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HOUSEHOLD CONSUMPTION AND CHANGES IN RETAIL TRADE DURING THE ECONOMIC CRISIS IN CROATIA

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Abstract

Data on household consumption across Europe show growing trend of economic deprivation of persons and households. In addition, data on the structure of personal consumption are also showing that, in times of crisis, majority of population is oriented merely to satisfaction of basic needs. Moreover, due to the reduced consumption in households, indicators of business activity in retail industry show a negative effect not only through the reduction of generated income, but also through changed way of behaviour of the majority of consumers, which consequently leads to changes in the retail structure. In this paper we will analyse official statistics and other available secondary data for Croatia in order to confirm the thesis that retail formats with the lowest margins occupy an increasing share of the market.

Key Words

Consumption; crisis; poverty indicator; retail; Croatia.

INTRODUCTION

The global economic crisis reached its highest intensity on a global level in period 2008-2013 and had affected all aspects of economic activities. Many scientists dealt with the problems of the economic crisis, measurements and effects of global economic crisis. However, there is a scarcity of papers dealing with the impact of the economic crisis on individual industries, and, especially, in the markets of the newer members of the European Union.

During the economic crisis, reduced consumption has a direct detrimental impact on retail trade. Therefore, this paper will focus on the retail trade in the newest EU member state – Croatia. In the paper we will describe how the reduction and restructuring of household consumption during the economic crisis is affecting the retail trade in Croatia.

The paper is divided into two main sections. The first section of the paper is based on publicly available official statistics and explains the movement of household consumption and the structure of household in Croatia. The second section of the paper is based on secondary data retrieved from official statistics, but also from research papers treating various topics related to retail industry in Croatia. The second section of the paper explains the changes caused by the economic crisis, in two directions: (1) changes in consumer behaviour, and (2) changes in the structure of retail trade.

THE CHANGING STRUCTURE OF HOUSEHOLD CONSUMPTION IN CROATIA AS AN INDICATOR OF THE ECONOMIC CRISIS

According to data gathered in The Household Budget Survey conducted by Croatian Bureau of Statistics, the average annual consumption expenditures per one household are decreasing due to deep economic crisis taking place since 2008 and an average household in Croatia spends less than 10000 euros per year for final consumption (see Figure 1). And this decrease can be explained by logarithmic regression with R square indicator of 0.9602.

Moreover, the official statistics relentlessly shows an extremely unfavourable structure of personal consumption in Croatia where from 2008 to today an increase in the share of food and non-alcoholic beverages in total consumption is observed. This share is now around 32%. Thus, one third of the average household budget in Croatia serves merely to meet the most basic needs of life i.e. foodstuff and non-alcoholic beverages. Second in importance are housing expenditures and energy (with a note that the index does not include the rent) which also in the same period increased share in the average household budget and today is around 15% of the average household budget. Shares of individual product groups in total consumption of households in Croatia are shown in Figure 2.

If we sum up the two mentioned indicators, we can conclude that in Croatia almost a half of the average household budget is spent on food and housing expenditures and in majority of households there is a little room left to meet some secondary or tertiary needs. All this tells us that the average household in Croatia focused on mere survival, with fewer acquisitions of

goods such as, for example: household appliances, consumer electronics, branded apparel and footwear, furniture and services in the field of hospitality and education.

In Table 1 the share of the most basic life necessities in Croatia and in some selected EU countries is shown. Based on Table 1, we can conclude that the Croatian household, compared to the newer EU member states is, in fact, in a very difficult situation. While in the average Austrian, Slovenian and Hungarian household, after obtaining food and paying housing costs (excluding rents and loans) remains between 60 and 70% of the household budget, for the average Croatian household it remains little more than half (52,30%) and out of that the household has to purchase the clothes and shoes, to pay transportation costs, to pay medical services, and to pay costs for their children's education.

Furthermore, according to CBS (2012a) data, to households in Croatia almost no space remains for long-term investment. Official data shows that for this purpose is allocated up to 7% of total expenditures in the household. While, for instance, in Slovenia the long-term investments are 9.72% of the total household expenditures, in Austria 10.31%, and the Czech Republic 8.36% (according to OECD.Stat data). We have to point out that there are some doubts regarding the methodology of CBS, but in this paper we will not get into debate on CBS methodology, but we will use available CBS data as is.

Table 1: The share of the basic necessities in total household consumption in 2011

| Country | 1 Food and non-alcoholic beverages | 2 Housing, water, electricity, gas and other fuels | Sum 1+2 |
|----------------|---|---|----------------|
| Croatia | 31,70% | 15,70% | 47,40% |
| Poland | 18,51% | 22,51% | 41,02% |
| Czech Republic | 14,64% | 27,08% | 41,72% |
| Hungary | 17,19% | 21,93% | 39,12% |
| Greece | 16,24% | 22,19% | 38,43% |
| Italy | 14,27% | 22,70% | 36,97% |
| Slovenia | 15,12% | 19,66% | 34,78% |
| Austria | 9,82% | 21,36% | 31,18% |

Source: For Croatia – CBS (2012a); for other countries – OECD.Stat (2015); own compilation

According to all the displayed data, we can argue that the personal consumption reached a bottom and there is no space for its further decrease in Croatian households because majority of Croatian households focuses on the satisfaction of basic needs.

