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SUMAR – SOMMAIRE – CONTENTS – INHALT

MACROECONOMIC DETERMINANTS OF ROMANIAN INTRA-INDUSTRY TRADE. A STUDY OF KEY CONTRIBUTORS TO EXPORT SALES

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Abstract: This study examines the main macroeconomic determinants of intra-industry trade between Romania and its major trading partners during the period 2001-2012. Using data at four-digit level for eight sections and based on a static panel data approach, we analyzed the country-specific characteristics. The results of the econometric analysis confirm the theoretical background. According to our estimations, the intra-industry trade is positively correlated to market size and negatively to differences in per-capita income and geographical distance, but there are also other specific factors of influence for each sector.

JEL classification: F1, C2

Keywords: intra-industry trade, OLS with logistic transformation, fractional logit regression model

1. Introduction

The classical and new classical theories of international trade, beginning with the absolute advantage theory and following with the comparative advantage one and Heckscher-Ohlin (HO) theorem explain the trade between different industries.

These approaches fail to explain why the commercial partners also exchange similar products between them, i.e. the so-called intra-industry trade (IIT). This phenomenon appeared in the ’60 along with many studies that tried to explain it. The intra-industry trade is the results of imperfect competition, making possible the exchange with substitutes meant to satisfy consumer’s different preferences.

Another motivation for studying this topic is that the experiences of economic integration indicate that this promotes intra-industry trade rather than inter-industry trade. In other words, once the commercial barriers are reduced, the intra-industry trade is expected to increase (Balassa, 1977, Grubel and Lloyd, 1975).

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The purpose of this paper is to measure the importance of intra-industry trade for Romania with its major trading partners and to identify the macroeconomic determinants that influence it. Most of the studies analyze IIT for all the traded products, but just a few of them focuse on the determinants on different groups of products, ignoring the fact that they may be different. This paper seeks to fill this gap in three ways. Firstly, it uses the latest estimation methods and data in this field. Secondly, it identifies the country-specific determinants of intra-industry trade for those groups of products that were important for Romanian trade between 2001 and 2012. And finally, it takes into consideration the latest evolution of trade and, at the same time also the last financial crisis.

The article is structured as follows: in the next section we will present the literature review on this topic and the applied methodology. The descriptive analysis together with the results of estimation methods can be found in the third section. The last paragraph presents the main findings of the study.

2. Theoretical background

In this section we review, first of all, the indicators used in the literature to measure the intra-industry trade, followed by some relevant empirical studies that measure the impact of main determinants of intra-industry trade. At the end of this section, we will sum up some of the country-specific determinants of IIT that are used more frequently in the literature and underline the hypothesis for this study.

2.1 Measurement of intra-industry trade

Grubel and Lloyd tried to answer theoretical questions raised by the phenomenon of intra-industry trade and to quantify its importance for a country. According to them, the intra-industry trade in one industry is the export value compensated by the import value in the same industry, the IIT being complete when the difference $\left| X_{ij} - M_{ij} \right|$ is zero. Moreover, they argue that this phenomenon is not compatible with the classical and neo-classical theories of trade (Grubel and Lloyd, 1971).

The measurement of the intra-industry trade starts from the idea that the whole trade of one country sums the trade with different and similar goods. Therefore, the intra-industry trade for a good *i* equals the difference between the whole trade of that good ($X_{ij} + M_{ij}$) and the net export or import given by $\left| X_{ij} - M_{ij} \right|$.

$$IIT_{ij} = \left(X_{ij} + M_{ij}\right) - \left|X_{ij} - M_{ij}\right|$$

In order to compare this indicator between economies, it is useful to use not an absolute indicator but a relative one, computing the shares of each type of trade (intra- and inter-) in total trade (Grubel and Lloyd, 1971: 496). In this way, we become the following relation:

$$\%IIT_{ij} = \frac{\left(X_{ij} + M_{ij}\right) - \left|X_{ij} - M_{ij}\right|}{\left(X_{ij} + M_{ij}\right)} \cdot 100$$

which gives us the expression of Grubel-Lloyd Index, GL_{ij}, (Grubel and Lloyd, 1971: 498):

$$GL_{ij} = 1 - \frac{|X_{ij} - M_{ij}|}{(X_{ij} + M_{ij})}$$

where:

- *i* represents a good;
- *j* represents a country;
- IIT_{ij}, $\%IIT_{ij}$ and GL_{ij} represents the size of intra-industry trade;
- X – value of exports;
- M – value of imports.

This indicator has the advantage of being a direct measure of intra-industry trade, taking values between zero (lack of IIT) and one (complete IIT). In other words, when there are no exports or imports which implies no IIT, the index value is 0. When the export value equals with the import value of the same industry, which means the the complete IIT occurs, Grubel-Lloyd Index takes the value one.

Using an index similar to the previous one, Finger (1975) argues that the presence of intra-industry trade does not contradict the neoclassical theories of trade. His opinion is that the interpretation depends on the definition of industry. If the industry is defined as a certain input-ratio, then the trade with similar products contradicts the HO model. But, if the products do not correspond in reality to this concept, then there is no contradiction in the fact that they do not belong to the same industries. Therefore, it is necessary not only to analyze the existence or nonexistence of simultaneous export and import within an industry but also to show that the input-ratio do not differ significantly from product to product.

The indicator developed by Finger is called *Trade Overlap Index* and, using an index similar to the previous one. If the relation of the last one is to be explained, than we have two situations:

(1) if $X_{ij} - M_{ij} > 0$, then the index becomes:

$$TO_{ij} = \frac{(X_{ij} + M_{ij}) - (X_{ij} - M_{ij})}{(X_{ij} + M_{ij})} = \frac{2 \cdot M_{ij}}{(X_{ij} + M_{ij})}$$

or

(2) if $X_{ij} - M_{ij} < 0$, then the relation is:

$$TO_{ij} = \frac{(X_{ij} + M_{ij}) + (X_{ij} - M_{ij})}{(X_{ij} + M_{ij})} = \frac{2 \cdot X_{ij}}{(X_{ij} + M_{ij})}$$

Generalizing, we reach to another intra-industry measurement developed by Finger (1975) it can be applied to analyze the IIT at the industry level:

$$TO_j = 2 \cdot \frac{\sum_{i=1}^{N} min(X_{ij}, M_{ij})}{\sum_{i=1}^{N} (X_{ij} + M_{ij})} = 1 - \frac{\sum_{i=1}^{N} |X_{ij} - M_{ij}|}{\sum_{i=1}^{N} |X_{ij} + M_{ij}|}, where\ i = \overline{1, N}$$

i represents in this case (and for the rest of this paper) the commodity traded by the country *j* and *N* represents the number of commodities in an industry. It can be noticed that the results of these indicators depend on how aggregated the export and import values are.

The intra-industry trade indices at the industry level can be also determined as a weighted arithmetic average of Grubel-Lloyd indices at the product level (Ekanayake, 2001: 94).

$$GL_j = \sum_{i=1}^{N} w_{ij} \cdot \left[1 - \frac{|X_{ij} - M_{ij}|}{(X_{ij} + M_{ij})}\right]$$

where: $w_{ij} = \frac{X_{ij}+M_{ij}}{\sum_{i=1}^{N}(X_{ij}+M_{ij})}$, represents the share of the trade with good *i* in the whole industry.

Another improvement to this measure is to use the relative import and export values of each good (as percentage in the total export or import) instead of their absolute value, as follows (Aquino, 1978):

$$GL_j^* = 1 - \frac{\sum_{i=1}^{N}\left|\frac{X_{ij}}{\sum_{i=1}^{N}X_{ij}} - \frac{M_{ij}}{\sum_{i=1}^{N}M_{ij}}\right|}{\sum_{i=1}^{N}\left(\frac{X_i}{\sum_{i=1}^{N}X_{ij}} + \frac{M_i}{\sum_{i=1}^{N}M_{ij}}\right)} = 1 - 0{,}5 \cdot \sum_{i=1}^{N}\left|\frac{X_{ij}}{\sum_{i=1}^{N}X_{ij}} - \frac{M_{ij}}{\sum_{i=1}^{N}M_{ij}}\right|$$

Both above-mentioned measures of intra-industry trade can take values between 0 and 1, as we already explained. The larger their value is, the more intra-industry specialization exists.

2.2 Literature review

The studies on the topic of intra-industry trade can be classified into many groups (Andersen, 2003). One group encompasses the studies focused on developing and improving indicators meant to measure better the amplitude of this phenomenon, mainly for the developed countries and less for the developing one. Another group of studies deals with types of IIT: vertical and horizontal. The vertical intra-industry trade takes into consideration the fact that goods are similar but differ in terms of quality, meanwhile the horizontal trade refers to products differentiated by other factors than quality. There is also a third type of studies, to which also belongs our paper that focuses on the determinants of intra-industry trade, at microeconomic, macroeconomic level or both.

To draw a picture about the main determinants and estimation methods, in this section we will present some empirical studies that are relevant for our research. The first group of articles investigates both the country- and industry-level explanatory variables.

Hu and Ma (1999) study the intra-industry trade of China with its major 45 trading partners over industrial groups of SITC 5 to 8. The influence of determinants was estimated using a cross-country OLS (Ordinary Least Squares) and Tobit method. The whole trade with similar products is disentangled into vertical and horizontal types, which are affected by different factors. While the vertical intra-industry trade is mainly influenced by human-capital intensity, the horizontal trade is more related to product differentiation and economies of scale. A similar research of Zhang and Clark (2009) identifies country- and industry-level determinants of intra-industry trade as well as of its components (vertical and horizontal). Based also on

Tobit estimates, it is concluded that US intra-industry trade with its main 40 commercial partners is dominated by horizontal rather than vertical IIT and their determinants differ. The horizontal IIT is influenced by distance, foreign direct investments (FDI), economies of scale and seller concentration. However for the vertical IIT development expenditures, trade orientation and trade imbalance are more meaningful. The result may differ substantially when the number of partner countries is restricted to just one region and/or one group of determinants (i.e. micro- or macroeconomic). Taking into consideration just the NAFTA partners, Ekanayake et al. (2009) observes that US intra-industry trade is almost entirely due to vertical differentiation, although the share of horizontal IIT has increased significantly. The explanatory variables are just industry-specific ones and among them product differentiation, quality differences, firms' concentration and industry size proved to be significant. Without splitting the intra-industry trade into horizontal and vertical, Sharma (2000) identifies both the micro- and macroeconomic determinants of Australian trade. Econometric estimations of an OLS model with logit transformation indicate a positive correlation of intra-industry trade with product differentiation and economies of scale and a negative one with the levels of industry protection and foreign ownership. Instead of studying the intra-industry trade as a whole, Sotomayor (2012) focuses on manufacturing industry in Mexico in the 1994-2006 period. The author adjusts the Grubel-Lloyd index with its maquiladora component, which overestimates the IIT index and the Mexican trade benefits with NAFTA partners. After adjustment, the determinants of the non-maquiladora intra-industry trade are analyzed both at the industry- and country-level. In addition to the OLS with logit transformation, the generalized linear model is also used. The results reveal the importance of differences in economic development and factor endowments.

In the second group of studies, only the macroeconomic determinants are analyzed. For example, in the case of Mexican intra-industry trade Ekanayake (2001) shows that, on one hand, it is positively correlated with the average income levels, average country size, trade intensity, trade orientation, common borders and language and the integration agreements. On the other hand, the intra-industry trade in Mexico is negatively influenced by income differences, inequality in country size, distance and trade imbalance. The results are estimated, using pooled OLS with logit transformation across the years 1996-1998. There are also articles that focus on macroeconomic determinants in intra-industry trade, but for a specific industry. In the case of Portugal automobile industry, Leitão and Faustino (2009) use country characteristic as explanatory variables and OLS with time dummies, Tobit and GMM-system as estimation methods. They find a positive correlation between the IIT and the difference in GDP per capita between countries, explained that in automobile components the vertical specialization is dominant. But, other results are according to the literature, i.e. the factor endowments, market size and culture similarities influence positively the trade with similar products. In the same industry, but for the USA between 1989-2006, Turkcan and Ates (2010) show that the main part of the automobile intra-industry trade was vertical. It was positively corelated with the average market size, differences in per capita GDP, outward FDI and geographical distance. Compared to other studies, the paper indicates that the intra-industry trade is also favored by a depreciation of the national currency (see Thorpe and Zhang (2005). More recently, Onogwu (2013) analyzes the country-specific determinants of

intra-industry trade in residues and wastes from food mill industry. The study is conducted for Nigeria in relation with the member countries of the Economic Community of West African States in the period 1981-2010. Using a logistic transformation and a non-linear least square technique, there are some influence factors that could be identified. Among them, the most significant were the partners' GDP, population and value added in manufacturing.

There are also studies that identify the macroeconomic determinants for the European countries. Among these, some authors (Leitão and Faustino, 2006; Faustino and Leitão, 2007) used both a static and a dynamic panel model to study the country-specific characteristics of Portuguese intra-industry trade during 1995 and 2003. The study confirms the demand similarity (Linder's) hypothesis indicating a negative relationship between per capita income and intra-industry trade and that Portugal has comparative advantages in lower quality products. With respect to the Czech Republic, Janda and Münich (2004) show that one of the most important determinants of IIT in this country is the quality of labor force. Another European country for which there are studies on the topic of intra-industry trade but, in the agro-food industry, is Hungary. Fertő and Hubbard (2002) separate the Hungary's intra-industry trade with its 14 EU trade partners for the period 1992-1998 into their components. Another analysis (Fertő, 2008) is extended and tests the smooth adjustment hypothesis suggesting that trade liberalization has not influenced the employment degree in Hungarian food industry. Botrić (2013) provides an analysis for Western Balkan countries and the EU between 2015 and 2010. It identifies relative income level, geographical distance, factor endowments and trading costs as significant factors of influence. Jámbor (2013) focuses on agro-food trade of Czech Republic, Hungary, Poland and Slovakia (the so-called Visegrad countries) with EU members. He concludes that the intra-industry trade is dominated by the vertical type and reveals the positive impact of economic size and the negative impact of geographical distance on IIT. Another study on the same group of countries was conducted by Molendowski (2014) for the period 2004-2012 for the four Visegrad countries with EU-10 and with EU-15 respectively. The purpose was to underline the impact of economic crisis on IIT. It proved to be more resilient to negative events. Among this group of economies, there is a recent study (Lapiňska, 2015) on Poland intra-industry trade between 2002 and 2011. The macroeconomic determinants proved to be trade barriers and the trade imbalance in Poland's bilateral trade.

For Romania, there are just a few studies, for instance Surugiu and Surugiu (2014) on the IIT for motor vehicle parts. They underline the determinants for the period 1995 and 2012, using a panel GMM as estimation method for a dynamic model. The study indicates a high degree of persistence, a negative relationship between IIT and partner's factor endowments and a positive one with respect to economic growth.

2.3 Country-specific determinants of IIT and estimation methods

From the previous sections, it can be concluded that the economic literature offers some theoretical explanations at the macroeconomic and microeconomic level. They are meant to explain the magnitude of trade with similar products.

To have a better overview of the expected signs, we present in the next table the first significant analyzes along with the explanatory variables and their

significance.[1] The newest studies take into consideration various combinations of these variables.

Table 1. Macroeconomic determinants of intra-industry trade on the basis of some empirical analyses

Variables	Balassa (1986a)	Balasa (1986b)	Helpman (1987)	Bergstrand (1990)	Hummels, Levinsohn (1995)
Country GDPs			(+/–)*		+/–
Average GDP	+*	+*		+*	
Sum of GDP			+		
Average GDP /capita	+*	+*		+/-	
Difference in GDP/capita			–*	–*	–*
Inequality index		–*			
Inequality/capita index		–*			
Average Capital-Labor Endowment				–*	
Capital-Labor Endowment Inequality				–	–
Land-Labor Endowment Inequality					–*
Distance	+*	–*			–*
Border dummy	+*	+*		+*	
Integration dummy		+*			
Inequality of tariffs				–*	

* Significance level at 10%
Source: adapted after Andersen, 2003: 29.

As we already mentioned, our study focuses on the group of macroeconomic determinants. Among these, there are: economic development of trade partners, market size, geographical proximity, degree of economic integration and trade barriers. Based on above-mentioned papers, we can make the following assumptions:

H1: The higher the income per capita of the trade partner is, the more intense the intra-industry trade. At low levels of income per capita, the demand is mainly for standardized products. The higher the income, the higher the demand for differentiated goods. By taking into account this variable, we expect to obtain a positive effect on Grubel-Lloyd index meant to reflect a rising demand for the differentiated products. This determinant was determined as real GDP/capita expressed in USD.

H2: If the trade partners are very different in their level of development, then the intra-industry trade will be lower. In other words, a large discrepancy between incomes per capita leads to a difference between consumers' preferences and/or factor endowment. Therefore, if the differences are large, then the propensity for trade with similar products is reduced. The GDP/capita discrepancy was determined according to Balassa and Bauwens (1987):

[1] We chose only those factors of influence that are also meaningful for our research.

$$DifGDPC = 1 + \frac{w_j \cdot \ln(w_j) + (1 - w_j) \cdot \ln(1 - w_j)}{ln2}$$

where: $w_j = \frac{\text{GDP/capita}_{\text{Romania}}}{\text{GDP/capita}_{\text{Romania}} + \text{GDP/capita}_{\text{country j}}}$

This index takes values between 0 and 1. The larger the value, the higher the degree of inequality.

H3: The higher the market size, the more important the intra-industry trade. In large economies, the production process is more likely to exhibit economies of scale when producing differentiated products. On the other hand, there is a higher probability that these products are demanded, leading to a higher intra-industry trade. The market size was measured as real GDP in mil. USD.

H4: Moreover, the larger the discrepancy between markets sizes, the lower the intra-industry trade. The relative difference was measured similar with GDP/capita.

H5: Geographical proximity should (also) positively influence the trade with similar products. The explanation lies, on one hand, in the fact that transport costs are lower and, on the other hand, in the fact that neighboring countries tend to be more similar regarding consumers' tastes and/or resources. This variable is measured as the straight line distance between Romania and its trade partners.

H6: The impact of bilateral exchange rate on IIT is not clearly explained by this theory. Generally speaking, depreciation (appreciation) of national currency makes the exports more (less) and the imports less (more) competitive. But because the GL index uses both exports and imports, we do not have expected sign for the coefficient of this variable.

H7: The more intense the trade between countries, the higher the intra-industry trade. Trade intensity (TINT) was calculated as the share of Romania's foreign trade with a certain economy in total Romanian trade.

H8: The trade with similar products is (also) positively influenced by the existence of common borders. In this respect, we used a dummy variable (BOR) of all Romania's neighbours.

H9: Intra-industry trade is (also) stimulated by participation to different free trade agreements. Romania's membership in EU should stimulate intra-industry trade. A dummy variable is used to quantify for EU members or for other countries with which Romania has a commercial agreement.

