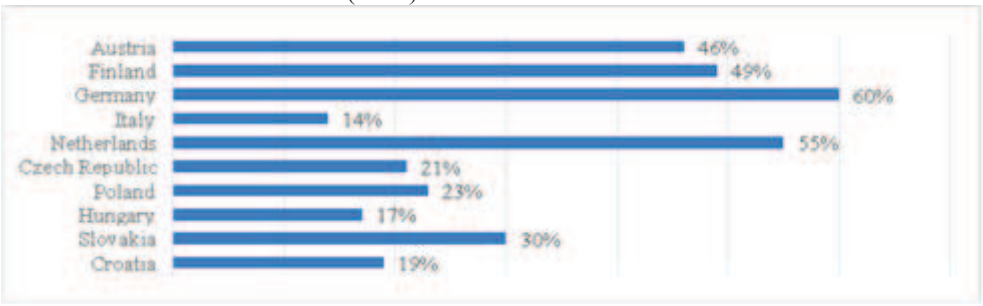
Graph 3 Shares of turnover via mail or the Internet in the total retail trade in observed European countries in 2011 (in %)



Source: Eurostat (2014). *Annual detailed the enterprise statistics for trade (NACE Rev. 2 G) [sbs_na_dt_r2]*.

Graph 4 shows the shares of persons who have bought /ordered goods or services for private use via Internet in the last three months (of 2013). As well as in the share in purchasing via Internet, these shares of Internet buyers are considerably smaller in the transition countries than in economically developed European countries.

Graph 4 Shares of the number of persons who have bought/ordered goods or services for private use via Internet in the last three months (2013)



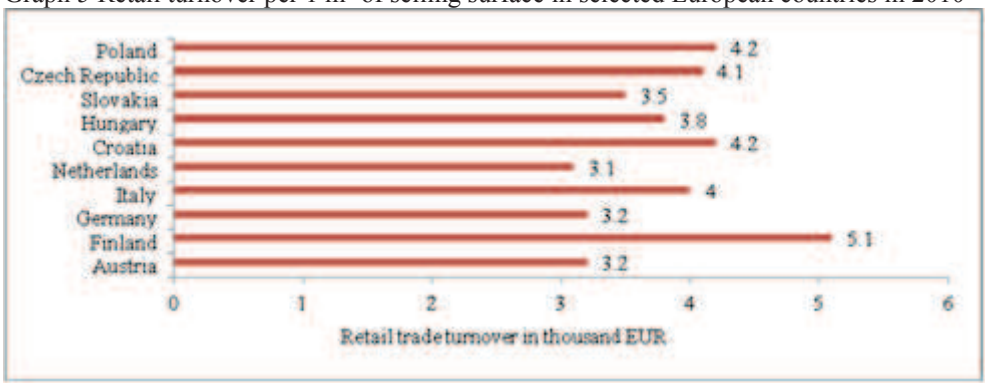
Source: Eurostat (2014). *Internet purchases by individuals*.

3.3. Productivity and Total Efficiency of the Selling Surface

Graph 5 shows the productivity of the selling surface, i.e. the realized turnover in the retail trade per 1 m^2 of selling surface in selected European countries.

It can be observed in graph 5 that the productivity of the selling surface in retailing is the highest in Finland, Poland, Croatia and the Czech Republic, whereas in more market-developed countries the productivity of the selling surface is lower. The presented indicators are the result of different retail structures and models. However, all countriesshow a declining tendency in the productivity of the selling surfaces and a decrease in the level of their utilization, because the retail surfaces are growing faster than the retail turnover.

Graph 5 Retail turnover per 1 m^2 of selling surface in selected European countries in 2010

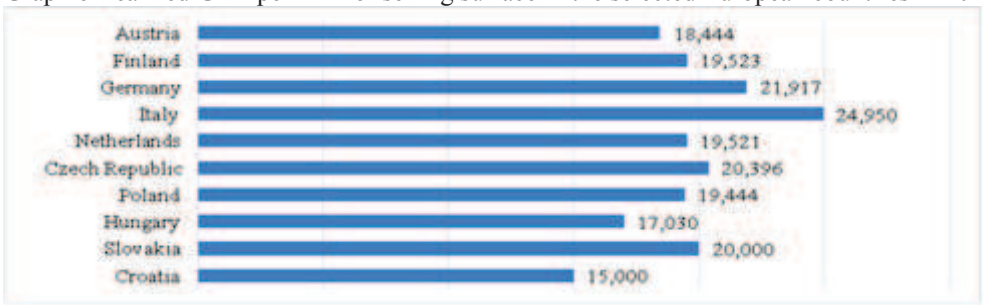


Note: Recalculated into the purchasing power standard (PPS)
Source: (a) xxx (2011). Key European Retail Data 2010 Review and 2011 Forecast, *Directions Magazine, Articles*, June 30th 2011
(b) Eurostat (2012). *Gross Domestic Product as Market Prices, Purchasing Power Standard per Inhabitant* – Statistics Database.
(c) Eurostat (2012). *GDP per capita - Annual Data* - Statistics Database.
(d) Eurostat (2012). *Population at 1 January*, Most popular database tables.

However, regardless of the somewhat better utilization of the selling surface in the transition countries, the overall efficiency of the retail trade (in the sense of the realization of GDP for the whole country per unit of selling surface) in the transition countries is significantly lower than in economically and market developed European countries. This means that retailing in the transition countries has not sufficiently included manufacturers of goods and services from these countries into their supply chains. The reasons for such tendencies, however, are not in the lack of selling surfaces but rather in the technical-technological underdevelopment of domicile retailers in the transition countries.

The realization of the GDP per 1 m^2 of selling surface in observed European countries in 2013 year has been presented in graph 6. It can be observed in the graph that Croatia and Hungary lag behind in total efficiency of the selling surfaces (in respect to total economic performances expressed in the GDP).

Graph 6 Realized GDP per 1 m^2 of selling surface in the selected European countries in 2013 (in EUR)



Source: (a) Eurostat (2014). *Gross domestic product the at market prices*, *Purchasing Power Standard per Inhabitant*
(b) GfK 2014, in: xxx (2014). *Einzelhandel Europa* (Retailing Europe) 2014, April 29, 2014

4. INSTEAD OF THE CONCLUSION

The problems relating to business premises in the retail trade are of special importance, because the retail trade development in a particular country can be expressed by means of the indicators of relative size of selling surface, and the efficiency of retail trade can be measured by the realized retail turnover per unit of selling surface.

However, not only the relative size of the selling space is important for the evaluation of development of retail trade in the particular country – very important are also the indicators about the usage of modern technologies. Therefore the development of retail trades in that sense can be evaluated, for example, according to the share of online retailing in the total retail trade, or also according to the number of persons who have bought/ordered goods or services online within a specified period of time. Of course, technological aspects also play a role in the realization of retailing efficiency. Technology is important for the development of new formats of retail operating units, where intelligent connecting of elements in the formatting of a stationary shop with

elements of online retailing especially comes to expression. In this way the multichannel, and even the so-called omnichannel retailing are developed.

Modern technological solutions must be used to allow the development of retailing in the sense of the functioning of successful retail supply chains. Thus the retailers also influence the realization of the total GDP in a particular country.

In the analysed transition countries one can observe a boom of selling surfaces. Productivity of the selling surface in the observed transition countries in 2010 did not lag behind the productivity in the observed economically and market developed countries.However, in some of the transition countries (Croatia, Hungary) the realized GDP in thetotal economy per unit of selling surface is relatively low. This means that the total efficiency of retail trade in the economy, in respect to the size of selling surface, is not satisfactory.

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