In addition, the analysis of poverty indicators is telling us that Croatia, compared to other selected countries, is in a very unenviable position

because it has high rate of poverty risk, which further reinforces the negative trends in personal consumption of households (see Figure 3). Unfortunately, due to the economic crisis taking place across EU, the risk of poverty is getting deeper and deeper, not only in Croatia, but across EU as well (see Figure 4).

Moreover, data of the Independent Trade Union surveys in Croatia are not encouraging because they claim that the average wage in Croatia can cover only 80% of monthly living expenses, and the pensions can cover only around 60% (CITU, 2013). And if this situation continues, a significant number of households will be brought to a situation that basic needs cannot be satisfied.

EFFECTS OF CRISIS AND REDUCED CONSUMPTION ON RETAIL TRADE IN CROATIA

A change in final consumption and ongoing and long-term economic crisis together with the problem of deepening poverty in given geographic market puts many challenges in front of retail companies. In advance we will describe some of challenges for retailers in Croatia. We will explain two levels of changes: (1) microlevel focusing on changes in consumers' behaviour and (2) macrolevel focusing on consequential changes in retail structure in Croatia.

Changes in Customers' Behaviour and Vicious Circle of Retailing in Economic Crisis

A large proportion of citizens in Croatia are negatively influenced by ongoing economic crisis. Basic economic indicators (CBS, 2009 and 2014b) show that unemployment rate grew from 13.2% in 2008 to 20.2% in 2013. At the same period average wages remained almost the same (in 2008 average net wage was 5178 kunas or 681 EUR, while in 2013 average net wage was 5178 kunas or 726 EUR; which means that annual growth was only 1.3%). At the same period consumer prices grew continuously (see Figure 5 where all chain indices year after year are above 100). Taking all of this into account, relatively, customers are getting poorer and poorer.

When the Maslow pyramid is discussed in retail management and retail marketing literature, then it is always in relation with mark-up possibilities. Counting on a high number of customers trying to satisfy their basic needs i.e. economy of scales, and due to high number of retailers serving similar purposed i.e. increased competition, retailers will apply lower mark-ups in product categories serving to customers' basic needs. While to product categories which are promoted to serve higher level of customers' needs (according to Maslow's pyramid, see Figure 6), the focus will not be on price competition but on qualitative values, and therefore, in those product categories retailers will usually apply higher retail mark-up rates. The higher retail mark-up rates combined with a large number of consumers that are

actually purchasing products, the higher profitability of retailer is generated as a consequence.

In the time of recession when customers are focused on low level of needs and where are a decreasing number of customers that can afford satisfaction of higher levels of needs, not only profitability of retailers is directly affected, but also their revenues are brought to a question. And a large number of retailers are brought into a vicious cycle of lowering business activities. There are several relationships in retailing system which can contribute to the depth of the crisis at a certain marketplace and understanding of them can be of a great importance when retailers are searching for a way to survive.

In Figure 7 the simplified model is given showing that layoffs and wage decrease at a certain market will, inevitably, lead to the pressure on retail prices and retailer will have to make corrections of mark-up rates. As mark-up rates in retail serve to cover operating costs, retailer will be forced to think how to lower this costs which in most cases means that he will decrease wages to his workers and/or layoff some of his workers and in that way in local market crisis is increasing and a contribution to pressure on retail prices is made.

Moreover, lower mark-up prices and reduced number of financially stable customers brings us to situation of lower revenues and lower profitability. Low profitability is a new pressure to cut operating costs and retailers is brought to a new situation of deciding on wages and/or layoffs. On the other hand, when retailer is facing a low profitability, he is forced to rationalize his supply chain, and, unfortunately, rationalization of supply chain often means a mere pressure on suppliers to cut input prices. This after some time, on suppliers' side, will lead to new layoffs and/or wage decrease. And the consequence will be a new pressure on retail prices.

But, the tragedy of the vicious spiral effect is that low profitability means a low possibility to invest into activities that can bring structural changes. Therefore, a deep recession is deepening more and more if some external impact isn't made at some point. That external impact can be: a government intervention into labour market; innovation impulse to change procedures, services, products; availability of financial support from financial institutions or investor for structural changes etc. But in this paper external impacts are not in our focus.

There are various actions taken by retailers in order to survive in the market and in order to keep profitability above zero values. Some of them are searching and applying new channels to communicate with customers so they are applying multichannel principles throughout implementation of channels with low transaction costs, others are applying innovative techniques in supply chains and intensively are searching for logistics effectiveness in strategic cooperation with suppliers, and some of them are intensively promoting private labels in order to gain overall control on all aspects of merchandize. And some research results (for instance: Petljak et al., 2011) show that in time of recession there is a respective growth of private labels in the average consumer basket. This brings us back to the

fact that customers are searching for products with the price as low as possible.

This fact is empirically supported by Anic (2010). His research results on consumers in Croatia show that the high proportion of price-sensitive consumers are those with lower incomes and lower levels of education. Moreover, when concerned for their own financial situation, consumers become even more price-sensitive. When they make decision in which store (of the foreign retailer) to purchase in, they tend to prefer the price-oriented retailers, while this is not the case when they are deciding on locally owned retailers. In addition, price-sensitive consumers show a great loyalty to a couple of preferred retailers, but they are spending less money per one purchase in stores of their preferred retailer.