Given these hypotheses, the purpose of this paper is to estimate the following model:

$$GL_{jt} = \beta_0 + \beta_1 \cdot X_{jt} + u_{jt}$$

where:

- *t* represents the time;
- *j* represents a country;
- GL_{jt} is the Grubel-Lloyd index between Romania and each of the 44 countries in each year between 2001 and 2012, with $j = \overline{1,44}$;
- X_{jt} is the matrix of independent variables and
- u_{jt} the error term.

The explanatory variables are:

1. LPCI (*logarithm of per capita income*), the average income per person calculated as GDP/person and expressed in logarithm of USD, real values;
2. RDPCI (*relative difference of PCI*), inequalities in PCI and calculated according to the formula from H2.
3. LGDP (*logarithm of gross domestic product*), meant to measure the market size expressed in logarithm of mil. USD, real values;
4. RDGDP (*relative difference of GDP*) differences in GDP levels;
5. LDIST, geographical distance between countries measured in logarithm of km;
6. EXC (*logarithm of bilateral exchange rate*) determined with the aid of cross exchange rates versus USD. For the countries that already adopted Euro, we determined the present theoretical exchange rates using the exchange rate between national currency and Euro at the moment of its introduction and EUR/USD evolution. We use the direct quotation, an increase of the value meaning a depreciation of RON versus other currencies.
7. TINT (*trade intensity*) calculated as the share of Romanian foreign trade with a certain trade partner in total Romanian trade;
8. BOR (*border*) is a dummy variable, taking the value 1 if there are common borders with the partner countries and 0 otherwise;
9. INT (*integration*) is also a dummy variable being 1 if Romania has free trade agreements with the partner country and 0 otherwise;
10. CRISIS is a dummy variable for the years 2008-2009 to measure the impact of last financial crisis on Romania's intra-industry trade.

As for the estimation methods, most of the studies use the pooled OLS estimates to analyze the main determinants of intra-industry trade. This approach causes at least two problems. On one hand, the dependent variable takes values between zero and one, being a fractional response form, and OLS estimation may lead to values outside this interval. Therefore, the logistic transformation is often used: ln(GL/(1-GL)). But it also has a drawback (Balassa, 1986a, 1986b) if the GL index is zero or one, because the logarithmic function is not defined in these points. Using this method would cause much of the observations to be lost. On the other hand, the estimated coefficients are difficult to interpret even when the missing values do not represent a main problem, because of the transformed dependent variable. In this situation, it is hard to obtain the marginal effects of explanatory variables on the GL index.

Because we want to capture the geographical distance and this variable is time-invariant, we can not use fixed effects model. For this reason, a random effects model with logit transformation was estimated, using generalized least square.

Recently Lee and Han (2008) have used specific estimation methods designated to models that have a continuous fractional or proportional dependent variable. It is called the Fractional Logit Regression Model (FLRM), proposed by Papke and Wooldridge (1996) and uses Quasi-Maximum Likelihood Estimation (QMLE). It has the advantage in solving the logarithm problem therefore not losing the zero and one values, and the marginal effects are obtained quite easily.

3. Data and results

In order to calculate the GL indices, we collected data regarding the export and import at four-digit HS Classification from the International Trade Center database. We took into consideration Romania's main 44 commercial partners[2] covering about 90% of its trade, between 2001 and 2012, obtaining a balanced panel data with 528 observations. It is important to mention that more than 70% of Romanian trade is intra-EU trade. For the rest of the variables, except export and import flows, we used UNCTAD database.

Because there are industries with neither exports nor imports, and to avoid using too many values of zero for GL index, we chose to analyze those sections of products that are meaningful for our country. After 1990 until 2008, Romania mainly exported the following products: 44 – Wood and articles of wood; 61, 62 – Articles of apparel and clothing accessories; 64 – Footwear; 72, 73 – Iron, steel and articles thereof; 84 – Nuclear reactors, boilers, machinery and mechanical appliances; 85 – Electrical machinery and equipment and parts thereof; 87 – Vehicles and parts and accessories thereof, 94 – Furniture.[3] Their importance varied accros the years. After the financial crisis, the main export goods are the capital and technology intensive such as machinery and vehicles. In our study, we analyze some of these groups of products, along with other so-called "traditional" belonging to the chemical industry. These are mineral, chemical and plastic products (see in Table 2).

In this study, we chose the period 2001-2012 because we also wanted to reveal if Romania's accession to EU in 2007 had or had not influenced the intra-industry trade. In this respect, we calculated the Grubel-Lloyd index for each trading partner, product and year. As previously mentioned, we used various approaches, from pooled OLS (POLS) and random effect (RE) with logit transformation to Tobit and Fractional Logit Regression Model (FLRM).

In Table 2, we summarized the results of all the estimation methods, keeping the sign of the coefficient that proved to be statistically significant at minimum 5% significance level in at least three estimation methods. The detailed results and their significance are presented in the annex.

[2] In alphabetically order, they are: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Czech Republic, Cyprus, China, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Holland, Hungary, Ireland, Israel, Italy, Japan, Kazakhstan, Latvia, Lithuania, Luxemburg, Malta, Rep. of Moldova, Norway, Poland, Portugal, Russia, Serbia, Syria, Slovakia, Slovenia, South-Korea, Spain, Sweden, Switzerland, Turkey, Ukraine, UK and USA.

[3] Our purpose is not to present the evolution of Romanian trade and its structure as there are other papers in this respect (Ban, 2009, 2010).

Table 2. Estimation summary

Section / Variables	25-27 Mineral products	28-38 Products of the chemical industry	39-40 Plastics, rubber and art. thereof	44-49 Wood and articles of wood	50-63 Textiles and textile articles	72-83 Base metals and articles thereof	84-85 Machinery and electrical equipment	86-89 Vehicles
PCI					+	+	+	+
RDPCI		–	–	–			–	–
GDP	+	+	+	+		+	+	+
RDGDP		+						
DIST	–	–	–	–	–	–	–	–
EXC				+			+	
TINT								
BOR		+		+				
INT								
CRISIS		–						

Note: We considered the results to be robust if the coefficients are statistically significant at minimum 5% significance level in three out of four estimated methods.
Source: own estimation.

As it can be seen in Table 2, the results confirmed our theoretical hypotheses. Analyzing the eight "traditional" sections, most of them (were) being important for Romanian foreign trade, it can be noticed that the macroeconomic determinants of intra-industry trade differ from one industry to another.

For almost all the products, there are some common factors of influence. For example, the market size (measured by GDP) is positively correlated with the intra-industry trade, no matter what the method. This means that larger export/import markets favor the intra-industry trade. Geographical distance proved also to be statistically significant in every estimated method and also has a negative impact on the intra-industry trade. This means that the further a country is from another, the less important the trade between them with similar products is.

Besides this group of common determinants, we also have some factors of influence that influence most, but not all of them. Firstly, the per capita income proved to be significant just for products such as textiles, base metals, machinery and vehicles and not important for minerals, plastics, wood and articles of the chemical industry. A possible explanation could be that the latter products are rather standardized, and demand differences influenced by higher income do not play anymore an important role in this case. Secondly, the differences in per-capita

income influence negatively the intra-industry trade with the majority of products, except articles made of mineral, base metal, and textiles. This means that the higher the discrepancies between countries, the more different the preferences and the trade with similar products is less likely to occur. Thirdly, somehow unexpected is the coefficient for the difference in GDP, variable that is important in explaining the Romanian intra-industry trade with chemical products. This variable is also known as "economic distance" and the larger the discrepancies in market size, the lower the intra-industry trade should be. Our results indicate the opposite. This situation can be explained if the trade with similar products is dominated by vertical (quality differentiated goods) instead horizontal (variety differentiated goods) IIT, our results being consistent with the neo-Heckscher-Ohlin trade theory (Chemsripong et al., 2005). A decisive answer could be provided, only if the total intra-industry trade is decomposed into its components and analyzed separately.

The remaining factors of influence were just sporadically significant, and this is the case of exchange rate. According to our results, the depreciation of RON increases the trade with similar products when speaking about wood and machinery.

The last three factors of influence are measured by dummy variables. According to our estimations, the common borders have a significant positive effect in the case of chemical and wood articles. The EU accession had no impact on Romanian intra-industry trade with the products we analyzed, meanwhile the financial crisis affected negatively mainly the intra-industry trade with chemical products.

4. Conclusions

The purpose of this article is to study the country-specific determinants of Romanian intra-industry trade with its main commercial partners. The research was conducted for certain industries that are relevant for this country, namely: mineral products, chemical articles, plastics, wood, textiles, base metals, machinery, and vehicles.

We tried to fill the gap in the literature as follows: firstly, there are just a few studies that analyze Romania's intra-industry trade and fewer that focus on certain industries. Secondly, we used a recent estimation method called Fractional Logit Regression Model, not used yet for IIT. Thirdly, our data is up-to-date also integrating the evolution during the last financial crisis.

We applied four methods to the estimation, and the empirical results indicate that the macroeconomic determinants differ from product to product. For the majority of them, market dimension, and geographical distance proved to be significant.

Besides these common determinants, there are others that influence the intra-industry trade in specific sectors. For example, the per capita income is significant just for textiles, base metals, machinery and vehicles. For these groups of products, demand differences influenced by higher income play an important role. Another example refers to the discrepancies between countries (measured as differences in per-capita income), that influence negatively the intra-industry trade with the majority of products. An unexpected result was the coefficient for the "economic distance" (measured as difference in GDP) that was positive instead negative. It implies that the larger the discrepancies in market size are, the higher the intra-industry trade is. This conclusion has a theoretical explanation if the trade

with similar products is dominated by quality instead variety differentiated goods. To answer this question, a further study is necessary in which to decompose IIT into its components.

Last but not least, there are also some products that are sensitive to exchange rate fluctuations, common borders and, respectively, the occurrence of economic crisis. A depreciation of national currency could intensify the IIT with wood products and machinery, meanwhile the common borders are especially significant for wood articles and chemicals. The latter was the only section negatively influenced by the economic crisis.

In our opinion, the present study has important policy implications. It indicates that the economic instruments should be adapted to each group of exported commodity in order to increase their competitiveness. Currency depreciation proved not to be that important compared to market size, economic and geographical distance. To stimulate the intra-industry trade, the policy makers should have a good perspective of all these determinants.

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Annex

Estimation results

25-27 Mineral products				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.259 (.200)	.603* (.341)	.010 (.032)	.158 (.151)
RDPCI	.626 (1.239)	-.918 (1.499)	-.145 (.160)	.011 (.709)
GDP	.706*** (.100)	.572*** (.189)	.078*** (.016)	.364*** (.069)
RDGDP	1.870*** (.482)	2.852*** (.916)	.042 (.080)	.354 (.317)
DIST	-2.472*** (.216)	-2.689*** (.409)	-.209*** (.035)	-1.074*** (.130)
EXC	.090* (.050)	.057 (.106)	.005 (.009)	.043 (.030)
TINT	-8.218** (3.770)	-7.514 (6.708)	.334 (.647)	.453 (1.745)
BOR	-.599 (.435)	-.946 (.920)	-.002 (.078)	.025 (.267)
INT	.354 (.331)	.115 (.404)	.069 (.042)	.296 (.208)
CRISIS	-.003 (.263)	-.100 (.230)	.039 (.028)	.186 (.170)
N	463	463	528 (64 left and 1 right censored)	528

28-38 Products of the chemical or allied industries				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.209 (.135)	.367 (.241)	.049** (.020)	.332*** (.123)
RDPCI	-7.744*** (.826)	-7.543*** (1.001)	-.683*** (.095)	-6.405*** (.657)
GDP	.444*** (.067)	.370*** (.135)	.043*** (.010)	.297*** (.056)
RDGDP	1.367*** (.3196)	1.373** (.655)	.058 (.051)	.487** (.246)
DIST	-.8725*** (.136)	-.776*** (.289)	-.066*** (.022)	-.510*** (.102)
EXC	-.008 (.032)	.012 (.077)	.003 (.005)	.025 (.021)
TINT	-2.480 (2.543)	-.748 (4.730)	-.288 (.406)	-1.893 (1.495)
BOR	.948*** (.293)	1.170* (.671)	.185*** (.050)	.781*** (.163)
INT	.058 (.227)	.1102 (.272)	.033 (.025)	-.075 (.131)
CRISIS	-.351** (.178)	-.357** (.152)	-.043*** (.016)	-.319** (.126)
N	484	484	528 (44 left and 0 right censored)	528

Significance level at 1% (***), at 5% (**) and at 10% (*). Standard errors are in parenthesis.
Source: own estimation.

39-40 Plastics, rubber and articles thereof				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.038 (.109)	.265 (.193)	.063* (.037)	.087 (.092)
RDPCI	-4.877*** (.661)	-1.824** (.784)	-.331** (.143)	-4.168*** (.527)
GDP	.308*** (.052)	.301*** (.107)	.045** (.019)	.223*** (.040)
RDGDP	-.295 (.258)	-.052 (.523)	-.029 (.095)	-.205 (.203)
DIST	-.585*** (.112)	-.560** (.231)	-.081* (.042)	-.415*** (.087)
EXC	.107*** (.027)	.095 (.062)	.016 (.011)	.087*** (.019)
TINT	1.984 (2.167)	.347 (3.824)	.120 (.684)	1.857 (1.279)
BOR	.212 (.242)	.633 (.539)	.129 (.100)	.131 (.186)
INT	-.068 (.185)	.457** (.198)	.094*** (.033)	-.022 (.130)
CRISIS	-.289* (.148)	-.218* (.120)	-.033* (.020)	-.199** (.098)
N	517	517	528 (11 left and 0 right censored)	528

44-49 Wood and articles of wood				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.744*** (.145)	.622** (.265)	.049* (.028)	.115 (.102)
RDPCI	-4.015*** (.874)	-2.730** (.932)	-.326*** (.114)	-2.034*** (.532)
GDP	.276*** (.073)	.218 (.167)	.061*** (.015)	.299*** (.050)
RDGDP	1.059*** (.348)	1.463* (.793)	.079 (.073)	.536** (.212)
DIST	-1.076*** (.151)	-1.074*** (.376)	-.113*** (.032)	-.622*** (.091)
EXC	.140*** (.036)	.103 (.104)	.017** (.008)	.083*** (.018)
TINT	3.860 (2.858)	5.568 (4.935)	.302 (.552)	.366 (1.293)
BOR	1.660*** (.319)	1.422 (.888)	.320*** (.075)	1.216*** (.167)
INT	.049 (.248)	-.002 (.228)	.048* (.029)	.167 (.151)
CRISIS	-.142 (.198)	-.074 (.127)	-.024 (.018)	-.109 (.106)
N	501	501	528 (27 left and 0 right censored)	528

Significance level at 1% (***), at 5% (**) and at 10% (*). Standard errors are in parenthesis.
Source: own estimation.

50-63 Textiles and textile articles				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.333*** (.093)	.635*** (.175)	.072*** (.024)	.211** (.090)
RDPCI	-.684 (.561)	-1.519** (.670)	-.285*** (.090)	-1.019* (.530)
GDP	.222*** (.045)	.165 (.102)	.021 (.014)	.202*** (.037)
RDGDP	-.188 (.219)	-.403 (.490)	-.016 (.066)	.242 (.217)
DIST	-.977*** (.097)	-.822*** (.226)	-.104*** (.030)	-.925*** (.087)
EXC	.037 (.023)	.045 (.061)	.003 (.008)	-.002 (.019)
TINT	-1.959 (1.853)	.038 (3.424)	.116 (.476)	-3.895*** (1.188)
BOR	.388* (.204)	.780 (.518)	.116 (.070)	.097 (.151)
INT	.130 (.156)	.242 (.161)	.042* (.022)	.164 (.117)
CRISIS	.177 (.128)	.101 (.099)	.011 (.013)	.127 (.104)
N	512	512	528 (16 left and 0 right censored)	528

72-83 Base metal and articles thereof				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.769*** (.118)	.850*** (.218)	.097*** (.029)	.449*** (.094)
RDPCI	-1.239* (.702)	.944 (.835)	.011 (.114)	-.408 (.496)
GDP	.479*** (.056)	.392*** (.125)	.063*** (.016)	.306*** (.037)
RDGDP	1.132*** (.281)	1.116* (.611)	.112 (.079)	.587*** (.206)
DIST	-1.346*** (.118)	-1.192*** (.274)	-.184*** (.035)	-.997*** (.092)
EXC	.077*** (.029)	.014 (.074)	.003 (.009)	.053*** (.018)
TINT	-2.827 (2.303)	-3.938 (4.253)	-.089 (.576)	.471 (1.090)
BOR	.625** (.260)	.801 (.647)	.071 (.082)	.176 (.152)
INT	.048 (.199)	.397* (.213)	.077*** (.029)	-.047 (.106)
CRISIS	-.008 (.159)	.062 (.124)	.012 (.017)	.074 (.100)
N	518	518	528 (10 left and 0 right censored)	528

Significance level at 1% (***), at 5% (**) and at 10% (*). Standard errors are in parenthesis.
Source: own estimation.

84-85 Machinery and electrical equipment				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.832*** (.120)	.689*** (.199)	.108*** (.030)	.597*** (.094)
RDPCI	-2.300*** (.713)	-2.670*** (.824)	-.537*** (.135)	-2.079*** (.585)
GDP	.396*** (.057)	.375*** (.109)	.061*** (.016)	.259*** (.039)
RDGDP	.103 (.285)	.163 (.534)	.005 (.078)	-.072 (.225)
DIST	-.866*** (.123)	-.907*** (.236)	-.138*** (.034)	-.554*** (.093)
EXC	.197*** (.030)	.213*** (.063)	.028*** (.009)	.122*** (.020)
TINT	.236 (2.384)	1.458 (3.983)	.416 (.612)	2.636** (1.293)
BOR	.854*** (.266)	.601 (.547)	.080 (.079)	.499*** (.169)
INT	.2627 (.203)	-.020 (.209)	.018 (.034)	.143 (.111)
CRISIS	-.093 (.165)	-.089 (.130)	-.012 (.022)	-.063 (.112)
N	525	525	528(3 left and 0 right censored)	528

86-89 Vehicles				
Variables	POLS with logit transformation	RE with logit transformation	Tobit	FLRM
PCI	.920*** (.184)	.713** (.313)	.111*** (.035)	.554*** (.152)
RDPCI	-8.222*** (1.128)	-7.966*** (1.345)	-1.097*** (.168)	-5.390*** (.966)
GDP	.388*** (.093)	.289* (.173)	.065*** (.018)	.301*** (.062)
RDGDP	1.811*** (.444)	1.339 (.833)	.088 (.087)	.395 (.349)
DIST	-1.372*** (.186)	-1.215*** (.364)	-.154*** (.038)	-.726*** (.124)
EXC	.131*** (.045)	.127 (.096)	.012 (.009)	.059** (.026)
TINT	-.467 (3.554)	2.881 (6.226)	.096 (.697)	.922 (1.571)
BOR	-.245 (.405)	-.452 (.843)	.020 (.086)	-.125 (.235)
INT	-.242 (.321)	-.498 (.388)	-.028 (.044)	-.170 (.165)
CRISIS	-.086 (.247)	.002 (.214)	.001 (.028)	-.031 (.143)
N	492	492	528 (35 left and 1 right censored)	528

Significance level at 1% (***), at 5% (**) and at 10% (*). Standard errors are in parenthesis.
Source: own estimation.