We have to point to other facts regarding contemporary customers that influence and change retail strategies all over the world. Ridderstrale and Nordstorm (2007) claim that contemporary customer is “a mother of all dictators!” because he/she wants to satisfy his/her individual need with personalized products or services and he/she is completely aware that it is possible in terms of a real time. This is the consequence of a growing competition in all markets all over the world. Customers have a huge possibility to instantly get substitutes of products, services, retail outlets, and retail channels and so on. Moreover, he/she is not afraid to intensively use information technology in all phases of purchasing. Prior purchasing, he/she is collecting information, comparing prices, then he/she is deciding how to purchase within the traditional or online store or even combining those two. At the end, after purchasing, he/she share information on products, services, retail outlets, retail experiences throughout social media, but also he/she is searching for additional support regarding the usage of purchased products or services. So, actually retailers are facing very well informed, involved and disloyal customers and they have to predict it in their retailing strategies.

Another thing to take into consideration in a future development in retail is an increased awareness of consumers of sustainability concepts in retailing. As some studies shows, in Croatia consumers react positively on corporate social innovations applied in retail outlets and, consequently, retailers in Croatia apply a wide spectrum of initiatives in the field of corporate social responsibility (see Renko et al., 2010 and Sutic et al., 2012). For instance, they make various donations to local communities, they provide products to socially endangered population during the Christmas and Easter season, they introduce environment-friendly shopping bags, they organize events in order to promote healthier lifestyle, etc.

Changes in the Retail Structure as an Outcome of Economic Crisis

Due to all previously described changes on micro level, on macro level we can observe that the retail structure is changed as well. In Figure 8 the structure of retail market is shown. It is obvious that winners in the time of recession are hard discounters because their market share doubled from 2008 till 2013. In the same period, the share of hypermarkets grew as well but only for 7% in given five years.

In such environment, small shops and supermarkets are two retail formats which in the crisis suffered the most. In given period small shops lost 9% of market share, while supermarkets lost 6% of market share. All in all, we can conclude that consumers are turning to shopping formats which offer a larger variety of products combined with lower mark-ups and, thus, lower prices.

Moreover, Knego and Knezevic (2012) explain problems that small retailers are facing in Croatia due to economic crisis, those are: (1) significantly lower labour productivity measured by gross turnover per employee compared to medium-sized and large retailers, (2) lower inventory turnover ratio, which increase the cost of financing inventories and increase operational costs, (3) unfavourable conditions due to inability of obtaining the benefits of economies of scale, (4) low gross margin and low mark-ups which shrinks their possibility of investment in technological modernization of their retail outlets, and (5) as a result of all previously mentioned problems, they have to offer higher prices comparing to larger retailers. All those problems are deepening in the situation of market concentration and increased internationalization of retail market so we can expect even harder situation for small retailers in the near future. So, in the future they will have to make significant changes in their overall business strategies trying to differentiate not by prices but by quality of service, personalization of assortment to narrow niches, by redesigning layout of shops, choosing more favourable locations, finding strategic partners at supply side and so on. For instance, Knego et al. (2014) give some suggestions regarding location and layout that can be applied by small retailers in order to survive at the market.

We have to point out that, according to data in Figure 8, there was a significant growth in "other formats" of retail. This category includes: traditional marketplaces of local community, door to door retail, vending machines, TV sales and e-commerce. Unfortunately, at the moment we do not have a detailed insight into the structure of the other category and in future research this category should be scrutinize more in order to see which format Croatian consumers are converting to: are they turning back to their local marketplaces or do they prefer e-commerce as a new retail channel?

In addition to mentioned changes, there is one new format that is situated between traditional retailing or traditional food supply chains and final users of food within a socially endangered population, and that is a social supermarket. The first social supermarket in Croatia was opened in Split in 2009.

Social supermarkets have the main purpose to serve those groups of customers which have low income or which are unemployed. Holweg and Lienbacher (2011) define social supermarkets as food oriented retailers selling food to a restricted group of people living in or at risk of poverty. Maric (2013) claims that social supermarkets are social innovation which comprises social responsibility of associated individuals with an aim to show social solidarity towards socially vulnerable persons or families towards collection and distribution of goods that are collected from individual donors, large retail chains and/or other companies. Therefore, we can say that in the very essence, they are non-profit organizations which base their activity on volunteerism and charity and if they generate any profits they use them to

promote charitable activities. At the moment, there are more than 15 social supermarkets operating in Croatia and on monthly level there are new initiatives taking place in this field of operation.

Holweg and Lienbacher (2010) explain that social supermarkets can be positioned as a linkage within reverse logistic systems trying to reduce food waste and to redistribute food surpluses which occurs in the traditional food supply chains.

Maric and Knezevic (2014) explain that social supermarkets, as a retail format, are of similar size as conventional supermarkets or as convenience stores and that they are serving a local community in narrow geographic area, offering food as a key part of merchandize. But their assortment is much narrow and shallow comparing to mentioned retail formats because it heavily depends on collected donations within a certain period. If they are not organized in order to distribute goods for free, then their pricing policy is comparable to hard discounters, because they offer significantly lower prices comparing to other retail stores (what is an analogy to the policy of EDLP – Every Day Low Prices). Therefore, at some markets there is observed collision between hard discounters and social supermarkets because, to some point, they are targeting similar group of customers or users. So in the near future this is the topic to pay attention to in further retail research.

CONCLUSIONS

The ongoing economic crisis had a detrimental impact on household consumption in Croatia. In period 2008-2013 average net wages remained almost at the same level. While, at the same period consumer prices grew continuously.

The household consumption in absolute values was reduced and its structure had changed. At the moment, almost a half of the household budget in Croatia is serving to satisfy the most basic needs.