THE LOGISTICAL APPROACH OF PUBLIC EDUCATION

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Abstract. The basic goal of logistical work tasks, processes, mechanisms is to totally satisfy the needs of the partners (customers) in the competitive environment of supply – which is present in the field of education as well. This goal must be the same in public education as well. Nowadays, logistics can be found in every domain of our life and its importance is constantly growing. In our accelerated, globalized world, the logistical way of thinking and the logistical-minded work have become the organizing tools of our life.
The starting focus of the research is the fact that the diverse logistical activities and tasks, as well as the logistical functions and processes based on them, aim at reaching a business goal. This applies both in the competitive sector, and also in public education. In this case, the business goal can be interpreted in a special way, and it is differentiated in the aspect of the different actors of public education. The final objective is to achieve the pedagogic and educational goal. The aim of the study is to draft where the take-off points are in the operation of public education through a logistical approach. The results of the study create the basis for the operation of public education through a logistical approach, as well as for the harmonization of its processes. The result of the research provides a general idea about how the logistical approach prevails in the processes, functional units and hierarchic levels of public educational institutions in Hungary.

JEL Classification: M30, M31, M37, M38, M39

Keywords: elementary school, logistical processes, the logistical way of thinking, public education.

1. Introduction

Firms can reorganize and modernize the execution of logistical tasks and processes in order to increase their competitiveness. In a fast-changing and hardly predictable economical environment, knowledge sharing, lifelong learning, continuous development and updating – along with the retention of values - are essential for every institution, including public educational institutions too. There are very few studies to read on logistics-oriented education or the logistics-oriented approach to educational

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processes, one of them is Sokolova (2011). However, the relationship between public education and logistics is an area to be researched, and the quantity of reference literature is limited.

The study rests on two pillars:

- on the one hand, the theoretical part of the study presents comprehensively the logistical approach of the competitive sector, thus pointing out the items in the research which are shared by the logistical system of the competitive sector and that of public education;
- on the other hand, it reveals the logistical working methods (in connection with the issue) of the examined elementary school, with the help of structured interviews and a case study based on the interviews.

During the research, mainly the terms public education, public educational system, public educational institution, elementary school, logistics, logistical approach, supply chain are used. These terms will be defined in the following:

- *Public education:* (2) „Public education is a public service, which provides the conditions of the long-term development of the Hungarian society, in favour of the growing up generation, and of which the general framework and guarantee is provided by the state. Knowledge, justice, order, liberty, fairness, moral and intellectual values of solidarity, equal treatment, tutoring for sustainable development and healthy lifestyle determine the whole of public education. Public education collectively serves the common wealth and the personal goals respecting others' rights." 3. § (1) „The child, the student, the teacher and the parent stand in the centre of public education, whose obligations and rights create a whole" (CXC law of 2011).
- *Public educational institution:* A public educational institution can be established and maintained by the state, by a nationality's municipality (within the framework of this law), by a church (registered according to the law about the freedom of liberty of conscience and religious freedom and the law about the legal status of churches, communions and religious communities), or its internal religious person (both in the following: church legal personality), and by any other person or organization if they acquired the right to perform the activity according to the conditions cited in the statute. A nursery school can be established and maintained by a settlement's municipality (CXC law of 2011).
- *Elementary school:* „10. § In an elementary school, education is carried out in eight grades, according to nationally unified requirements. The elementary school prepares the student for secondary school by their interests, abilities and talent" (CXC law of 2011).
- *Logistics:* „Logistics is the planning, realizing and controlling process of the efficient and cost-effective flow of input materials, semi-manufactured goods, end products and the related information from the provenance to the site of use, all with the aim to satisfy consumer needs" (Szegedi, 1998).
- *Logistical Approach:* can be described with various characteristics: the overall cost approach, system approach, flow orientation, the aim to reach high standard consumer service and cross sectional functions.

Now, we are going to review the most important literature that is in connection with our topic.

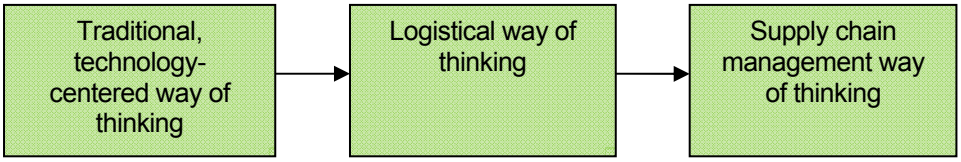
2. Review of the literature

In the course of reviewing the related literature, those items of professional literature were presented that show the logistical and supply chain management in public education and that are essential for this study.
The starting point of our study comes from the domain of supply chain management, as it analyses logistics and logistical processes – comprising the field of research - from a " bird's-eye perspective ".
The 7R definition of logistics defines logistics through the seven „rights". According to this theory, the task of logistics is the disposition of: the right product, in the right quality, in the right condition, at the right place, at the right time, to the right customer, at the right cost.

These rights appear not only in the field of logistics but in the field of human resource management as well (Pató, 2015; Pató, 2014b; Garbacanová; 2012; Pató, 2013). It is important to define the differences between the traditional, technology-centred and the logistical way of thinking (Table 1). The differences between these two are the following:

1. "It widens the borders of the system and it views processes on a system-level. It tries to focus on processes beyond the limits of the firm's legal borders, and tries to take the whole logistical chain into consideration.
2. Consequently, it takes notice of the conflicts in costs and the synergical effects of sub-systems.
3. Communication between the subsystems becomes essential.
4. It demands the application of up-to-date technologies.
5. "Resulting from the world trade competition, the importance of indirect economic factors in connection with market judgement (quality, reliability, services) is increasing" (Kovács, 1998)

Table 1: **Broadening the borders of the traditional, technology-centred way of thinking**



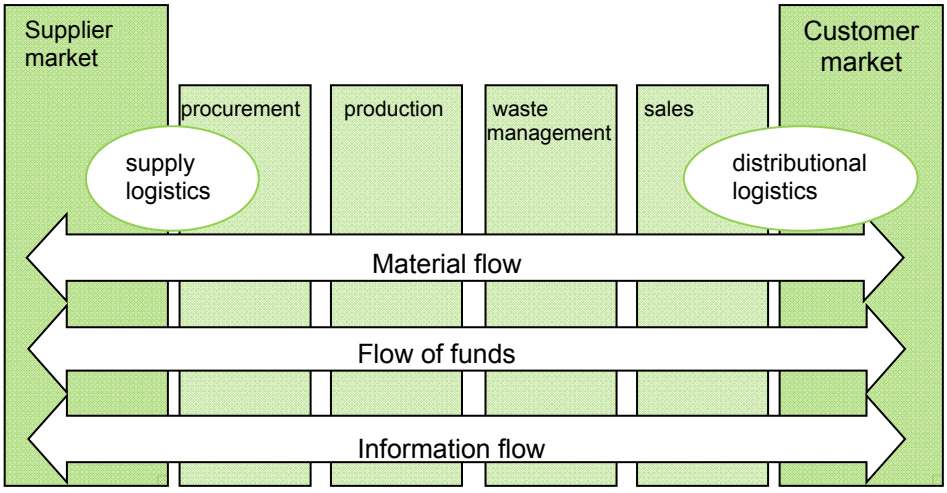
Source: Own editing

Nowadays, the logistical way of thinking is extending its borders, leading to supply chains (Erturgut and Soysekerci, 2011; Erturgut, 2012; Cetinkaya et al, 2011, Scott; 2011; Monczka, 2010; Christopher, 2005), which can be noticed in public education as well. The cornerstones of the creation of supply chains are confidence, modern information technology and risk-sharing.

The interpretation of the term “supply chain” is inevitable for the presentation of the logistical point of view. It is inevitable, as the actors of the economy try to gain competitive advantage through cooperating (in supply chains) with their suppliers and clients, along with exploiting their own factors of competitiveness. Therefore, they are intent on broadening the boundaries of the system.

The definitions of the supply chain (SC) and supply chain management (SCM) show a broad picture. We define the supply chain in this study according to Ballou (2004). According to Ballou (2004), the supply chain comprises every activity that passes and transforms products and services to the final consumer, along with the information flow that accompanies these processes (Ballou, 2004 in Pettersson-Segerstedt, 2013).

Table 2. ***The cross-sectional function of logistics***



Source: based on Prezenszki, 1999

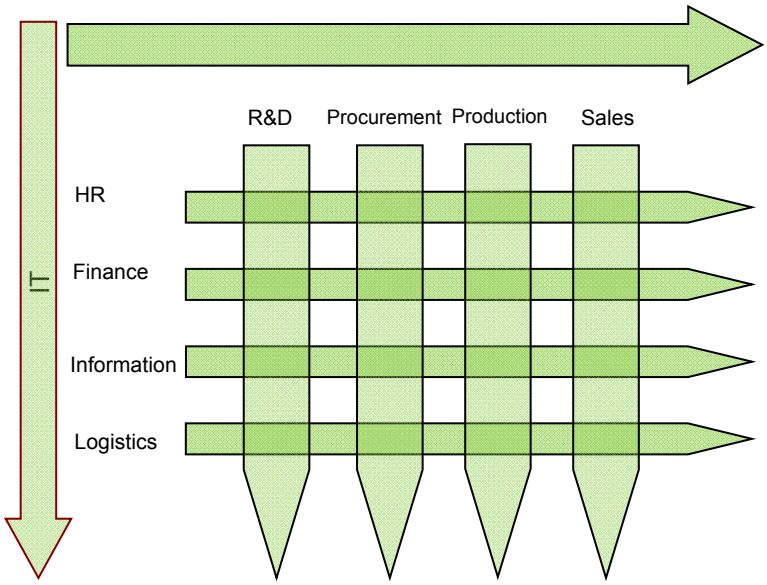
IT back-up is indispensable to the proper functioning of supply chains. Successful supply chains can only work well if the adequate information is available. If we analyse the information supply of supply chains, first we have to examine in which functional units real time information is needed. (Table 2)These fields are procurement, input material supply, goods distribution, inventory management, stock management, transportation, forwarding, order processing and communication (Arnolds, et al, 2013; Knight, 2014; Caniels, 2005; Ruston, 2010).

Informational systems will assure the necessary IT support for information forwarding. „The aim of an informational system is to connect the user with the matching information source the user really needs, so the user will be able to reach the information satisfying their needs” (Burt, 2012 in Sasvári, 2012).

Corporate logistics derives from the interlocking of the horizontal and the vertical set-up of the company.

It can be seen on the third image that information travels through all the functional logistical units and all the hierarchic levels.

Table 3. ***The cross-sectional function of logistics***



Source: Pfohl, 1996

The cross-sectional functions of logistics are to be interpreted as the connection between the various fields (R&D, procurement, production, sales) of the enterprise. (Table 3) The smooth running of these functions requires integrative approach and the development of appropriate procurement (Knight et al., 2014; Sartor, et al, 2013).

The integrating view and role of logistics should be underlined as the total cost approach The dynamic flow of material and information can be derived from this role. However, the total cost approach and the seamless flow of information is not only to prevail, at the level of an organization but in the entire supply chain. (Ellegaard- Koch, 2012; Esposito- Passaro, 2013; Hartmann et al, 2011; Spina et al, 2013; Costantino et al, 2012) Nevertheless, sustainability plays an increasingly important role in the logistics chain and supply chain management (Giunipero et al. 2012; Schneider- Wallenburg, 2012).

All the fields of logistics have to be arranged to a clear connection network through the information flow among the fields. It is based on trust-based information sharing in supply chains (Lotfi et al., 2013). If there is no cooperation between the fields of the enterprise, we can speak of „territorial egoism" or concurrence, which can lead to the scattering and fragmentation of logistic activities. This can cause the decrease in efficiency and competitiveness on the scale of the enterprise.

3. Methodological considerations

The search has to be carried out in the field of revealing research. Although the knowledge and literature concerning the field of the study is available, it is not from the public educational aspect.

Information was gathered through primary information collection in the course of the research. The case studies based on the interviews were prepared by application of different methodologies collaterally and intertwined, so that they can serve the realization of research objectives together. The interviews were perfectly complemented by the methodology of observation as well. The interviews, the results of observation and the document analysis were presented in the form of a case study.

It was an important point in the choice of the test sample that we should be able to map the majority of the processes in connection with logistics in the examined public education institution. That is why an institution that allows this became the centre of the research. The research goal itself was to focus on an institution where the presence or identification of the logistical way of thinking is not obvious, ordinary "and straightforward". This was evidently identifiable in the case of primary schools among the Hungarian public educational institutions, which is why this type of school has been chosen as the research focus. Simultaneously, the characteristic logistical way of thinking in Hungarian primary schools can also be shown on the test sample.

Structured personal interviews were carried out, where some meetings had to be repeated in order to make some data clear.

The interviews were conducted with the Director of the Veszprém School District and the deputy headmaster of the primary school examined. In order to clarify the results, one meeting with the school district director and six meetings with the deputy headmaster were necessary. 45 institutions belong to the school district, the school district maintains 45, operates 18, takes part in the professional management in 11 of these institutions. There are schools where the school district is responsible not only for maintenance but operation as well.

The examined primary school is one of the renowned, prestigious schools in Veszprém (Hungary). It employs 32 teachers, one teacher assistant, one IT administrator and one school secretary. The school headmaster, the deputy headmasters and heads of departments are concerned in the management of different hierarchical levels.

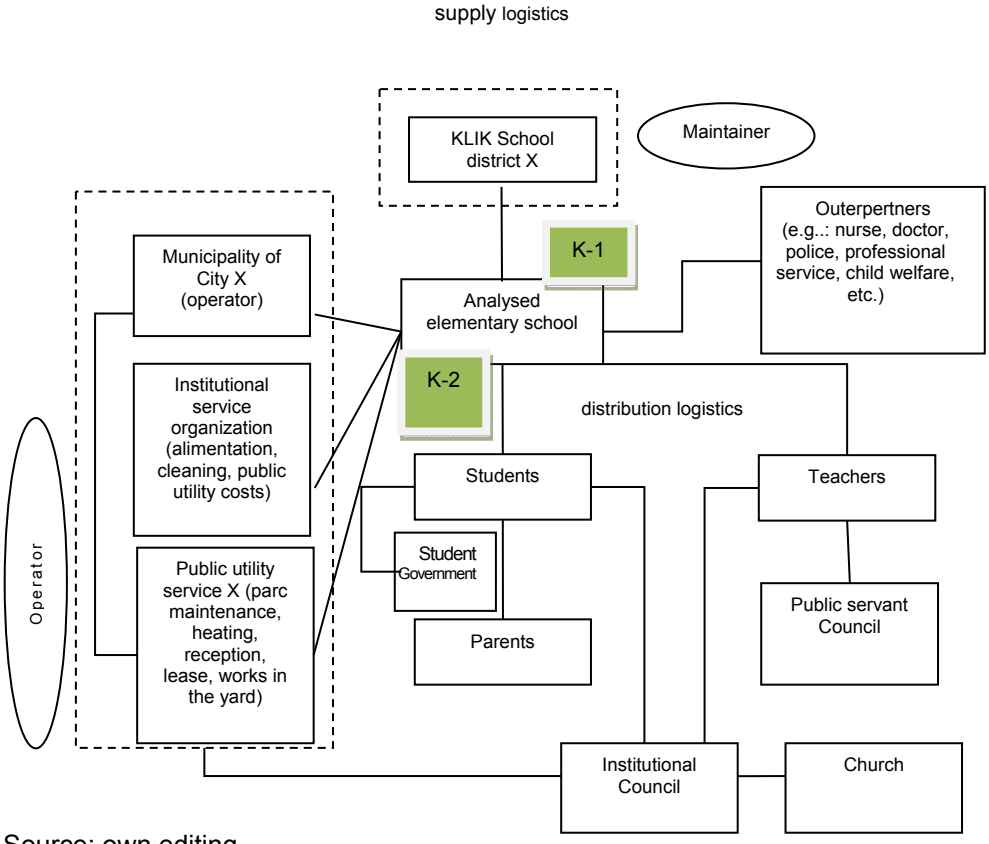
The interviews were conducted along the interview questions in Appendix 1. This paper does not address the presentation of all the information and results obtained from the interview questions. Secondary sources were also important in the study, along with primary information collection. That's why the SZMSZ (abbreviation for Szervezeti és Működési Szabályzat (meaning: Institutional and Operational Rules

ROO) and school policy of the concerned public educational institution were examined via the institutional papers handed over and via websites as well. The observation was carried out during a practice program at the school.

The point of departure was based on Pató's (2014a) idea, that a research model is designed to provide perspicuity of the understanding of the research problem and field for the user. "The aim of creating the model is to see through and not to lose data, from which important information can be extracted. This model is especially significant, in the early period of research, when the negligence of important factors can eventuate that the research has to be repeated" (Pató, 2014a).

So this research model (Table 4) serves to show the connections of the research:

Table 4: ***Research model***



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The research question:

K-1. What kind of comparison can be seen between the functional units of public education (the examined elementary school) and the functional units of logistics of the competitive sector? How can this appear in logistical thinking?
What kind of structure do the functional units of public education form and these are in what kind of relationship are these with logistical thinking?

Presentation of the examined institution:

The headmaster manages the school and is personally liable for management. The most important assistants of the headmaster are the two deputy headmasters. The heads of the form teachers, the head of the day-care teachers, the head of the maths and literature teachers, the teachers helping the work of the student government, the institutional council and the public servant council all take part in bringing about the most important institutional decisions. The headmaster makes the final decisions, keeping in mind the laws and the authoritative measures, and the headmaster is responsible for the execution and supervision of these decisions. Before deciding, the headmaster, as a democratic leader, asks for the opinion of the teacher's board, the organizations concerned, the parents and the students, thus helping thinking together.

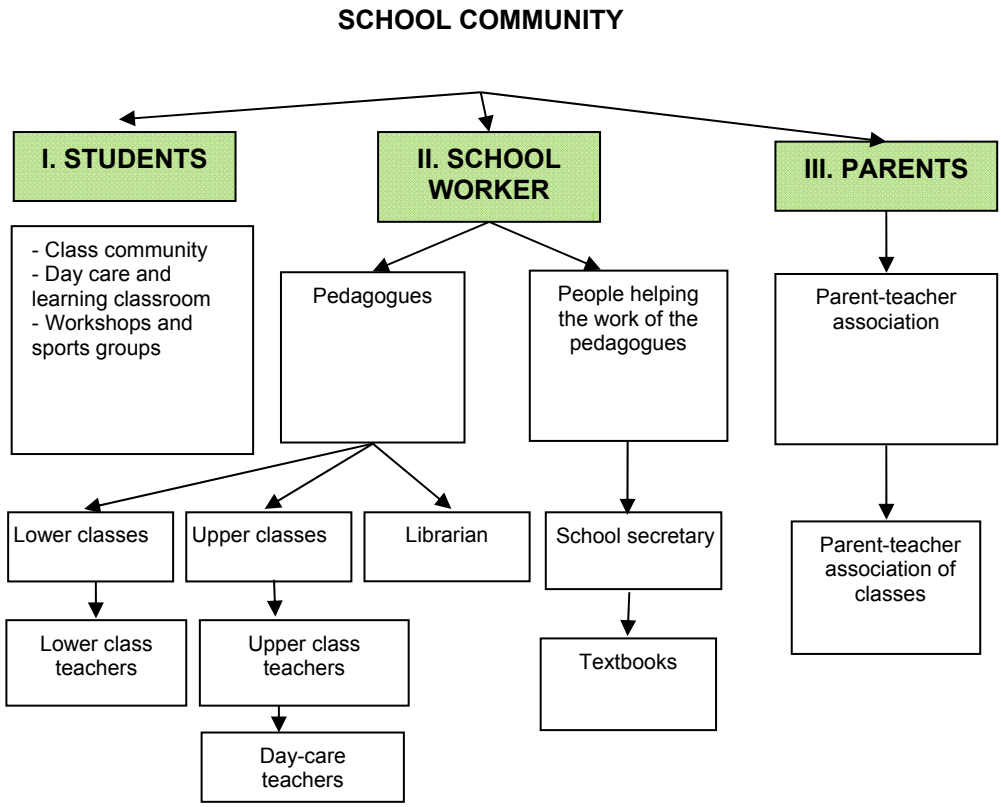
There are certain cases that belong to the decisive authority of the body. In these cases, the headmaster does not make decisions alone, but a board decision is reached. These cases are for example the pedagogic program, disciplinary situations, modification of the rules of the house and the SZMSZ (ROO), etc.

"The headmaster is a pedagogic leader, an educational leader, an HR leader in one person, he or she is responsible for the functioning and management of the school." (Kalicz-Mezei, 2012) Since 2013, this is different, as according to the new (now valid) Hungarian public educational law, the leader of the institution is only responsible for the professional work with full authority. They can have a word in HR questions, the leadership of the school can choose a new colleague via tenders (that the school proposes a candidate to KLIK (stands for Kebelsberg Intézményfenntartó Központ (Klebelsberg Institution Maintainance Centre, which is currently the maintainer of public educational institutions in Hungary) with a recommendation), they are responsible for the efficient and smooth operation of the institution, for the productive work, but their tasks do not comprise management. This is important in a logistical aspect, as several management tasks can be connected to logistics.

4. Research outcome

During the first steps of the research, the organizational construction and its logistical interrelations were explored. The configuration and structural pattern of the institution were determined from the SZMSZ, which is the following (Table 5):

Table 5: **Organizational structure of the examined institution** (Source: SZMSZ)

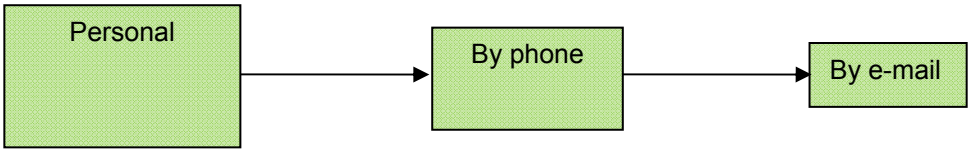


The basis to the realization of efficient logistical processes is information. That is the reason why the information flow of the institution was examined as well. Different structures can be found concerning the information flow between the members of the organization.

The examined organization tries to deal with its partners on a whole-system basis, which is reflected in everyday communication as well. This is essential for the efficient operation, and it is extended to the parents and the students as well. The school is in an everyday personal relationship with their maintainer (KLIK) and with their operator (the municipality) in order to work efficiently. This makes it possible to reach harmony with their partners – including the colleagues as well. The information distribution of the institution involves all the information in connection with its life. The institution itself requires information or asks for it, if they are in a decision-making situation, and they need help with it. The deadlines concerning data retrieval towards the maintainer are fully respected; they even try to provide these data to the school district earlier than expected. Data sharing is usually made by Excel tables or reports. Lots of information is uploaded to the system KIR (stands for Köznevelési Információs Rendszer (meaning: Public

Educational Information System) as well. Information is shared via formal and informal ways inside and outside the organization. One of the most important informational places of the examined institution is the website of the school, which is updated daily. Data sharing is preferred and mostly carried out personally by the school, as – according to the interviewee's experience – immediate reflections, solutions, corrections can be performed this way. Information sharing by phone or by e-mail follow this modality of communication (Table 6).

Table 6: **The preferences of the school in the field of information sharing**



Source: own editing

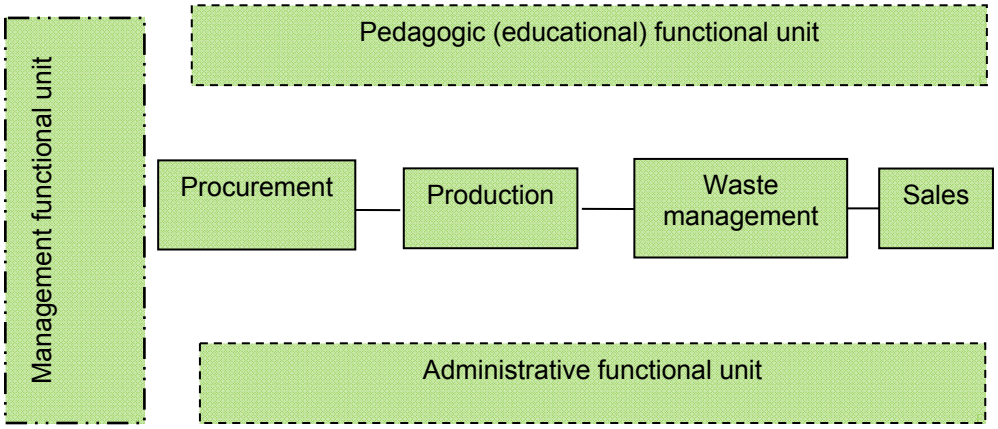
Ad-hoc information requirements are not rare in the life of the school. These requirements often have really short (even few hour) deadlines. *Comparing diagram 7 (The functional units of the examined school in connection with logistics) with diagram 2 (The cross-sectional function of logistics.) shows that all the logistics functional area can be identified in the examined public educational institution, the same way as in the private sector.* Besides the functional units present in the competitive sector, the pedagogical (educational) functional unit, the administrative functional unit, and the management functional unit were defined at the school. It is interesting that though the institution does not dispose of its own management, particularly on administrative levels, this unit is still an important part of the organization (Table 7).

Procurement is an activity in public educational institutions as well, which is meant to provide a specific organization (such as the primary school examined) with all the goods it needs to sustain its operations and which it cannot produce itself. An organization must be supplied with many things, such as labour (teachers in this case), energy, basic materials (educational tools, chalk, textbooks, etc ..), information (eg. educational program) etc, which are required to be obtained from various markets. Therefore, procurement is a complex process. It only adds to the complexity that public educational institutions are not authorized to do their own purchasing, each decision is made by the maintaining institution (KLIK) and purchasing is done centrally. The maintaining institution may obtain the opinion of the educational institution about procurement decisions, and the final decision may be reached based on this. During procurement, as well as in different fields of the private sector (Hallikas et al, 2012), quality, price, reliability, deadlines, flexibility, communicative and innovative skills may be taken into account.

The following functional area is production. Production is an important step in the flow of material and information. From a logistical point of view, production is a step in material flow in which material transformation occurs. In the public educational system, however, production has a different meaning from the one in the private sector. Education is mainly service, so its value-creating "productive" aspects be taken into account here. As for the teachers, production means the process of education, while students gain knowledge, for parents and future employers it means the acquisition of competitive, marketable knowledge and skills.

Logistics is generally extended on the life of the product. Thus, the environmental profile of logistics cannot be left out. The approach of the theory and practice of cleaner production in terms of a product's life cycle means that every step of the production process needs to be considered, bearing in mind the idea that hazards that pose a threat to humans and the environment at a certain stage or during a process should be reduced or eliminated. The preservation of the environment has become a competitive factor. It also applies to the field of public education.

Table 7: **The functional units of the examined school in connection with logistics**



Source: own editing

The majority of the information in the information flow can be related to logistics, more particularly, to the procurement functional unit. The 7R definition of logistics describes logistics through the seven „rights". According to this definition, the task of logistics is the disposition of: the right product, in the right quality, in the right condition, at the right place, at the right time, to the right customer, at the right cost. In the examined institution, this definition can be interpreted as the following.

Instead of the *right product,* right service was determined during the interview, which means an educational-pedagogical work that was laid down in the pedagogic program and in the institutional mission statement.

The *right quality* criterion is always present at the school, and its sufficient level is essential to be maintained.

The *right condition* criterion comprises several factors, such as the students' family background and situation, his or her state of mind, approach and attitude to studying. Besides, the deputy headmaster cited here the provision of adequate supplies, the ability to react to different situations immediately and the pedagogic examples that should be followed.

The *right place* criterion can be interpreted at the school as providing the required circumstances, the students being in their own classroom, or, in the case of special subjects (physics, chemistry, art and physical education), they migrate between classrooms. Cleanliness and order were mentioned at this criterion, as, for example, the students have to check if there is any rubbish left in their desks after each class.

The right time means the order of teaching in the school, which involves the starting time of classes, the definition of breaks, the time for breakfast and lunch.

The *right customer* criterion was markedly defined as the parental expectations. Namely, its application to secondary schools is clearly controlled but the parental expectations are diverse and need to be reacted to immediately.

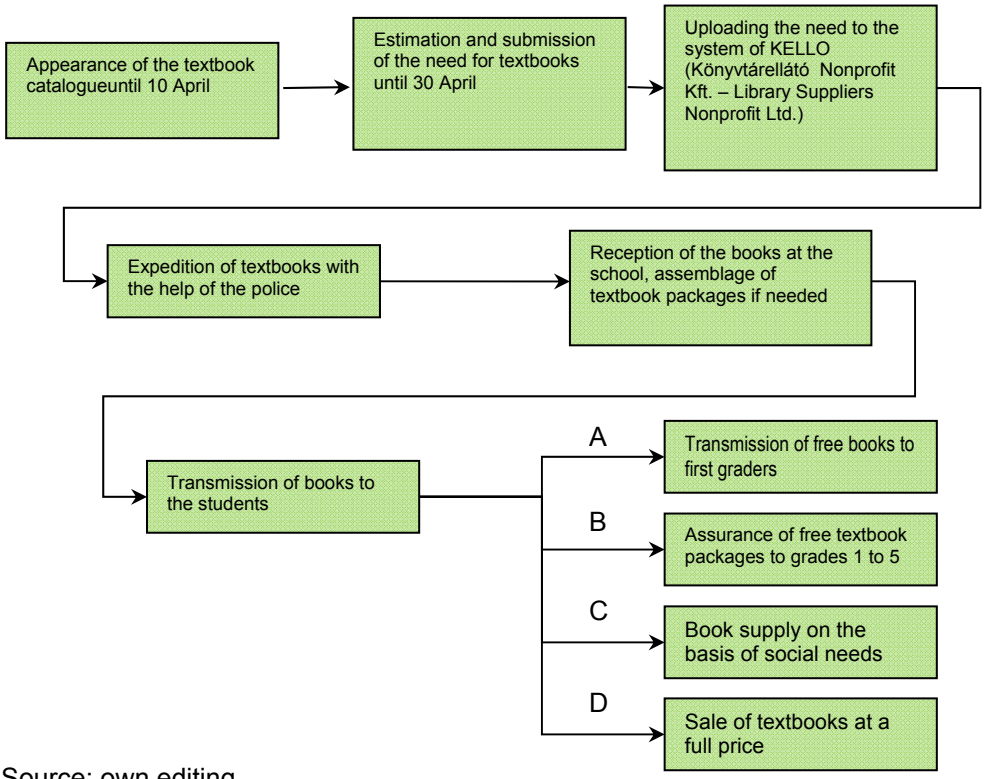
The *right cost* criterion cannot be interpreted, as the institution does not have its own budget. The equipment needed for everyday operation are assured by the ISZSZ (abbreviation for Intézményi Szolgáltató Szervezet, which equals Institutional Service Organization). The school has its own pay desk, but its importance is quite small. The school can raise money through its foundation along defined principles, where the "right cost" principle is indispensable.

In the course of the competition that developed in the field of education, the institution sets off with the pedagogic program and tries to form a unique appearance that makes the school appealing.

From the functional units of logistics, procurement is present in the school in the form of textbook acquisitions, which result in a material flow as well.

Table 8 shows this process.

Table 8: **The process of textbook acquisition**



Source: own editing

Furthermore, procurement can be found in children alimentation too, but this activity is realized via outsourcing, the school does not take part in it.

From the functional units of logistics, waste treatment can be identified as communal waste treatment. The selective waste collection is realized in the school, to which paper collection is connected, which is organized twice a year (in autumn and in spring). It involves used battery collection in the framework of the hazardous waste collection as well.

The sales functional unit appears in the form of the sale of the collected paper during paper collection.

The production functional unit was not identified during the interviews.

Now we are going to answer the research question based on the research outcome.

K-1. Which is the relationship between the functional units of public education (the examined elementary school) and the functional units of logistics of the competitive sector? How can this appear in logistical thinking?
What kinds of structure do the functional units of public education form and what kind of relationships do they have with the logistical thinking?

The 7R definition of the logistical way of thinking can be found at schools, and at school districts, based on the results of the research. All the functional units of logistics could be found as well, along with three additional functional units, which are in connection with the school's professional work and logistics too.

The functional units of public education form a special supply chain. In today's competitive sector, it is unquestionable that a competitive advantage (success) cannot be enhanced on a single enterprise level, that is why the firms form supply chains to satisfy the needs of their customers. The supply chains, or rather networks could be found at the examined schools as well, and they work in the operation of school districts and the maintenance by KLIK too. With the presence of logistical thinking, the goal of education is realized in the form of supply networks to satisfy needs.

5. Conclusions

Logistics is nothing else but cooperation. It can be seen through the example of the examined school that several factors have to be taken into consideration in the formation of a well-functioning organization. These factors have the influence on the performance of the organization and on each other as well, so they are in interaction with each other. The goal is the synergy of these factors.

The results of the research show that in today's Hungary, stabilizing steps have been taken in the processes at schools after changing the maintainer of public schools (KLIK – Klebelsberg Intézményfenntartó Központ – Klebelsberg Institution Maintenance Centre) – though only by a continuous dynamic development. Along with this fact, the opportunities given by the logistical way of thinking in maintenance, operation and everyday functioning of public education institutions have to be reconsidered.

As the research shows, diverse work connections of public education can be identified during the logistical operations, and these connections can provide a kind of competitiveness as well. The creation of supply chains in public education can be perceived through the new and much-needed work connections. This can result in rationalization too. In this case, supply chains mean that the institutions step out of their own boundaries and establish tight connections – even partnerships – with other institutions. These connections can work only on the basis of reliable and real-time information sharing, immediate reactions and, based on the experience from the competitive sector, confidence.

Based on the interviews, the short time trends of the logistical thinking of public education institutions are:

- the rationalization of information flow,
- the definition and solidification of process protocol,
- flexibility in time and in space,
- fast reactions to the occurring demands.

Looking far into the future, it can be stated with the help of this research, that the logistical way of thinking is present and consciously applied in not only the competitive sector, but in public education as well. Moreover, as it can be seen

through the operational framework noticed with the help of the interviews, with the broadening and abolition of the borders of the institution, institutions without borders can be formed, which leads to rational operation in the future.

The needs and demands towards public educational institutions (in our research: elementary school) change dynamically. Expectations can be made by the "following" school, the parents, the maintainer and the operator as well. The institutions are in connection with several partners, which requires flexibility, the cornerstone of which is effective communication.

Time will tell and practice will prove if the opportunities drafted in the case study and the logistical way of thinking applied in the competitive sector will take root in public education and to what extent.

This research is useful not only for public educational institutions, but for the maintainer, the operator, the "user" and the partners too. The reason for this is that perfect cooperation is needed from all the participants to endorse the logistical way of thinking. For this reason, the interaction between the participants will be of vital concern.

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Appendix 1: Interview questions

Interview questions to the director of KLIK		Interview questions to te deputy headmistress of the examined elementary school	
1.	What kind of information sharing is done between the schools belonging to the school district and their partners? Which pieces of information can be connected to logistics?	1.	What kind of information sharing is done by the school and with whom? Which pieces of information can be connected to logistics?
2.	Can the information **provided** be grouped? (professional, priority, business, organisational management, etc…)	2.	Can the information **provided** be grouped? (professional, priority, business, organisational management, etc…)
3.	Can the information **required** be grouped? (professional, priority, business, organisational management, etc…)	3.	Can the information **required** be grouped? (professional, priority, business, organisational management, etc…)
4.	Is there a schedule for the sharing of information? (weekly, monthly, etc., given, received necessary information.)	4.	Is there a schedule for sharing and providing information? (weekly, monthly, etc., given, received necessary information.)
5.	How common is information sharing? What determines the frequency?	5.	How common is information sharing and providing? What determines the frequency?
6.	What is the way or protocol of information sharing?	6.	What is the way or protocol of information sharing?
7.	Does information sharing typically occur in a formal or informal way?	7.	Does information sharing typically occur in a formal or informal way?
8.	Is there electronic (internet) support for the sharing of information (website, intranet, e-newsletters, etc...)	8.	Is there electronic (internet) support for sharing and providing information (website, intranet, e-newsletters, etc...)
9.	Is information typically shared orally or in writing? What is the cause of one or the other solution?	9.	Is information typically shared orally or in writing? What is the cause of one or the other solution?
10.	Does information request from schools happen in an ad-hoc way?	10.	Does information request from the school happen in an ad-hoc way?
11.	If yes, how many times has it happened, with what deadlines, concerning what topics since the school has been maintained by KLIK?	11.	If yes, how many times has it happened, with what deadlines, concerning what topics since the school has been maintained by KLIK?

12.	What induced this unplanned move?	12.	What induced this unplanned move?
13.	Characteristically, the following functional areas can be identified in logistics. (suppliers' market - procurement, production, waste management, sales - customer market). How can these be defined at the institutions in your maintenance and what other functional fields of logistics can be determined?	13.	Characteristically, the following functional areas can be identified in logistics. (suppliers' market - procurement, production, waste management, sales - customer market). How can these be defined at your institution and what other functional fields of logistics can be determined?
14.	What functional areas can be identified in public educational institutions?	14.	What functional areas can be identified in public educational institutions?
15.	What percent of the information during information flow related to the different functional fields of logistics? Please define the functional field and the rate of information.	15.	What percent of the information during information flow related to the different functional fields of logistics? Please define the functional field and the rate of information.
16.	Is there material flow between your organization and the school **maintained**?	16.	Is there material flow relating to your school? Where does this flow come from and go to? What materials are involved in the flow? With what purpose?
17.	Is there material flow between your organization and the school **operated**? (Municipality)	17.	
18.	Is there cash flow between your organization and the school **maintained**?	18.	Is there cash flow in your school?
19.	Is there cash flow between your organization and the school **operated**?	19.	
20.	Does the Veszprem KLIK consider the respective institutions on a total system level (involve processes outside its legal boundaries in its scope of attention and adopt the full logistics chain way of thinking? If yes, how does this show?	20.	Describe the school management and organizational structure; what logistical considerations may be identified in this area?
21.	There is increasing competition in the field of education and market value judgment related factors play an increasingly important role. These are for instance quality, reliability and service. How does this show in your work, especially in the areas related to logistics?	21.	Does Kossuth School consider the institutions which are in connection with it on a total system level (involve processes outside its legal boundaries in its scope of attention and adopt the full logistics chain way of thinking? If yes, how does this show?