This brings many challenges in front of retailers operating in the market because their profitability is directly affected and often they are caught in a vicious cycle of lowering business activities as it was explained in the paper.

On the other hand, consumers are becoming more and more price sensitive and conscious regarding purchasing, which can lead retailer to implementation of policies oriented towards cutting prices and cutting operational costs, and that means speeding up in the vicious circle.

In the paper we explained that retail formats which are oriented towards a larger product variety at lower prices are gaining the market share in situation of economic crisis. Available data shows that both, the hypermarkets and hard discounters grew in market share in Croatia since 2008, while supermarkets and small shops suffered the most.

Another thing that we brought attention to, are social innovations that in the future could have an impact on retail revenues if the crisis continues, and those are social supermarkets as a form of food distribution to socially endangered citizens.

Nonetheless, this paper is based on secondary data gives a conceptual insight into retail market changes in times of crisis. Thus, it can be used as a basis for future primary research of changes in consumer behaviour and trends in retailing in similar markets. Especially, one topic have to be more investigated and explained, and it is a growth in “other retailing formats” because it would be very useful to explore is e-commerce as a new retail channel growing in times of crisis in Croatia and elsewhere.

ACKNOWLEDGEMENT

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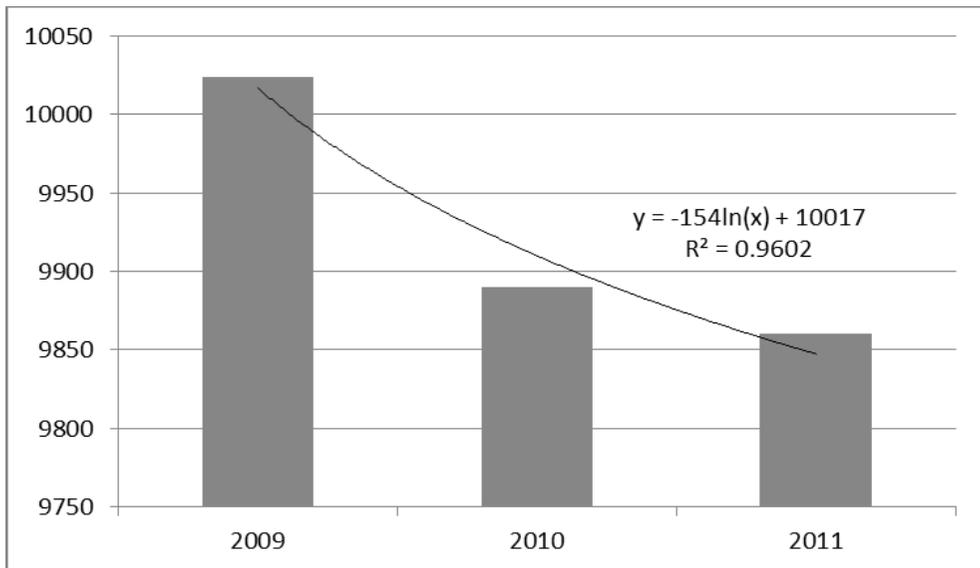
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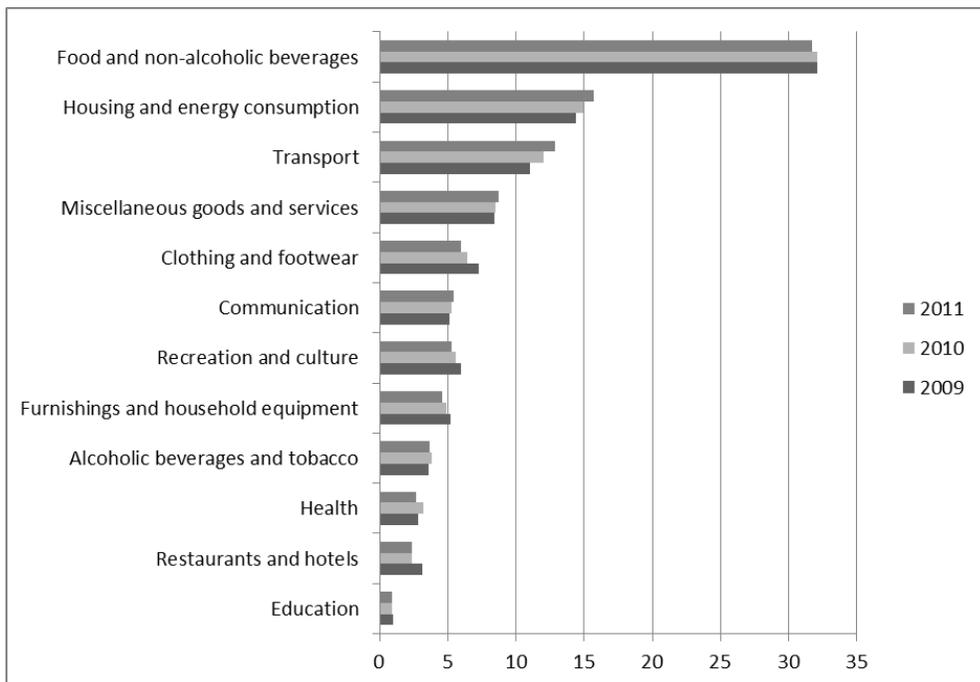
APPENDIX

Figure 1: Average annual consumption expenditures per one household in Croatia (in EUR)