22.	How can the 7R definition of logistics be interpreted in your work? The 7R definition of logistics defines logistics through the seven “rights”. According to this theory, the task of logistics is the disposition of: the right product, in the right quality, in the right condition, at the right place, at the right time, to the right customer, at the right cost.	22.	There is increasing competition in the field of education and market value judgment related factors play an increasingly important role. These are for instance quality, reliability and service. How does this show in your work, especially in the areas related to logistics?
23.		23.	How can the 7R definition of logistics be interpreted in your work? The 7R definition of logistics defines logistics through the seven “rights”. According to this theory, the task of logistics is the disposition of: the right product, in the right quality, in the right condition, at the right place, at the right time, to the right customer, at the right cost.

DEMOGRAPHICS-BASED DISSIMILARITIES IN THE RELATIONSHIP BETWEEN PERCEIVED CSR AND CUSTOMER LOYALTY: THE CASE OF PERSONAL CARE PRODUCTS

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Abstract: The purpose of the current research is to investigate the demographics-based dissimilarities in the relationship between perceptual corporate social responsibility (CSR) and customer loyalty. The study is focused on the personal care products market, within the particular socio-cultural and economic framework of one of the largest countries of Central-Eastern Europe. In order to accomplish the research purpose, a total of 1462 urban Romanian users of personal care products were investigated by means of a paper-and-pencil questionnaire, which comprised a total of 34 items intended to reflect perceptual CSR (28 items) and customer loyalty (6 items). The results show that, in general, customer loyalty towards personal care brands/companies is positively and significantly influenced by how customers perceive their companies' social responsibility. However, certain perceptual CSR dimensions (such as those regarding the environment, public authorities, cultural sponsorship) have a significant effect on customer loyalty only among some demographics-based market segments. The implications of the current research are both theoretical and practical. From a theoretical perspective, the study brings new insights regarding the relationship between perceptual CSR and customer loyalty. From a practical standpoint, the results represent useful information for efficient market segmentation and dissemination of companies' CSR efforts.

JEL Classification: M31

Keywords: perceptual CSR; customer loyalty; personal care products; demographics

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1. Introduction

Corporate social responsibility (CSR) and customer loyalty represent important literature issues especially due to several advantages they can confer organizations in most industries. Thus, implementing appropriate CSR policies, as well as disseminating CSR efforts among various categories of publics have been proven to increase companies' attractiveness to potential employees, to enhance their employees' motivation and retention, to improve the satisfaction level of customers, or to generally enhance companies' relationships with their primary stakeholders (Kim & Park, 2011; Sen & Bhattacharya 2001; Peloza & Shang, 2011). Moreover, many relevant business benefits can be associated with customer loyalty, including business performance and long-term profitability (Reichheld, 2003; McMullan, 2005; Salegna & Goodwin, 2005).

Up to this day, several studies have focused on the topic of the relationship between consumer behavior and perceived CSR. However, researchers should further and deeper investigate how perceptions of CSR impact customer loyalty, as well as how this relationship varies across different demographic categories. Furthermore, the actual knowledge regarding the above-mentioned issues within the particular socio-cultural and economic context of Central-Eastern European countries is rather scarce.

The aim of the current research is to fill the above mentioned knowledge gap by investigating the demographics-based dissimilarities in the relationship between perceptual CSR and customer loyalty in a specific sectorial and geographical context. Thus, the paper is focused on the personal care products market, within the particular socio-cultural and economic framework of one of the largest countries of Central-Eastern Europe. In order to clearly delimit the sectorial focus of the study, the personal care products industry was defined as including all companies that make and commercialize products intended to satisfy consumers' needs of personal hygiene or beautification.

2. Literature review

Before approaching the issue of the relationship between perceived CSR and customer loyalty, the two concepts need to be briefly described, according to the most relevant conceptual frameworks developed in the literature.

Firstly, concerning the concept of CSR, it must be stated that a widely accepted definition does not exist yet in the literature (Dahlsrud, 2008). Nevertheless, the literature reveals at least three CSR systematization approaches: Carroll's approach, the UN's sustainable development approach and, respectively, the stakeholder-based approach. In Carroll's approach CSR is regarded as comprising *"the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time"* (Carroll, 1979, p.500). In the UN's sustainable development approach CSR is seen as a three-dimensional construct (social, economic, and ecological), representing the *"way through which a company achieves a balance of economic, environmental and social imperatives"*, being *"a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders"* (UN, 2015). Finally, according to the stakeholder-based approach (Freeman et al, 2010) companies' social responsibilities

are clearly delimited considering the specific stakeholders they are focused on. Thus, companies have certain particular responsibilities towards each stakeholder category: shareholders, customers, employees, the environment, the society, etc. According to this approach the concept of perceptual CSR is very similar to that of corporate reputation, both of these constructs reflecting how a company's policies and actions with regard to economic, social, or environmental issues are perceived by its stakeholders (Radomir et al, 2014).

Secondly, in what concerns customer loyalty, the literature comprises several relatively similar approaches, the main differences among these regarding the exclusive nature of loyalty and, respectively, its behavioral or attitudinal character. Some popular definitions regard the concept as having an exclusive nature and behavioral character. Thus, the American Marketing Association (AMA) defines customer loyalty as *"the situation in which a consumer generally buys the same manufacturer-originated product or service repeatedly over time rather than buying from multiple suppliers within the category"* (AMA, 2015). Another AMA definition sees loyalty as *"the degree to which a consumer consistently purchases the same brand within a product class"* (AMA, 2015). David A. Aaker, one of the most relevant authors who have paid special attention to customer loyalty, also defines the concept from an exclusive and behavioral standpoint stating that it *"reflects how likely a customer will be to switch to another brand, especially when that brand makes a change in price, product features, its communication or distribution programs"* (Aaker, 1991, p.39). However, the most relevant and influential definition of customer loyalty comes from Jacoby & Chesnut (1978) who define it as *"the biased behavioral response expressed over time by some decision-making unit with respect to one or more alternative brands out of a set of brands and is a function of psychological processes" (*Jacoby & Chesnut, 1978, p.80). In this approach, customer loyalty is seen as having a non-exclusive, and, respectively, a dual behavioral-attitudinal nature, the authors suggesting that observed behavior alone is not capable of fully explaining loyalty, repeat buying behavior being accompanied by psychological commitment.

After briefly describing the main concepts of the paper – CSR and customer loyalty – the issue of the relationship between the two concepts will be further on depicted, according to recent and relevant studies indexed in the most widespread and important literature databases: Web of Science and Scopus (Norris & Oppenheim, 2007).

In what concerns recent studies having focused on the relationship between perceived CSR and customer loyalty in the particular sector of personal care products, only two such papers could be identified in Web of Science and Scopus, both being geographically focused on South-East Asia (He & Lai, 2014; Suh & Yoo, 2014). These papers suggest a positive, significant, but indirect influence of certain dimensions of perceptual CSR on customer loyalty, mediated by variables such as brand image (He & Lai, 2014), or brand authenticity (Suh & Yoo, 2014). However, both studies have a limited approach regarding the measurement of perceived CSR and do not consider demographic-based dissimilarities in the investigated relationship.

Taking into consideration other industries related to the personal care products sector, and analyzing the contents of the same literature databases, three recent relevant studies can be outlined as focusing on the subject. Thus, a survey conducted by Singh et al (2012) among Spanish customers of several fast-moving consumer goods (FMCG) companies suggests that there is a positive relationship

between perceived ethicality of a brand, on one hand, and brand trust and brand affect, while the latter ones are positively correlated with brand loyalty. Moreover, a survey conducted among Austrian customers of three different companies, including a FMCG one (Öberseder et al, 2014) reveals a positive influence of customers' perceptions of CSR on their purchase intention, both directly and indirectly, mediated by customer-company identification. Finally, a survey conducted among Slovenian customers of OTC medicine brands (Roblek & Bertoncelj, 2014) suggests that customers' perceptions of CSR have a positive influence on brand loyalty, both directly and indirectly, mediated by brand trust and customer satisfaction. However, even though some of the previously mentioned studies include an extended approach in what concerns the quantification of perceived CSR, none of them specifically address the demographic-based differences in the relationship between perceived CSR and customer loyalty.

3. Methodology

The purpose of the current research is to investigate the demographics-based dissimilarities in the relationship between perceptual corporate social responsibility (CSR) and customer loyalty. The study is focused on the personal care products market, within the particular socio-cultural and economic framework of one of the largest countries of Central-Eastern Europe. In the context of the current research, the personal care products industry was defined as including all companies that make and commercialize products intended to satisfy consumers' needs of personal hygiene or beautification.

In order to accomplish the research purpose, a total of 1462 urban Romanian users of personal care products were investigated between January-March 2015. The investigation was done by means of a paper-and-pencil self-administered questionnaire comprising an extensive set of items intended to measure CSR perceptions and customer loyalty.

A two-phase process was employed in order to establish the final item pool aimed at measuring perceived CSR and customer loyalty: in the first phase a preliminary item pool was created based on an extended literature review, while in the second phase the preliminary item pool was refined by removing ambiguous, redundant or customer imperceptible items, with the support of several marketing specialists (especially professors and Ph.D. students).

The final item pool included 34 items, 28 of these being targeted at evaluating customers' perceptions of CSR with regard to their current or most recent personal care products provider. The 28 items were based on previously developed and validated scales (Maignan, 2001; Öberseder et al, 2014; Pérez & Bosque, 2013; Salmones et al, 2005; Turker, 2009; Wagner et al, 2008), and regarded companies' responsibilities towards several important stakeholder categories: *shareholders* (2 items: maximizing profits and economic performance; long term economic success), *customers* (6 items: providing good quality products; pursuing customer satisfaction; providing honest and complete information; charging fair prices; providing safe products; managing customers' complaints), *employees* (6 items: fair remunerations; good working conditions; lack of discrimination; respecting employees; respecting employees' rights; offering professional development opportunities), *the environment* (4 items: minimizing specific negative effects; minimizing resource consumption; using

environmentally friendly materials; waste management and recycling), *community development* (7 items: positive contributions to local economic development, local quality of life, local employment, and other local companies' development; respecting local values/culture; social sponsorship; cultural sponsorship), and, respectively, *public authorities* (3 items: respecting legal norms; paying taxes; avoiding corruption).

The other 6 items included in the final item pool were targeted at assessing customer loyalty and were also based on previously developed and validated scales (Cronin et al, 2000; Martínez & Bosque, 2013; Rosenbaum, 2006; Sloot et al, 2005; Zeithaml et al, 1996). These latter items reflected respondents' intentions to remain customers of the current personal care products provider, to purchase more from the same company, to recommend it to friends and acquaintances, etc.

Procedurally, the subjects firstly had to name a specific company or brand from which they had recently acquired personal care products. Further on, they had to keep in mind that provider and to strictly refer to it when expressing their perceptions of CSR, rating the 28 dedicated items on a Likert scale ranging from 1="strongly disagree" to 7="strongly agree", with a middle neutral point. Finally, after assessing their provider's CSR, respondents were asked to refer to the items regarding their loyalty to that company, rating the 6 dedicated items on a similar Likert scale.

Non-probabilistic sampling procedures such as snowball sampling and quota sampling (by age and gender) were employed, a total of 1462 valid and completed questionnaires being collected. The demographic structure of the investigated sample can be seen in Table 1.

Table 1. Sample demographic composition

Gender	
Men	719
Women	743
Total	1462

Age	
18-29 years	557
30-44 years	518
45-56 years	387
Total	1462

Relative income	
Lower	225
Similar	879
Higher	358
Total	1462

Education	
High-school or lower	739
BA	443
MA or higher	280
Total	1462

Type of residence	
Up to 50,000 inhabitants	501
50 - 200,000 inhabitants	462
More than 200,000 inhabitants	499
Total	1462

4. Results

The actual analysis of the relationship between perceived CSR and customer loyalty was preceded by an exploratory factor analysis intended to reduce the large number of items to a lower number of reflective latent variables. The analysis resulted in a single latent variable for customer loyalty and six other latent variables corresponding to companies' social responsibilities towards shareholders (economic success), customers, employees, the environment, community development, and public authorities. However, even though theoretically both social and cultural sponsorship

were treated as companies' particular responsibilities towards community development, the factor analysis suggested that the two corresponding items should be separately included in two different latent variables (Table 2).

Table 2. Latent variables

Latent reflective variables*	No. of items	Variance explained
Economic success	2	6.42%
Customers	6	8.68%
Employees	6	14.33%
Environment	4	9.20%
Community development & social sponsorship	6	11.75%
Public authorities & cultural sponsorship	4	7.48%
Customer loyalty	6	12.23%

*Exploratory factor analysis; Varimax rotation; Kaiser-Meyer-Olkin value (KMO=.934>.9); Bartlett's test of sphericity (Chi-square=33806.776; df=561; p<.001)

The relationship between perceptual CSR and customer loyalty was depicted using a multiple linear regression model (see Figure 1). Each perceptual CSR dimension was inserted in the model as a potential partial predictor of customer loyalty, all corresponding variables' values being computed as mean scores.

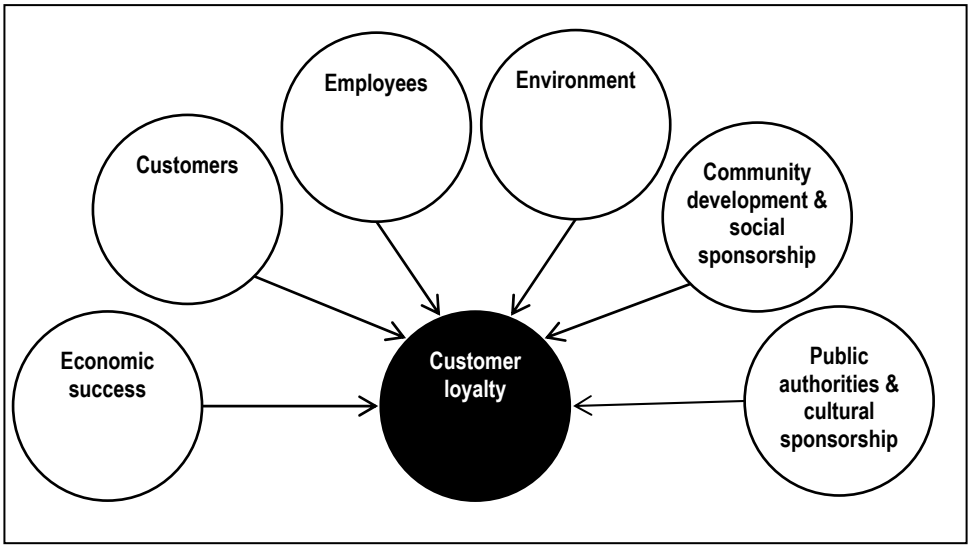

Figure 1. Proposed multiple linear regression model

The proposed model was comparatively tested within different demographics-based customer categories, considering gender, age, relative income, education, and, respectively, type of residence.

Table 3. Gender-based multiple linear regression standardized coefficients

	Men			**Women**		
	Beta	t	p	Beta	t	p
Economic success	-.031	-.89	.376	-.003	-.10	.919
Customers	.498	12.60	.000	.462	12.03	.000
Employees	.020	.49	.628	-.002	-.05	.960
The environment	.059	1.47	.142	.116	3.11	.002
Community dev. & social sponsorship	-.016	-.41	.683	-.018	-.47	.636
Public auth. & cultural sponsorship	.100	2.33	.020	.177	4.28	.000
	R^2=.325 F(6,712)= 57.212 p<.001			R^2=.389 F(6,736)= 52.116 p<.001		

As it can be seen in Table 3, the variance in customer loyalty accounted for by customers' perceptions of CSR is higher in the case of women (38.9%) as compared to the case of men (32.5%). These results suggest that the positive impact of perceived CSR, as a whole, on customer loyalty is higher in the case of female customers than in the case of male ones. Moreover, results indicate the fact that even though in both cases (males/females) the most influential CSR perception refers to how customers perceive companies' responsibility towards their customers (Beta=.498/.462), the perceived responsibility towards the environment has a positive and significant impact on loyalty only in the case of women (Beta=.116), while the influence of perceived responsibility towards public authorities and cultural sponsorship, even though significant in both cases, is higher in the case of female consumers (Beta=.177 versus Beta=.100).

Table 4. Age-based multiple linear regression standardized coefficients

	18-29 years			**30-44 years**			**45-56 years**		
	Beta	t	p	Beta	t	p	Beta	t	p
Economic success	-.055	-1.42	.154	.003	.07	.943	.011	.23	.815
Customers	.507	11.88	.000	.497	10.46	.000	.434	7.74	.000
Employees	.040	.89	.371	.001	.02	.985	-.043	-.77	.441
The environment	.119	2.76	.006	.063	1.41	.160	.075	1.29	.200
Community dev. & social sponsorship	-.036	-.80	.420	-.019	-.42	.673	.017	.30	.764
Public auth. & cultural sponsorship	.118	2.54	.011	.143	2.80	.005	.161	2.65	.008
	R^2=.385 F(6,550)=57.287 p<.001			R^2=.367 F(6,511)=49.453 p<.001			R^2=317 F(6,380)=29.391 p<.001		

Table 4 shows that the variance in customer loyalty accounted for by customers' perceptions of CSR is the highest in the case of the youngest consumers (38.5%) and lowest in the case of the oldest ones (31.7%). The results

suggest that the positive impact of perceived CSR, as a whole, on customer loyalty is higher in the case of younger consumers, and diminishes as age increases. Moreover, results indicate the fact that even though in all age categories the most influential CSR perception refers to how customers perceive companies' responsibility towards their customers (Beta=.507/.497/.434), the perceived responsibility towards the environment has a positive and significant impact on loyalty only in the case of the youngest (Beta=.119), while the influence of perceived responsibility towards public authorities and cultural sponsorship, even though significant in all cases, decreases as age rises (Beta=.118/.143/.161).