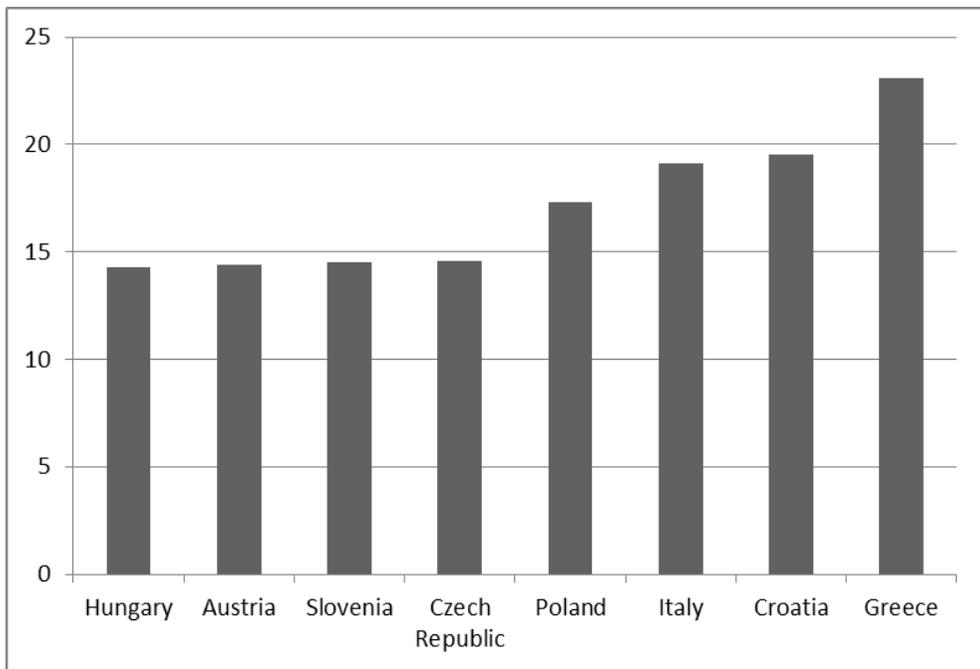
Source: CBS (2012a)

Figure 2: The structure of the household expenditures in Croatia



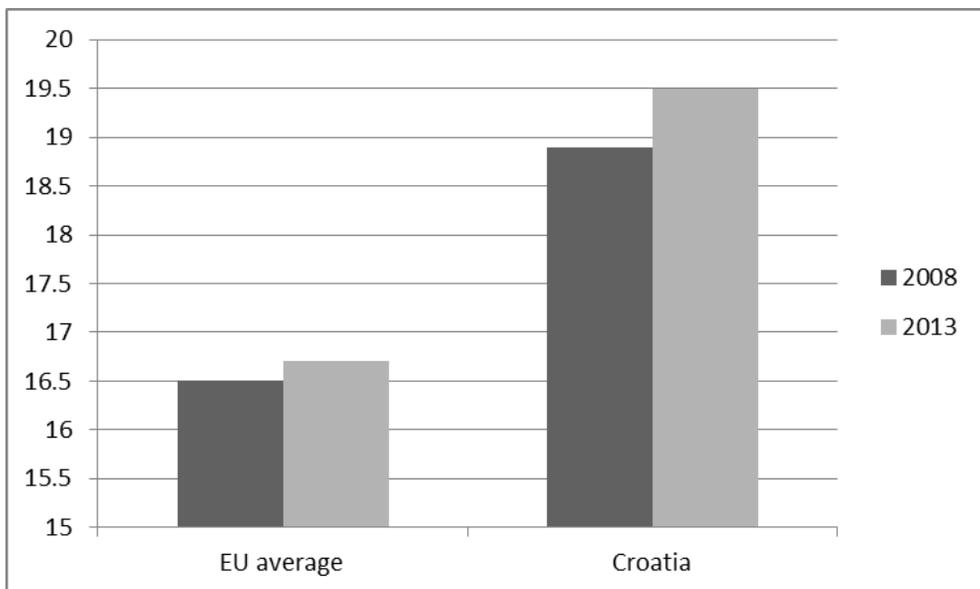
Source: CBS (2012a)

Figure 3: Percentage of population at the risk of poverty in 2013



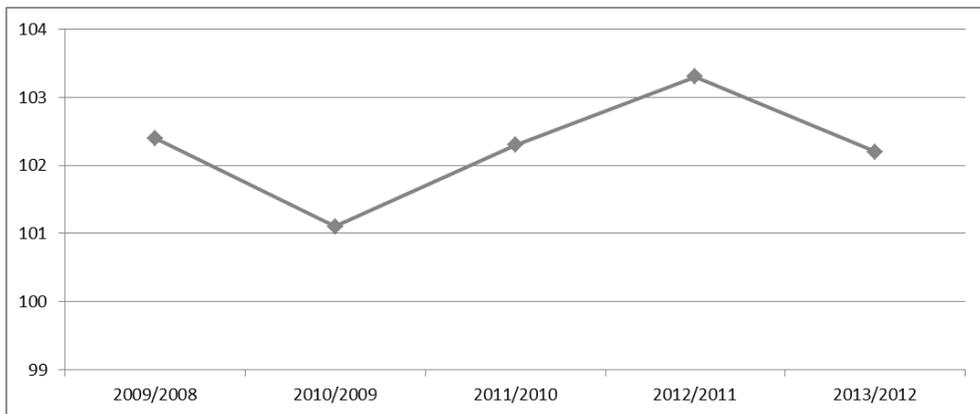
Source: CBS (2014a)

Figure 4: The risk of poverty rate 2008 and 2013 (%)



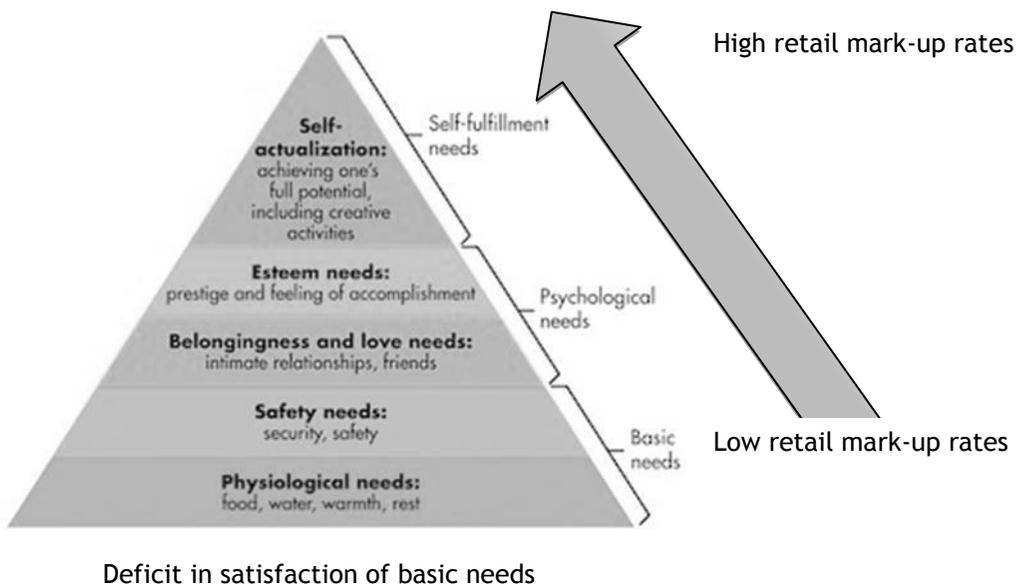
Source: CBS (2010), CBS (2014a)

Figure 5: Chain indices of consumer prices in Croatia



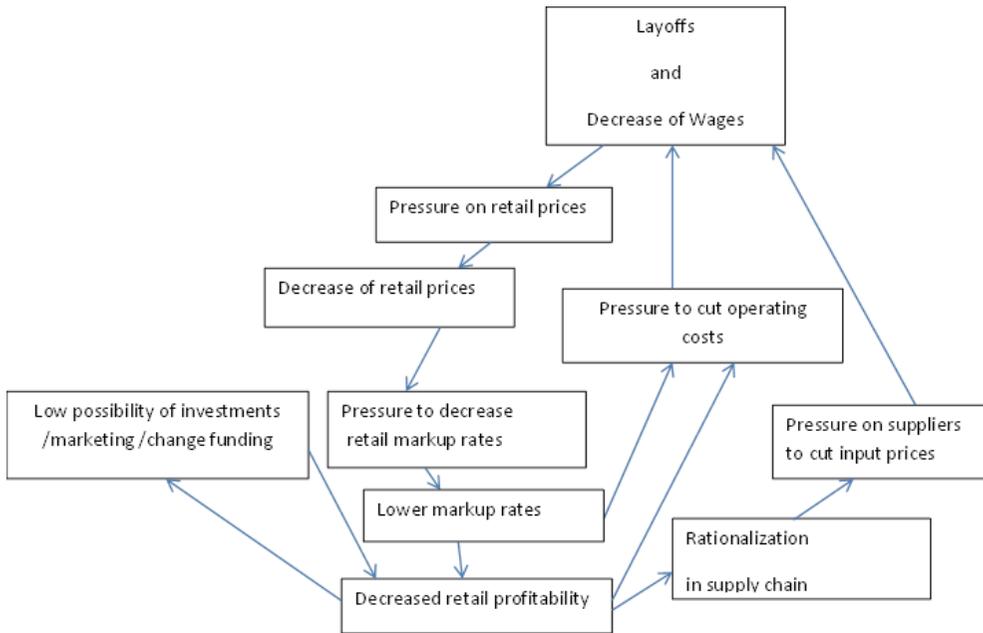
Source CBS (2012b, 2014b)

Figure 6: Maslow's pyramid of needs



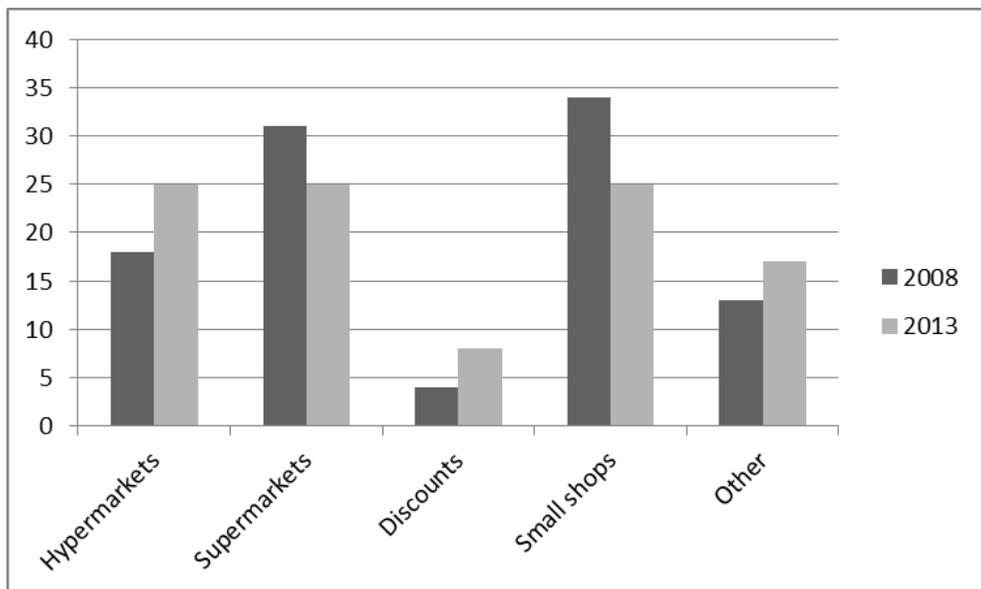
Source: Adapted according to Maslow (1943)