Table 5. Income-based multiple linear regression standardized coefficients

	Lower			**Similar**			**Higher**		
	Beta	t	p	Beta	t	p	Beta	t	p
Economic success	.105	1.71	.088	-.029	-.93	.352	-.074	-1.50	.134
Customers	.448	6.52	.000	.515	14.40	.000	.452	8.13	.000
Employees	.146	1.93	.055	-.008	-.24	.810	-.052	-.88	.380
The environment	-.012	-.16	.873	.097	2.78	.006	.105	1.93	.055
Community dev. & social sponsorship	-.056	-.79	.433	-.016	-.46	.649	.015	.26	.792
Public auth. & cultural sponsorship	.136	1.72	.088	.109	2.89	.004	.208	3.41	.001
	R^2=.402 F(6,218)=24.429 p<.001			R^2=.363 F(6,872)=82.741 p<.001			R^2=.348 F(6,351)=31.263 p<.001		

Results in Table 5 indicate that the variance in customer loyalty accounted for by customers' perceptions of CSR does not differ sharply among different income categories, despite an apparent diminishing as income gets higher (40.2%/ 36.3%/ 34.8%). Results show that in all income categories the most influential CSR dimension refers to companies' responsibility towards their customers (Beta=.448/ .515/.452). However, the perceptual CSR aspects referring to the environment, public authorities and cultural sponsorship have a selective impact on customer loyalty. Thus, the perceived responsibility towards the environment has a positive and significant impact on loyalty only in the case of consumers with an average income (Beta=.097), while the influence of perceived responsibility towards public authorities and cultural sponsorship is only significant for consumers with average or higher incomes (Beta=.136/.109/.208).

Table 6. Education-based multiple linear regression standardized coefficients

	High-school			**BA**			**MA, PhD**		
	Beta	t	p	Beta	t	p	Beta	t	p
Economic success	-.017	-.50	.617	-.020	-.44	.659	-.022	-.39	.700
Customers	.505	13.38	.000	.464	8.97	.000	.473	7.39	.000
Employees	.017	.44	.658	.045	.90	.369	-.097	-1.40	.163
The environment	.077	2.00	.046	.060	1.23	.218	.177	2.72	.007

Community dev. & social sponsorship	-.041	-1.06	.290	.053	1.06	.288	-.060	-.93	.353
Public auth. & cultural sponsorship	.158	3.85	.000	.091	1.65	.100	.164	2.34	.020
	R^2=.376 F(6,732)=73.562 p<.001			R^2=.355 F(6,436)=40.029 p<.001			R^2=.339 F(6,273)=23.380 p<.001		

As it can be seen in Table 6, the variance in customer loyalty accounted for by customers' perceptions of CSR does not differ sharply among different education categories, even though there is an apparent decrease as education level gets higher (37.6%/35.5%/33.9%). Results indicate the fact that in all education categories the most influential CSR perception refers to how customers perceive companies' responsibility towards their customers (Beta=.505/.464/.473). However, the perceived responsibility towards the environment has a positive and significant impact only in the case of those highly educated (Beta=.177), while the influence of perceived responsibility towards public authorities and cultural sponsorship is only significant in the case of the less educated, and, respectively, the highly educated consumers.

Table 7. Residence-based multiple linear regression standardized coefficients

	Up to 50,000 inhabitants			**50 - 200,000 inhabitants**			**More than 200,000 inhabitants**		
	Beta	t	p	Beta	t	p	Beta	t	p
Economic success	-.021	-.54	.587	-.068	-1.59	.112	.015	.36	.721
Customers	.574	12.68	.000	.526	10.88	.000	.368	7.51	.000
Employees	.036	.76	.448	-.014	-.29	.771	.013	.25	.800
The environment	.050	1.08	.279	.066	1.36	.175	.123	2.61	.009
Community dev. & social sponsorship	-.007	-.15	.880	.028	.62	.538	-.057	-1.15	.251
Public auth. & cultural sponsorship	.096	1.93	.055	.146	2.91	.004	.173	3.23	.001
	R^2=.432 F(6,494)=62.746 p<.001			R^2=.373 F(6,455)=45.059 p<.001			R^2=.284 F(6,492)=32.479 p<.001		

Results in Table 7 show that the variance in customer loyalty accounted for by customers' perceptions of CSR decreases significantly as customers' cities of residence are larger (43.2%/37.3%/28.4%). Therefore, it can be stated that the positive impact of perceived CSR, as a whole, on customer loyalty is higher among consumers residing in smaller cities, and lower among those residing in larger ones. Moreover, results indicate the fact that the most influential CSR perception, in all residence categories, refers to companies' responsibility towards their customers (Beta=.574/.526/.368). However, the influence on customer loyalty is limited in the case of other CSR dimensions such as those referring to the environment, public authorities and cultural sponsorship. Consequently, the perceived responsibility towards the environment has a positive and significant impact on loyalty only among consumers residing in large cities (Beta=.119), while the influence of perceived responsibility towards public authorities and cultural sponsorship is not significant as a predictor of loyalty among consumers residing in smaller cities (Beta=.096/.146/.173).

Finally, all results suggest that, no matter what demographics-based category is taken into consideration, the loyalty towards personal care brands or companies is not significantly impacted by how customers perceive companies' responsibilities with regard to their economic success, employees, or community development and social sponsorship.

5. Conclusions, implications, limitations and future research opportunities

By investigating the demographics-based dissimilarities in the relationship between customers' perceptions of CSR and their loyalty towards personal care products brands/companies from one of the largest Central-Eastern European countries, the current paper manages to fill a relevant regional knowledge gap. Results indicate that, no matter what demographic category is taken into consideration, the loyalty towards personal care brands or companies is positively and significantly influenced by how customers perceive companies' responsibility towards their customers, this being the most influential CSR dimension. Moreover, in all demographic categories, customers' loyalty is not significantly influenced by how these perceive companies' responsibilities with regard to their economic success, employees, or community development and social sponsorship. However, perceived CSR in what concerns the environment or public authorities and cultural sponsorship has a significant effect on customer loyalty, this effect being different in various demographic categories.

Thus, the research suggests that the positive impact of perceived CSR, as a whole, on customer loyalty is higher in the case of women (as compared to men), in the case of younger consumers (diminishing as age increases), and among consumers residing in smaller cities (as compared to those residing in larger ones).

Moreover, the perceived responsibility towards the environment has a positive and significant impact only in some demographic categories: female consumers, younger consumers, consumers with an average income, highly educated consumers, or consumers residing in large cities.

Also, the positive influence of perceived responsibility towards public authorities and cultural sponsorship is significant only among consumers with average and high incomes, and not among those residing in smaller cities. Moreover, this positive influence is higher in the case of female consumers (as compared to men), and decreases sharply as age rises.

Practical implications of the findings can be emphasized, especially relevant in what concerns the appropriate focus and marketing communication of CSR. Thus, companies that have the same sectorial and geographical focus as the current research can improve the level of their customers' loyalty by selectively emphasizing their CSR efforts, focusing on their responsibility towards customers (concerned with customers' satisfaction and solving customers' complaints, providing high quality and safe products, providing honest and complete information about products, and charging fair and reasonable prices) in all demographics-based market segments. Moreover, CSR efforts related to public authorities, cultural sponsorship, or the environment should also be emphasized, with particular focus on those demographics-based market segments in which these have been proven influential with regard to customer loyalty.

Thus, according to the research results, companies should always and actively disseminate CSR actions/policies regarding their customers, among all market segments, and by all means available (CSR reports, CSR sections included in corporate websites, special advertising campaigns etc.). When addressing market segments which include mostly women, young consumers, people with an average income level, highly educated consumers and/or people residing in large cities, companies should also emphasize their CSR efforts concerning the environment (such as, for example, those regarding using environmentally friendly materials, reducing energy/resource consumption, recycling and others alike). On the other hand, if companies target market segments consisting mainly of consumers with a low income level and/or people residing in small cities, there is no need for underlining CSR efforts related to cultural sponsorship or public authorities (such as, for example, those regarding taxes or corruption in relation with public authorities).

The limitations of this research refer mainly to the fact that possible mediating factors of the relationship between customers' perceptions of CSR and customer loyalty were not taken into consideration. This limitation, however, represents an opportunity for an enhanced future research based on structural equation modeling. Thus, customer satisfaction, customer trust, or other variables with a potential mediating effect could be integrated into the relationship model, outlining possible indirect effects of perceptual CSR on customer loyalty.

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DETERMINANTS OF FINANCIAL KNOWLEDGE AMONG ADOLESCENTS

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Abstract. The study measures the level of financial knowledge among the adolescents in Zimbabwe, with a particular focus on secondary school pupils. Financial knowledge is critical in providing lifelong skills and knowledge for handling personal finances beyond school. A sizeable amount of previous studies underscores the importance of financial knowledge in making sound financial decisions leading to financial growth and wealth accumulation. A descriptive cross-sectional research design was employed, with data being collected from Gweru district's ten secondary schools. The schools were spread across the three strata (secondary schools in low-density areas, secondary schools in high-density areas and secondary schools in rural areas). A self-administered questionnaire with 44 questions, adapted from the Jump$tart financial literacy survey, was employed to collect data and 763 students participated in the study. Results revealed that the average financial knowledge score was very low at 33.3%. The location of the school and student's learning mode were the important determinants of financial knowledge among respondents. Financial knowledge did not vary by gender. It was concluded that secondary school pupils are less knowledgeable about financial decision making and this will reduce their financial prosperity. Clearly, broader environmental factors such as school location and learning mode exerted the most important influence in the accumulation of financial knowledge. The study recommends that the Ministry of Education, Sport and Culture should consider introducing a compulsory subject at the Ordinary level of study so as to equip the students with the important skill in personal finance management.

JEL classification: A21, D11, D12, D14

Keywords: Financial literacy, youth, secondary school pupils, Zimbabwe

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1. Introduction

Although contemporary literature provides mixed evidence on the impact of financial literacy on the ultimate financial well-being of individuals, this study seeks to establish the level of financial handling preparedness of secondary school pupils assuming financial education is beneficial to individuals. This research follows the studies that assert that financial literacy education provides measurable benefits and that it is beneficial to provide financial education to secondary school students (Fox, Bartholomae, & Lee, 2005). This assertion is however in direct contrast to those arguing that financial education costs outweigh the potential benefits (Willis, 2008). This is especially so given that developed countries are placing more emphasis on financial literacy which should subsequently lead to more informed financial decisions (Beverly & Burkhalter, 2005; Sohn, Joo, Grable, Lee, & Kim, 2012; Xu & Zia, 2012).

Several scholars have defined financial literacy, although there is no universally accepted definition. However, the consensus seems to focus on the individual's ability to understand personal finance matters. For instance, Sohn et al. (2012:969) define financial literacy as "the knowledge and skills necessary to handle financial challenges and decisions in everyday life". Similarly, Huston (2010:306) defines financial literacy as "measuring how well an individual can understand and use personal finance-related information". In this definition, financial knowledge forms the integral part of financial literacy and may not be equivalent to financial literacy (Huston, 2010). Huston further asserts that in measuring financial literacy it is important to establish whether the person can also apply it correctly. As such, in this study these two views are encompassed in that knowledge is tested using qualitative aspects of the questionnaire while the application component is taken care of by the mini case problems and application questions.

The dearth of financial literacy literature on African countries is a major concern in this study. Furthermore, existing literature suggest that education is important in improving financial literacy among a country's population (Mandell & Klein, 2007). However no studies to test the proposition have been conducted in Zimbabwe. Zimbabwe has the highest literacy rate but characterized by high unemployment rates, in excess of 70%, low manufacturing capacity utilization, and the growing informal economy. In Zimbabwe, post-secondary school is limited to those with financial capabilities while employment opportunities are slim. As such, once students complete secondary education most of them always join the informal sector to earn income to sustain a living. Thus, financial literacy among secondary school going students is important in providing lifelong skills and knowledge of handling personal finances beyond school. The informal sector does not provide for regulatory savings schemes and retirement funds. Consequently, effective management of personal finances ensures that individuals participating in the informal sector contribute to national savings through the use of banks and other savings funnels. These funds could further be used for onward lending to other productive sectors of the economy.

To this end, the unpredictable economic cycles (Jorgensen & Savla, 2010), family financial difficulties and its impact on the health of the family (Norvilitis, Szablicki, & Wilson, 2003), the need to possess financial knowledge and skills pertaining to financial management matters (Chen & Volpe, 1998) are some of the reasons for the growing need for research and education in the financial literacy

discourse. A recent study by the World Bank on financial literacy provided some insights on the levels of financial literacy in Southern Africa (Xu & Zia, 2012). However the study excluded Zimbabwe. Despite the socio-political and economic problems in Zimbabwe over the past decade, literacy rates among the youth aged between 15 and 24 years remain astonishingly high at 99% (The World Bank, 2013). The question that arises here is whether this high literacy rate culminates into high financial literacy rate in Zimbabwe. Furthermore, do secondary school pupils have sufficient financial knowledge and skills to handle financial challenges and decisions in everyday life? What influences financial knowledge among secondary school pupils – financial socialization, socio-economic status or demographic factors?

The rest of the paper is organized as follows; Section 2 provides a brief review of literature related to the study. Section 3 details the research methods employed to gather data for the study, together with an outline of data analyses employed. Section 5 presents discussions, and Section 6 provides conclusions and recommendations. The paper concludes by highlighting the limitations of the study and acknowledgements.

2. Literature Review

Financial literacy has received much attention from government agents, the private sector, multilateral organizations and educational institutions worldwide since the early 2000s. Most literature is focuses on developed countries where financial literacy is given attention from early childhood learning to adulthood. Literature on financial literacy point to financial literacy being fundamental to individuals' financial well-being (Meier & Sprenger, 2012). This finding is supported by surveys conducted by Lusardi and Mitchell (2007) and Bernanke (2006), who found that financial knowledge and financial outcomes were positively associated. However, Meier and Sprenger (2012:2) argue that despite the growing "importance of financial literacy, many individuals remain financially illiterate". Consequently, Meier and Sprenger (2012) concluded that the acquisition of financial information is an investment of which like any investment class some individuals may find unattractive. This conclusion helps explain why some individuals remain financial illiterate in this knowledge economy. Contemporary literature shows that financial literacy is still low everywhere although it is much lower in developing countries (Xu & Zia, 2012). In America, the average score from the Jump$tart survey among high school seniors was 48.3%. This score was a decline from the 1997 levels further pointing towards declining financial literacy levels (Jorgensen & Savla, 2010).

Different reasons have been put forward to improve financial literacy, especially among the adolescents. For instance, parents have a central role in promoting and encouraging positive and favorable attitudes about money to their children (Sohn et al., 2012). Thus, Sohn and colleagues assert that other factors that play an integral role in the level of financial knowledge among the youth are "financial socialization, financial experiences, money attitudes, and financial literacy…" pp. 978. This is further echoed by Lusardi et al (2010) who posit that knowledge acquired from parents who, in particular have college or university degrees help their children understand financial matters better than those whose parents or friends do not have college or university degrees. Lusardi and colleagues also appreciate that although cognitive ability plays an important role in financial literacy, education can improve financial literacy. The most important thing found in

the study by Lusardi and colleagues was that financial education is mainly beneficial if provided prior to individuals making financial decisions (Lusardi, Mitchell, & Curto, 2010). The provision of financial education prior to financial exposure suggests that incorporating financial education into secondary school curriculum is necessary in the preparation of the youth for post-secondary life. Attempts have been made to value the implementation of financial literacy in public high schools in Texas, and the model was unique to the state of Texas (Davis & Durband, 2008).

However, earlier studies disputed the role of parents in financial education. These studies argue that although children turn to their parents for financial knowledge, parents do not have such skills themselves (Lyons & Hunt, 2003; Moschis, 1985). Nevertheless, the consensus has been that both explicit and implicit teachings by parents help shape children's financial attitudes and behaviours (Jorgensen & Savla, 2010; Moschis, 1985). In the like manner, results from the Jump$tart survey show that motivation is the key factor in the development of financially literate students. As such teachers should be adequately trained to provide financially interactive personal finance lessons (Mandell & Klein, 2007).

In terms of personal financial behaviour, literature shows that there is no significant difference in the behaviour of high school students who did a course in financial literacy and those who did not (Mandell & Klein, 2009). Thus, with time individuals who did a financial literacy course "were no more financially literate than those who did not take the course" pp. 21. However, although the results were conclusive, they were based on a small sample of 79 students and as such the results may not be representative or generalized.

3. Methodology

The study employed a descriptive cross-sectional research design. The study was conducted during the month of September 2012. The Ethical Clearance to conduct this study was sought and granted by the Midlands provincial office of the Ministry of Education, Sports and Culture. The targeted population was all Form 4 students in the Gweru district. The data obtained from the Midlands provincial office of the Ministry of Education, Sports and Culture indicated that there were 3 751 Form 4 students in the Gweru district's 39 secondary schools in 2012. The stratified random sampling technique was employed to draw up the sample of schools to include in the study. The secondary schools in the Gweru district were firstly stratified into three strata (also known as sectors) as they are used by the Ministry of Education, Sport and Culture. The three sectors or strata were S1 (Secondary school in low-density urban areas), S2 (Secondary school in high-density urban areas) and S3 (Secondary school in rural areas).

A sample of 10 secondary schools was then randomly selected from these strata, in proportion to the total number of schools in each stratum. The final sample consists of three schools from stratum S1, two schools from stratum S2 and five schools from stratum S3. However, to maintain anonymity in the survey results, the names of sampled schools were withheld. All Form 4s in a randomly selected school would automatically be part of the sample. The resultant sample size was 987 students. This figure represented 20.98% of the study population and was above the 20% threshold that is usually suitable for generalizing findings in population sizes less than 5 000 (Gay, Mills, & Airasian, 2006).

A self-administered questionnaire with 44 questions was employed to collect data. This questionnaire was largely adapted from the Jump$tart financial literacy survey by Mandell (2008), although the questions had to be tailored to suit the Zimbabwean context. The questionnaire also incorporated some relevant socio-demographic characteristics of respondents to aid analysis. Eventually, 763 questionnaires were completed, giving a response rate of 96.95%. This response rate is as a result of high cooperation among the secondary schools sampled.

4. Data analysis

The questionnaires were captured in the STATA (Version 11.0) software after checking for completeness and consistency. Tabulations were used to show percentages and frequencies of respondents in each response category. Responses gathered were used to compute a financial literacy score for each respondent. These responses are analysed across selected socio-demographic characteristics of respondents such as gender, school classification, learning mode, location of school, race of respondent and age. The financial knowledge score was computed using the following formulae;

$$Financial\ Knowledge\ Score = \frac{Number\ of\ Correct\ responses}{Total\ Number\ of\ Financial\ Knowledge\ questions} * 100 \quad \ldots(\mathbf{1})$$

Descriptive statistics for financial knowledge scores such as mean, standard deviation, minimum and maximum values were them reported, and analysed against gender, school classification, race of respondent, learning mode and location of the school. A two-sample *t*-test with equal variances was further carried out to ascertain whether the observed differences in financial knowledge scores across gender, learning mode and location of the school was statistically significant. Furthermore, logistic regression analysis is employed to determine the relationship between financial knowledge and the selected socio-demographic characteristics of respondents. Financial knowledge scores are first categorized into two classes, those less than 50% (represented by 0) and those above 50% (represented by 1). Both bivariate and multivariate logistic regression analyses are conducted to ascertain the importance of the selected variables. This is done before and after controlling for the other variables affecting financial knowledge.

5. Findings and Discussions

Table 1 provides a summary of the socio-demographic characteristics of respondents.

Table 1. Summary of important respondents' socio-demographic characteristics

Socio-demographic characteristics	Frequency (Percentage)
Gender	
Male	375 (49.1)
Female	388 (50.9)
Race of Respondent	
White	14 (1.8)
Black	728 (95.4)
Indian	21 (2.8)
Learning Mode	
Boarder	242 (31.7)
Day Scholar	521 (68.3)
School Location	
Urban area	492 (64.5)
Rural area	271 (35.5)
School Classification	
Sector 1	317 (41.6)
Sector 2	173 (22.7)
Sector 3	273 (35.7)
Guardian Monthly Income	
Less than $500	298 (41.9)
$500-$1 000	146 (20.5)
$1 001-$2 000	81 (11.4)
$2 001-$4 000	75 (10.6)
Above $4 000	111 (15.6)
Guardian's Level of Education	
Did not complete "O" level	88 (11.9)
Completed "O" or "A" level	205 (27.6)
Completed Certificate or Diploma	137 (18.4)
University graduate	231 (31.1)
Don't know	82 (11.0)

The research sample was balanced across gender, with males and females constituting 49.1% and 50.9%, respectively. The majority of respondents (95.4%) were black. Whites and Indians constituted 1.8% and 2.8%, respectively. Slightly above two-thirds of the respondents (68.3%) were day scholars and 64.5% of the respondents were drawn from schools located in urban areas, with the difference drawn from rural schools in the Gweru district. Majority of respondents (62.5%) come from poor households where their guardians earn less than $1 001 per month. Only slightly below a sixth of the respondents (15.6%) indicated that their guardians earn monthly salaries above $4 000 per month. About 77.1% of respondents revealed that their guardians had at least completed 'O' level education, with 31.1% of them having graduated with a university degree.

The average financial knowledge score was 33.3% (SD=14.1). The median score was 31.3%, with minimum score of zero and a maximum score of 68.8%. The financial knowledge scores were very low among secondary school pupils in the Gweru district in Zimbabwe, with a maximum scores of only 68.8%. An average of 33.3% found in this study is quite low when compared to the financial knowledge

scores found in other countries, for instances, Jorgensen & Savla (2010) found an average knowledge score of 48.3% among high school seniors in America; while Chen & Volpe (1998) reported an average financial knowledge score of 53% among college students in America.

Financial knowledge scores appeared to vary by gender, school classification, race of respondent, learning mode and school location. Male respondents scored marginally lower than their female counterparts (32.8% versus 33.7%) and boarders scored fairly higher than their day scholar counterparts (36.4% versus 31.8%). Similarly, respondents drawn from schools in urban areas had higher average financial knowledge scores than those from rural schools (36% versus 28.3%). Other variations of average financial knowledge scores among respondents were observed across school classifications, with respondents from secondary schools in low-density urban areas scoring 40.2%, as compared to 28.5% scored by respondents from secondary school in high-density urban areas and 28.2% scored by those from secondary school in rural areas. Indian students had a higher average financial knowledge score of 36.3% (SD=12.9), as compared to financial knowledge scores of 28.6% (SD=15.3) for white students and 33.3% (SD=14.1) for black students. Table 2 summarises the financial knowledge scores of respondents across selected socio-demographic characteristics of respondents.

Table 2. Descriptive statistics of financial knowledge scores by selected socio-demographic characteristics of respondents

Socio-demographic variables	Financial knowledge Scores (%)	
	Mean	Standard deviation
Gender		
Male	32.8	13.7
Female	33.7	14.6
School Location		
Urban	36.0	14.4
Rural	28.3	12.1
School Classification		
Sector 1	40.2	14.0
Sector 2	28.5	11.8
Sector 3	28.2	12.2
Race of Respondent		
White	28.6	15.2
Black	33.3	14.1
Indian	36.3	12.9
Learning Mode		
Boarder	36.4	15.5
Day Scholar	31.8	13.2
Total	**33.3**	**14.1**

To test for the significance of the observed differences in financial knowledge scores across gender, mode of learning and location of a school, Two-sample t-tests were conducted. Results revealed that, although female students were observed to have a slightly higher average financial knowledge score than their male counterparts, the

differences across gender were not statistically significant. This result means that there is no statistically significant difference in financial knowledge scores by gender.

Across learning modes, the two sample t-test results revealed that the difference in financial knowledge scores between boarders and day scholars was statistically significant at 99% confidence level. This significant result means that boarders in the sample scored 4.7% higher in financial knowledge as compared to their day scholar counterparts. In other words, these results confirm that day scholars had lower financial knowledge than boarders. Similarly, the Two-sample t-test showed that the observed difference between respondents from urban schools and those from rural schools was worth noting and statistically significant at 99% confidence level. This enunciates that urban school respondents had, on average, 7.6% more financial knowledge scores than their counterparts from schools in rural areas. Table 3 summarises the Two-sample t-test results by gender, learning mode and school location.

Table 3. Two-sample t-test results for financial knowledge scores by selected socio-demographic characteristics of respondents

Group	Number of Observations	Mean	Standard deviation	Confidence Interval 95%	t-statistic
Gender					
Male	375	32.8	13.7	31.4 - 34.2	-0.91
Female	388	33.7	14.6	32.3 – 35.2	
Learning Mode					
Boarder	242	36.4	15.6	34.5 – 38.4	4.29*
Day scholar	521	31.8	13.2	30.6 – 32.9	
School Location					
Rural	492	36.0	14.4	34.7 – 37.2	7.38*
Urban	271	28.3	12.1	26.9 – 29.8	
Combined	**763**	**33.3**	**14.1**	**32.3 – 34.3**	

Degrees of freedom = 761
* P < 0.01

Results from bivariate and multivariate regression analysis revealed the importance of gender, location of a school and learning mode of pupils as important predictors of financial knowledge among secondary school pupils. However, it was also found that the race of respondents was not important in explaining financial knowledge scores of students both before and after controlling for other variables. In particular, results revealed that female students were 78% (in the bivariate model) and 71% (in the multivariate model) more likely to score above 50% in financial knowledge than their male counterparts. With odds ratios of 0.19 (in the bivariate model) and 0.20 (in the multivariate model), the results show that respondents from schools located in rural areas were 81% and 80%, respectively, less likely to score financial knowledge scores above 50%. Similarly, day scholars were shown to be less likely to score above 50% in financial knowledge as shown by odds ratios of 0.41 and 0.44 in the bivariate and multivariate models, respectively. The race of students was not statistically significant in explaining financial knowledge scores among the respondents. Table 4 presents a full set of logistic regression results.

Table 4. Bivariate and multivariate logistic regression results by selected socio-demographic characteristics of respondents

Predictor Variables	Bivariate Model	Multivariate Model
Gender		
Male	1.00¨	1.00¨
Female	1.78 (1.21-2.62)***	1.71 (1.14-2.56)***
Location of School		
Urban area	1.00¨	1.00¨
Rural area	0.19 (0.11-0.33)***	0.20 (0.11-0.34)***
Learning mode		
Border	1.00¨	1.00¨
Day scholar	0.41 (0.28-0.60)***	0.44 (0.30-0.66)***
Race of Respondent		
White	1.00¨	1.00¨
Black	1.23 (0.27-5.57)	0.65 (0.14-3.16)
Other	1.88 (0.31-11.37)	0.90 (0.13-5.86)

*The reference category is identifiable by an odds ratio of 1.00¨ and ***P < 0.01. Figures in parenthesis are the 95% confidence interval values, and those outside are the odds ratios.*

6. Conclusions and recommendations

The study concludes that secondary school pupils are less knowledgeable about financial decision making, and this will reduce their financial prosperity. Such low levels of financial knowledge are quite worrying and a cause for great concern, given the fact that Zimbabwe boast of one of the highest literacy levels in the world, yet there is such limited in financial knowledge. It is, therefore, recommended that the Ministry of Education, Sport and Culture should consider reviewing its curriculum, with the ultimate goal of introducing a compulsory subject at Ordinary level so as to equip the students with the important skill in personal finance management. Alternatively, personal finance issues can be incorporated into the existing subjects that are compulsory for all pupils, such as Commerce or Principles of Accounting. There is growing consensus that such skills are a prerequisite for sound personal financial decision making, which is intertwined with financial success. High financial literacy levels are also good for the financial stability of any economy as they reduce economic ills such as indebtedness and the lack of a savings culture.

It is also concluded that broader environmental factors such as school location and learning mode exerted the most important influence on the accumulation of financial knowledge. These two factors were found to be statistically significant in explaining the variations in financial knowledge among the pupils in the sample. On the other hand, personal factors such as gender had limited influence on financial knowledge among secondary school pupils in the Gweru district. These results underscore that financial knowledge among secondary school students could be enhanced through the targeting of environmental factors as opposed to personal factors. The targeting of environmental factors is a vital starting point about finding ways of improving financial knowledge among the country's citizen. The importance of the environmental factors seems to reiterate the importance of the person's immediate

environmental factors in molding one's future, as opposed to factors within an individual. In this regard, institutions such as schools should play a leading role in empowering their students with the prerequisite financial knowledge.

7. Limitations

The study relies on results obtained through self-administered questionnaires. Although the use of self-administered questionnaires elicit higher rates of personal information than face to face interviews do (Fenton et al., 2001), the limitations of self-administered questionnaires (including the inability to probe for further clarifications or details, less control over how the questionnaire is completed and limited power of observations) should be noted. The other limitation of the study relates to the generalizability of the results. It is important to note that generalization of the results to the entire country could be misleading as the sample is not representative to all secondary school pupils in Zimbabwe.

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IS THERE A RELATIONSHIP BETWEEN HOME OWNERSHIP AND UNEMPLOYMENT RATE IN ROMANIA?

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Abstract: A country's home ownership can indicate a high level of development. At the same time, social factors may contribute to low home ownership, triggering imbalances in the unemployment rate. The historical evolution of the home ownership in Romania was also analyzed. The aim of this article is to verify the hypothesis that there is a direct relationship between the increase in home ownership and the unemployment rate. More precisely, the analysis focuses on whether the growth of home ownership is or can represent the effect of the rise in the unemployment rate. Work hypotheses were analysed starting from the manner in which home ownership is classified by categories referring to the status in the labour market, as well as by property type. The results suggest no direct relation between the home ownership rate and unemployment rate in Romania, in contrast with recent specialized literature at the European level.

JEL Classification: R20, R21, R31

Keywords: private home ownership, unemployment rate, behaviour of buyers, real estate market

1. Introduction

The financial crisis and the period after the crisis have determined profound changes in the economic system (Iamandi & Munteanu, 2014), while economic resilience increased the capacity for recovering the negative effects of external shocks. (Zaman & Vasile, 2014). From this point of view, analysing the housing market as a correlation with other economic indicators represents a quest that is not only relevant but also necessary. Investigating the relationship between a country's home ownership level and its unemployment rate has been the focus of numerous research studies, which will furthermore be presented. Such studies aimed at analysing the consequences of a high level of private home ownership, its

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relationship with job duration and salary level or the dynamics of private home ownership. Before purchasing a real estate property, a tenant may increase productivity in order to reach a level of income needed to become a home owner. As soon as he/she becomes an owner, the incentive for increasing his/her productivity, while working more hours, becomes even higher, due to the need to pay the instalments of the credit, which was taken out in order to purchase the respective property in the first place (Dietz & Haurin, 2003). This research had as an objective to calculate the percentage increase/decrease of these two indicators. Thus, a study on developed countries among which USA, UK, Italy, France and Sweden has revealed that a 10% increase in home ownership leads to a 2% rise in the unemployment rate (Oswald, 1996). Another research has indicated that a higher level of private home ownership in the US is associated with reduced job mobility, greater commuting times and fewer new businesses (Blanchflower & Oswald, 2013). Home owners with higher incomes have more mobility than tenants with low incomes, when the loss associated with the possible loss of the work place is higher than the costs associated with owning or renting a house. An economy in recession reduces regional mobility, while asymmetric shocks lead to higher migration in developing areas, leading to a decline in the labour force of the respective area (Dohmen, 2005). Another study referring to Finland has shown the fact that although home owners are unlikely to become unemployed, there are certain factors which limit the positive effects of home ownership in case the purchase was made by taking out a loan: i.e. lower consumption or higher competition in the labour market (Laamanen, 2013). Taking out a mortgage in order to buy a house may enhance the relationship between the unemployment rate and poor health. Thus, Lau and Leng have studied this effect, concluding that there is a closer connection between the unemployment rate and poor health in the case of house owners with a mortgage loan which is over 80% of the value of the home (Lau & Leung, 2014). This can be enhanced by the decline in real estate prices in an economy in recession. A 10% rise in the likelihood of future unemployment leads to a 2% decrease in the likelihood of investing in real estate property. Conversely, a similar variation of the income level triggers a decrease in the likelihood of investment by 0.2%-0.3% (Moriizumi & Naoi, 2011). Thus, the investment trend is not affected by the decrease of the income.

At the same time, the positive aspects of home ownership have been analysed in numerous articles. Thus, a high level of home ownership has a positive impact on neighbourhoods and the community in general, by maintaining a high level of stability among the inhabitants. Moreover, a high number of inhabitants who are renting a house indicates high poverty and unemployment rates in the respective neighbourhood (Galster, Quercia, & Cortes, 2000). The relationship between home ownership and the future income has been analysed, the results showing a rise in the income of the families who had recently become home owners. This can be explained by the fact that the families which expect a rise in their income are more likely to buy a home but also by the fact that a high home ownership level leads to the intensification of efforts to generate or stabilize the income (Haurin & Rosenthal, 2005). In the long term, high home ownership also leads to increased future income, excluding the effect of further education or increased work activities on the part of family members (Di, 2007). Due to their

lower job mobility, home owners will retain their job for a longer period, making it possible for companies to increase their investment in the home owners' professional development, and for the home owners to receive higher salaries. (Munch, Rosholm, & Svarer, 2008).

A high home ownership rate is also influenced by the moment of acquisition of the first home, which varies in European countries. It has been demonstrated that during the second half of the 20th century, in Western and Central European countries, young people had access to credit and consequently were able to become home owners (Angelini, Laferrère, & Weber, 2013). The variance in the second part of the 20th century may also have been influenced by the big number of conflicts in the first half of the century, which lead to migrations of the people in Europe and to instability as far as home ownership is concerned. Several research studies have analysed mobility levels, in particular of people over 50 years of age, the results indicating a higher level of mobility of northern peoples compared to that of Mediterranean countries. What is more important, they highlighted that the change of status from tenant to owner is based on social events with a negative impact on the owner's financial capacity (Angelini, Brugiavini, & Weber, 2013)

The general views and opinions related to the relation between unemployment rate and home ownership was the result on the analysis on different country. Depending on the data taken into consideration and particular factors like availability of financing or housing affordability, there could be significant differences at a country level and even on a city level. The next step in developing our research paper was to formulate the research questions and hypothesis.

First, starting from the literature review presented above, our hypothesis included the fact that within the European Union there are premises for a relationship between home ownership and the unemployment rate, based on different characteristics of the real estate market like: attractiveness of owning a home, mobility and diferences between renting versus financing through credit.

Second, analysing the case of Romania, our hypothesis is that, considering the social and historical aspects regarding property rights, there is no relationship between home ownership and the unemployment rate. This hypothesis is based on the high value of home ownership for Romania, compared with fluctuations in unemployment rate, and needs to be tested in the next sections of the paper.

2. Home ownership – social and historical aspects

The home ownership analysis starts from the historical aspects related to property rights. In what follows, we intend to analyse the way in which the property rights were modified depending on the political and historical circumstances. Our analysis is trying to establish, which was the determining factor that accounted for the need of holding property in Romania. Many historic landmarks are presented related to the development of housing and, implicitly, of the sense of ownership.

Prehistoric settlements, especially those created by the Neanderthal hunters, were structures for living purposes or seasonal settlements consisting in simple shelters or huts. Anthropological discoveries have confirmed the existence of inhabited caves towards the end of the last glacial era, situated in the parts of Romanian counties like Brașov, Constanța, Mehedinți, Sălaj. Starting from the Neolitic, the life

style changes due to the appearance of the old European villages and towns, with horticulture as one of the main occupations ("Istorie Edu," 2015). The development of techniques for polishing and processing stone tools triggered a change in the living style of pre-historic communities towards stable settlements, where the most important activities were related to the production of food. Being part of stable communities led to a better development of the sense of ownership, which covers not only the house, but also the farmed land.

Getae-Dacian settlements, both the ones dug in the ground and the ones above the ground, made of wood, stone or even covered with a Greek type of rooftiles, were often complex constructions with polygonal rooms ("Istorie Edu," 2015). Towns start to change as military conflicts lead to the need of fortifications around both civilian and religious buildings. The sense of belonging to the community is stronger than that of private ownership, given the possible conflicts which could lead to the destruction of the fortifications. The Middle Ages display evidence of an increase in social stratification and implicitly of a considerable impact on private property. Village communities included members who were free persons, hereditary land owners, while the land was not distributed periodically and only a part of it was worked jointly. In the Romanian feudal society, land ownership was very diverse, being split between the ruling prince, the clergy, the noblemen (big land owners) and the communities of free peasants. The end of the 19th century and the beginning of the 20th century brings along a differentiation among social classes and various privileges regarding property ownership. Thus, two thirds of the arable land belonged to the ruling prince, the noblemen and the clergy and about one third to the free peasants ("Istorie Edu," 2015). In 1864, the agrarian reform lead to granting land ownership rights to the peasants, so that two thirds of the land given to the peasants to work on became their own, without compensation (Zamfir, 2013).

The development of the real estate sector in the communist period led to an increased need for private home ownership, being also supported by legal measures which resulted in the transfer of real estate property from the state to individuals. The situation in 1974 indicated legal measures according to which tenants could choose between buying their rented home by taking our credit or paying an increased rent by 25-100% ("Romania pushes private home ownership," 1974). Law no. 4/1973 on the development of home construction, selling the state owned houses to the population and building privately owned holiday houses encouraged the population to own private homes by means of financial incentives. The law stipulated that „due to the high rate of development of the national economy, the modernisation of cities and workers' centres, the increase in the number of workers and specialists, the steady rise in the salary and other sources of income of the working class, there is a need for intensifying the construction of homes and increasing their level of comfort" (*Law no.4*, 1973).

The legal measures adopted after 1990 aimed at facilitating the development of new constructions, as well as at introducing fiscal measures waving the tax paying obligation (Law no.114 - Housing Law, 1996). These measures resulted in an increase of private home ownership.

At the end of 2013, home ownership in Romania stood at 95.6% ("Statista," 2015), representing the highest value in the European Union, where the average for the 27 Member States was 69.9%, the lowest values being in Austria (57.3%) and Germany (52.7%).

3. Research methodology and data sources

The research analysed statistic data from Eurostat and the National Statistics Institute (NSI) for the 2007-2013 period. The data refers to the unemployment rate and to home ownership in the European Union and its Member States. For Romania, the data used refers to the household structure by occupancy, size, employment status of the head of the household, as well as by type of residential environment.