Figure 7: Impact of Recession on Retail – Vicious Circle(s) of Retail in Time of Economic Crisis



Source: Own work

Figure 8: Market share of retail formats in Croatia (in %)



Source: Own compilation on the basis of CCE (2010) and CCE (2014)

A REVIEW OF FACTORS THAT INFLUENCED THE INTENTION OF ACCEPTANCE AND USE OF SOCIAL COMMERCE AMONG SMALL MEDIUM-SIZED ENTERPRISES IN MALAYSIA

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Abstract

Small and Medium Enterprises (SMEs) are the backbone of the economic development in Malaysia. The contribution of SMEs to the Gross Domestic Product (GDP) keeps increasing each year. Therefore, in order to remain \ and competitive in the market, SMEs have to keep up with the rapid pace of information and communications technology (ICT). The recent emergence of social media has led to many changes in the methods of marketing and buying and selling among consumers and even vendors. These, coupled with the integration of e-commerce and social media, which is known as social commerce (s-commerce), can assist SMEs to grow further. This study will explore the factors that influence the acceptance and use of s-commerce among SMEs in Malaysia based on the Unified Theory of Acceptance and Use of Technology (UTAUT).

Key Words

Social commerce; e-commerce; ICT; adoption of technology, SMEs; UTAUT.

INTRODUCTION

Information and communications technology (ICT) is viewed as a long-term investment with the potential to improve the productivity and profitability of a business. According to Wen and King (2008), ICT is an important technology that has been used by organizations, including businesses, to shape the competition within organizations over the last decade.

In a competitive global environment, small and medium enterprises (SMEs) need to launch a strategy in order to survive in commercial industries by taking into account various opportunities from the angle of technology (Papastathopoulos, Anastassopoulos, & Beneki, 2010). One of the main objectives of SMEs is to take advantage of development opportunities in the international market, and that market can be penetrated by means of e-commerce (Koreans & Lin, 2013). The government is also beginning to recognize the importance of SMEs, which are strongly linked to ICT, as their innovativeness and creativity will be evaluated through ICT (Ritchie & Brindley, 2005).

Therefore, it is essential for organizations to continue with their efforts to develop and implement technology by keeping abreast with current technological advancements (Yang, Lee, & Lee, 2007). Companies that have successfully used ICT effectively are said to have a positive strategic advantage that can have an impact on their competitiveness (Raravi, Bagodi, & Mench, 2013).

LITERATURE REVIEW

The Use of ICT

ICT is a platform for competition in the business world of today. Extraordinary advances in ICT have had a profound impact on the economic activities and work methods of populations throughout the world (Ramlan & Ahmed, 2010; K. S. Tan, Chong, Lin, & Eze, 2009). To succeed in the 21st century, all countries are encouraged to develop business ideas based on the needs of the economy and the local community because it is a factor for the birth of ideas for new business opportunities (Barba-sánchez, Martínez-ruiz, & Jiménez-zarco, 2007).

Nowadays, ICT has become a strategic asset that can help improve business processes and alter the functions of the market. Companies that have successfully used ICT effectively are said to have a positive strategic advantage that can have an impact on their competitiveness (Raravi et al., 2013).

However, technical expertise is seen as an obstacle to the use of ICT as it has to be constantly upgraded for a variety of ICT uses including social media and social commerce (s-commerce). The lack of awareness and skills concerning ICT are internal barriers to the use of ICT among SMEs (Bazini, Ph, & Qarri, 2011).

Therefore, to ensure that SMEs are not left behind when it comes to ICT, the latest and appropriate training should be given so that the available ICT tools can be used accordingly. In their study, Shah Alam, Fauzi Mohd Jani, Asiah Omar, Hossain, and Ahsan (2012) suggested that more training in relation to technology and innovation be given to SME executives in Malaysia in order to encourage the use of ICT in business.

There are SMEs that believe that ICT cannot possibly improve their business performance (Middleton & Byus, 2011). Nevertheless, Bressler and Oklahoma (2011) observed that most small business owners are constantly trying to find new ways to increase profits and to remain competitive in the market. Meanwhile, ICT is being emphasised as it is said to provide substantial support in business processes (Hayes, 2012).

The Use of E-Commerce

The use of the internet is one branch in ICT that has greatly helped to expand businesses at the global level (Bazini, Ph, & Qarri, 2011). According to Hashim (2009), ICT, especially e-commerce, is considered to be vital to SMEs, and the government is playing an active role in its development in Malaysia.