3.1. Analysis of the relationship between house ownership and unemployment rate within the European Union

The analysis of the current situation within the European Union started from statistic descriptors related to the evolution of the unemployment rate, as well as of the level of home ownership, the values being presented in Tables 1 and 2 below. The level of unemployment presented between 2007 and 2013, as minimum and maximum values can show interesting comparison analysis between countries. In this sens, in 2007, the value for EU 27 as 7.2%, with a mean of 6.5%, will Denmark had the lowest value (3.8%) and Slovakia the maximum one (11.2%). After 2007, all the indicators increased (both the minimum value, maximum, mean, median or the value for EU 27). In this sense, in 2013, the minimum value of the unemployment rate was for Austria (4.9%), will Greece had a record maximum value of 27.5%, as a sign of deeper recession after the financial crisis. The mean, median and value for EU 27 was around 10-11%.

Table 1. Statistic descriptors regarding the unemployment rate in EU

	Minimum	Country	Maximum	Country	Mean	Median	EU 27
2007	3.8	Denmark	11.2	Slovakia	6.5	6.3	7.2
2008	3.4	Denmark	11.3	Spain	6.4	6.3	7.0
2009	4.4	Netherlands	17.9	Spain	8.9	8.0	8.9
2010	4.4	Austria	19.9	Spain	10.1	8.5	9.6
2011	4.2	Austria	21.4	Spain	10.1	8.3	9.6
2012	4.3	Austria	24.8	Spain	10.8	9.9	10.4
2013	4.9	Austria	27.5	Greece	11.1	10.2	10.8

Source: Author's calculations based on the Eurostat data, (http://ec.europa.eu/eurostat, Unemployment rate by sex and age groups - annual average, %, code une_rt_a, 2015)

Another country that has 5 of the 7 years as maximum value was Spain, with unemployment rate increasing from 11.3% in 2008 to 24.8% in 2012. If we consider this social changes correlated with migration of citizens across Europe, we can also include, effects on the residential market. If the job market is

fluctuating or is seasonal, there is a higher probability that the residential market is more a rent market, than actual transactions.

A similar analysis was developed, with results presented in Table 2. In this table, home ownership rate was assessed as minimum, maximum (with mentioning the country), mean, median and EU 27. In this case, the minimum value of home ownership rate decreases from 59.2% in 2007 (Austria), to 52.6% in 2013 (Germany). While the mean and median remained constant with small fluctuations, the EU 27 value decrease from 72.8% to 69.9%. The maximum values for the entire period were of Romania (95.6%-96.6%). What does this value tell us? Firstly, that the Western countries are more likely to rent apartments than owning them. Second, that in Romania, which has the highest value in European Union, there is a culture for home ownership. Some of the historical reasons were mentioned in the previous section, but we could also add that the value of rents is in the same range as the value for mortgage.

Table 2. Statistic descriptors regarding home ownership in EU

	Minimum	Country	Maximum	Country	Mean	Median	EU 27
2007	59.2	Austria	96.1	Romania	76.7	74.5	72.8
2008	57.9	Austria	96.5	Romania	76.9	75.2	73.2
2009	57.6	Austria	96.5	Romania	76.8	74.4	73.1
2010	53.2	Germany	97.5	Romania	76.6	76.1	70.5
2011	52.4	Austria	96.6	Romania	76.2	75.5	70.3
2012	53.3	Germany	96.6	Romania	76.3	75.2	70.4
2013	52.6	Germany	95.6	Romania	76.2	75.8	69.9

Source: Author's calculations based on the Eurostat data (http://ec.europa.eu/eurostat, Distribution of population by tenure status, type of household and income group, Code: ilc_lvho02)

Through the previous two tables, we can see the big picture related to the evolution of the unemployment rate and home ownership for EU 27. First, unemployment rate increased and second, the home ownership decreased. This could mean that difficulties on the job market create higher impact on how the actual family budget is spent. One of possible decision, when faced with unemployment, will be to sell the property and rent. Moreover, those who didn't have a property in the first place, took directly the decision to rent a property. Moreover, tax on property, which is higher in Western countries, is another reason for not owning a house. When studying home ownership in relation with unemployment rate, the trend and characteristics of the countries could mean different evolutions. For the analysis we choose to use the correlation coefficient and to see which countries have negative correlation, positive correlations or no correlation.

The analysis of the correlation among the 28 EU Member States is presented in Table no. 3, by pointing out also median, maximum or minimum values, together with quartiles.

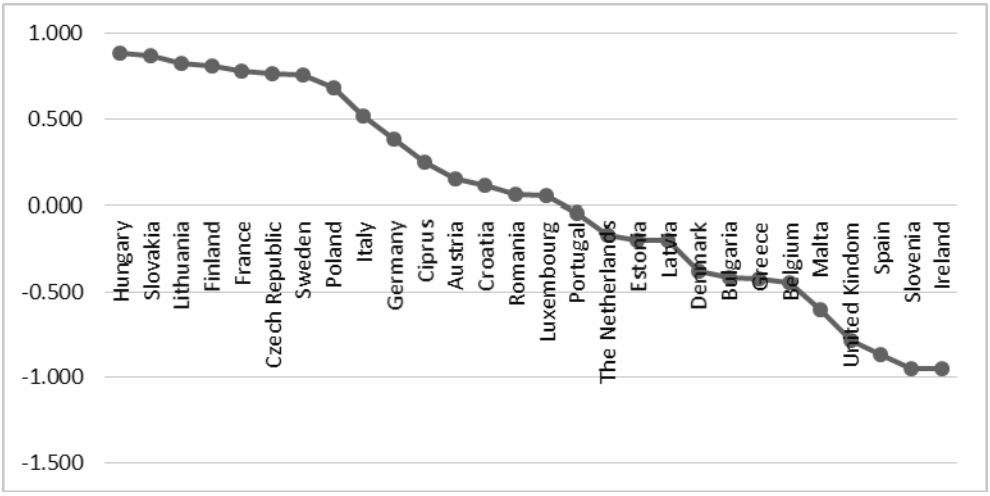
Table 3. Correlations among the 28 EU Member States

Country	Correlation coefficient	Country	Correlation coefficient
EU27	-0.878	Portugal	-0.046
Hungary	0.886	Netherlands	-0.169
Slovakia	0.869	Estonia	-0.197
Lithuania	0.829	Latvia	-0.198
Finland	0.81	Denmark	-0.381
France	0.786	Bulgaria	-0.414
Czech Republic	0.769	Greece	-0.427
Sweden	0.761	Belgium	-0.444
Poland	0.681	Malta	-0.601
Italy	0.523	UK	-0.786
Germany	0.385	Spain	-0.864
Cyprus	0.254	Slovenia	-0.948
Austria	0.151	Irleland	-0.949
Croatia	0.118	*Statistic descriptors*	
Romania	0.061	Median	0.0585
Luxembourg	0.057	Q1	-0.416
		Min	-0.949
		Max	0.885
		Q3	0.701

Source: Author's own calculations

The median of the series of data regarding the correlation between the unemployment rate and home ownership is 0.0585, while the value of quartile 1 indicates that 25% of the countries in the sample have a negative correlation between the two rates, i.e. the high values of home ownership correspond to low levels of the unemployment rate. The highest level of negative correlation is for Slovenia and Ireland. For 50% of the sample there is a low correlation, or a lack of correlation between the two rates. Finally, a positive linear correlation was found in 8 of the analysed countries, the maximum values being those of Hungary and Slovakia. In this way, the hypothesis no. 1 of this research is confirmed, regarding the existence of premises related to the relationship between the two variables analysed. Thus, the results indicated various values for the 28 Member States, most of them presenting a negative correlation or a lack of relationship.

Figure 1. Correlation between home ownership and employment rate acrross EU



Source: Author's own calculations based on the Eurostat data

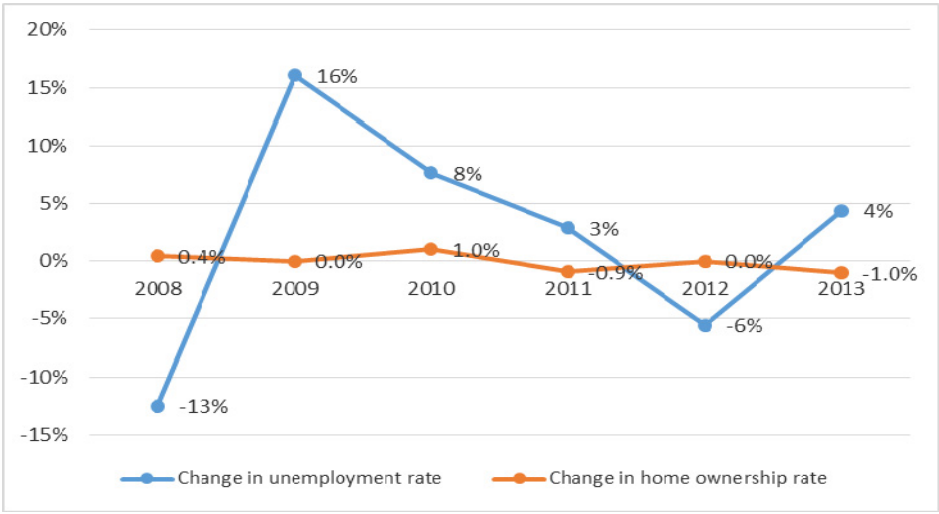
The results from Table 2, are graphically represented in Figure 1. The values are not general for a specific area of Europe. Mainly, we cannot conclude that there are negative correlations or positive for Eastern Europe or Western Europe. Actually, the countries with highes positive correlations are Hungary, Slovakia or Finland and France or Sweden, from different parts of Europe. A negative correlation will mean that an increase in unemployment will be reflected in a similar decrease of home ownserhip. A reverse relation will mean than when unemployment increases, home ownership has also higher values, which could raise new questions on the validity of the relation itself.

3.2. Analysis of the correlation home ownership – unemployment rate in Romania

The analysis of the correlation in the European Union shows a value of 0.061 for Romania, which indicates a lack of direct relationship between the two variances. Moreover, a comparison between the trends of the two variances (Figure 2) demonstrates different trends and the lack of a direct relationship. When confronted with data related to home ownership in other countries, the theory of a direct relation between home ownership and unemployment seems to be not so feasible. The theory presented by (Oswald, 1996) in which a 10% increase in home ownership leads to 2% rise in the unemployment rate, cannot be applied to Romania, and as seen in the previous section, not even for the rest of the countries. Assessing this relationship becomes even more evident when the analysis is made on different employment categories.

When analyzed the changes in unemployment rate, we can see high values in the period after the financial crisis, while the changes in home ownserhip were below 1%.

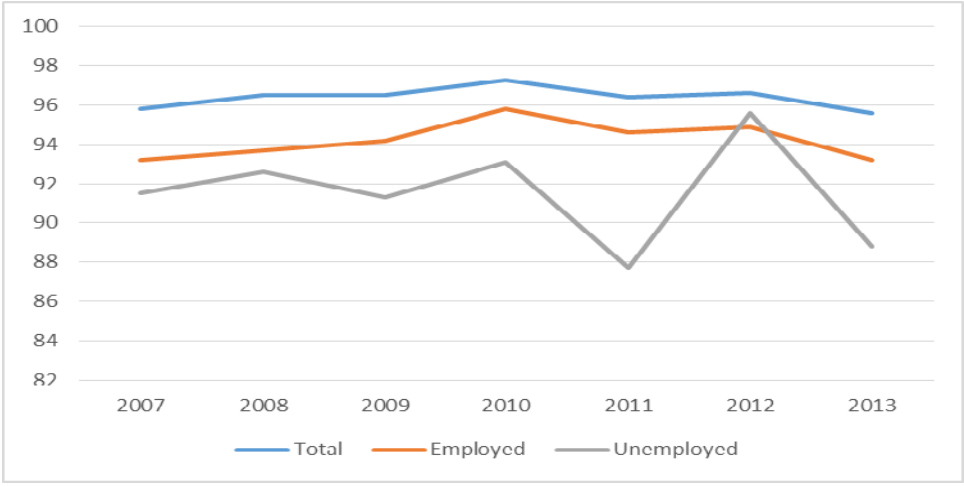
Figure 2. Comparison between the unemployment rate and home ownership variance trends



Source: Author's own calculations

The analysis by employment status shows high values of home ownership, with significant variances for the unemployed during the analysed period. In spite of this, the minimum value was seen in 2011 – 87.9%, being much over the European Union average. So, even this social category (the unemployed) has high home ownership value, even though this value decreased in 2011.

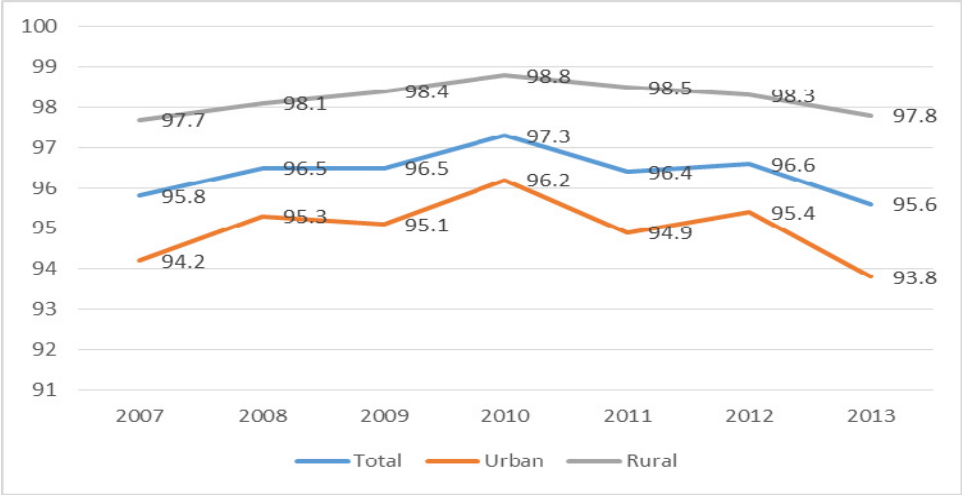
Figure 3. Home ownership by employment status



Source: Author's calculations using National Institute of Statistics data (http://www.insse.ro/ Structure of dwellings based on employment status, 2015)

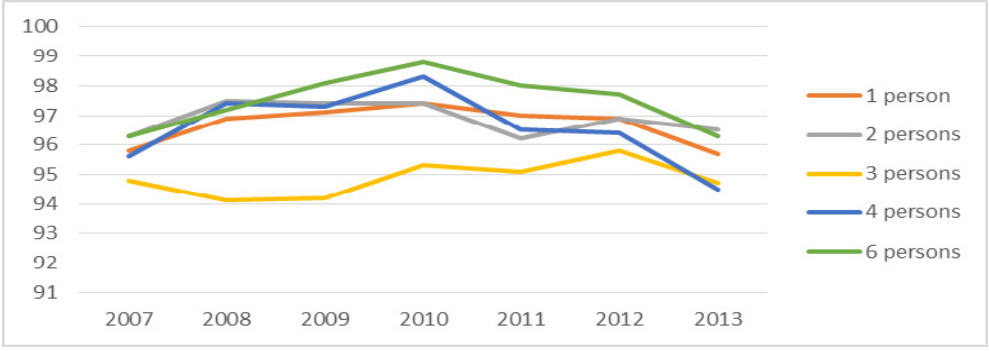
As for home ownership by type of residential environment, urban versus rural, a significantly higher value was seen for the rural area, the values being above the average for Romania. Thus, in 2013, the figure was 97.8% in the rural area, compared to 93.8% in the urban area, as can be seen in Figure 3. As far as home ownership by occupancy of a household is concerned (Figure 4), the lowest value is in the case of 3-member households, while the highest value is that of 5-member households.

Figure 4. Home ownership by residential environment



Source: Author's calculations using National Institute of Statistics data (http://www.insse.ro/ Structure of dwellings based on type of areas, 2015)

Figure 5. Home ownership by household size



Source: Author's calculations using National Institute of Statistics data (http://www.insse.ro/ Structure of dwellings based on household size, 2015)

High levels of home ownership are also seen among other social categories, depending on their employment status. Most of the times, changing one's work place leads to higher mobility, also including adequate transportation. More than this, a high level of home ownership cannot lead to a decrease in the number of businesses in a region. On the contrary, it may have as an effect urban growth in a developing region, as well the setting up of new business centres. As pointed out in the results, for Romania, there are many facts that the level of home ownership is high not only at the city level, but also at the rural level. In the later case, even if the value of home ownership is close to 100%, the level of unemployment is high, and the social distribution by age is towards elderly people. Moreover, the household size has similar values when it comes to home ownership and also the occupational status. This leads to the opinion that home ownership has more to deal with the status quo that Romanians aspire, without actual linkage with the unemployment rate, contrary to the similar studies. The arguments are in favor of the first and second hypothesis, as the second emphasize that for Romania we can not establish a relation between the employment rate and home ownership. This is an interesting fact to analyze in this region, mainly because we could assume that higher employment rate, and thus lower income will impact the actual willingness to acquire a residential property. Moreover, we could consider that increase or recovery of the economy will be translated in lower employment rate and thus in even higher home ownership. But, for the case of Romania we cannon find this type of relation for the analyzed period. The past period, which was marked by lower housing prices could trigger a new housing bubble mainly because of higher willingness for owning a home.

4. Conclusions

Home ownership varies within the European Union, due to several social and historical factors such as impact of the First and Second World War which had an impact on the mobility across Europe. Moreover, the Easter Europe which was affected by decades of communism, which made urbanisation for the working class a main priority, developed the need for property and owning a dwelling. For Western countries the availability of dweeling correlated with accessibility of financing made renting a good option. This article has presented a few landmarks on the evolution of some factors that impacted the increased home ownership and related to the development of housing in Romania. This lead to Romania's position in the top of European countries regarding home ownership. The hypotheses presented at the beginning of the article referred to the relationship between home ownership and the unemployment rate in the European Union, the results indicating various values for the 28 Member States, most of them presenting a negative correlation or a lack of relationship. As far as the analysis of the situation in Romania is concerned, the lack of relationship cumulated with high home ownership by employment categories verifies the second hypothesis related to inexistence of a relationship between the two variables in contrast to the recent studies in specialised literature. So, how could the analysis of the home ownership and employment rate relation could be better understood? One point was to establish the factors that are behind the higher home ownership. Another point was to analyse the correlation. We could also point out differences in terms of market

timing related to the impact on this relation. Home ownership is an indicator established over decades and thus has multiple factors that have impact (from cultural ones, political and historical to actual financing policy and availability of properties). A more in-depth focus on area could trigger some important results. For instance, looking at a neighboorhood level we could spot the actual number of rented apartments in a period in which unemployment rate is high. Moreover, if unemployment rate is low, we could see increased transactions in this area. Of course, the lack of data is the main concern behind this experiment, but further work should be conducted in this narrow field. The limitations of the research are given by the amount of data, which means that further research should verify these hypotheses by county, sector and by development regions. Practical implications come from the actual evidence from Romania that disagree the existing literature. The existing theory supports a relation, but our main conclusion is that this should be analyzed at a lower level, and a possible relation having multiple complex factors like mobility of citizen from or outside EU, urban developments and creation of new business districts or even change in the social structure of a neighborhood. Results are relevant not only to appraisers and real estate professionals but also for policy makers on the availability of financing taking into consideration the high willingness for owning a home.

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