According to Jehangir, Dominic, Naseebullah and Khan (2011), the rapidly increasing use of ICT will increase the use of e-commerce in Malaysia but it poses a big challenge to organizations. E-commerce is recognized as a corporate weapon, which, if used properly, will lead to long-term success in terms of profitability and competitive advantage in the market.

However, many SMEs are reluctant to use e-commerce as they are concerned with issues in relation to security and privacy in the use of the internet (Chitura, Mupemhi, Bolongkikit, & Pagar, 2008). It has also been observed that SMEs lack the expertise and staff to handle e-commerce, and this is one of the factors that is obstructing the use of s-commerce among SMEs.

SOCIAL COMMERCE

The growth in the use of the internet nowadays has introduced big changes to the business world because extensive opportunities are available over social media to expand businesses (Erickson, Komaromi, & Unsal, 2010). Social media has greatly altered the attitude of consumers, from one that is passive to one that is active with regard to information, and sometimes it acts as a disseminator of information on social websites (Hajli, 2014). Social media is the new medium of communication between vendors and consumers nowadays, where it has the capacity to increase the competitiveness of a business (Bell & Shirzad, 2013). It was initially developed for users to socialize with their friends, family members or even to increase the number of new contacts, and ultimately it has become the most important marketing platform worldwide. Following the advent of social

media, which has become a worldwide, a change is taking place in the use of e-commerce among sellers and even buyers with the emergence of a new mechanism known as social commerce (s-commerce), which is a subset of e-commerce.

S-commerce is a combination of e-commerce and social media (Kim & Park, 2013). It involves interactions between customers and vendors, customers and customers, or even between vendors and vendors, through social media. Smith, Zhao and Alexander (2013) defined s-commerce as e-commerce activities that use social media platforms such as Facebook and Twitter to promote online purchases.

Online purchases are rapidly becoming the choice of social media users because it is easier for them to obtain information about the product directly from the vendor or even from other users. This proves that the power of word-of-mouth among buyers or even sellers can affect product sales (Baghdadi, 2013).

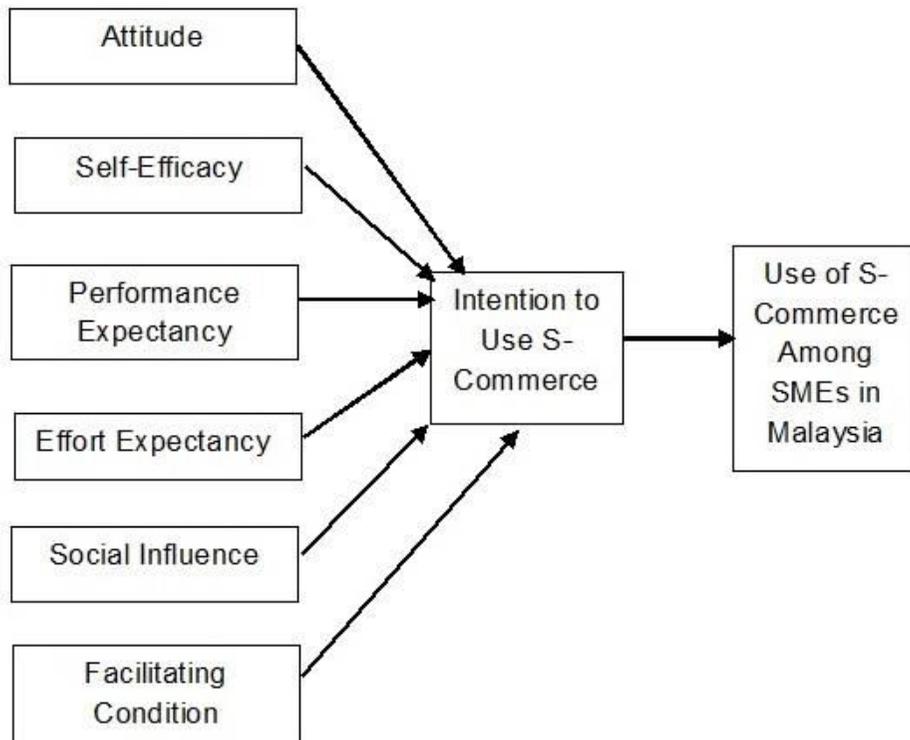
In s-commerce, consumers are not only engaged in buying and selling activities, but they can also be involved in sharing their experience in using a product (K. F. Hashim, Affendi, Yusof & Rashid, 2012). Therefore, in this context, the role played by customers and also the quality of a product are important because s-commerce can help buyers to make informed decisions prior to a purchase based on information provided by other buyers (Zhou, Zhang, & Zimmermann, 2013). This was supported by Gatautis and Medziausiene (2014) who stated that the s-commerce era is an era where the community determines which products and services should be offered in the future.

Although the revolution that is taking place in s-commerce is regarded as lucrative from a marketing aspect, nevertheless consumers are wary of it as issues of trust and confidence are involved when there is an exchange of money and goods without a face-to-face meeting between the seller and the buyer (Erickson et al., 2010). However, the use of s-commerce among Asian countries, especially in Japan and China, is driven by economic concerns and is not due to the fun of socializing, as is the case in western countries (Wang & Zhang, 2012).

RESEARCH FRAMEWORK

The framework in this study used the variables found in the unified theory of acceptance and use of technology (UTAUT) as the basis for the development of this research model. This framework was developed to study the factors that influenced the intention of acceptance and use of social commerce among small medium-sized enterprises in Malaysia.

Figure 1: Research Framework



Source: The Unified Theory Of Acceptance And Use Of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003)

Attitude

The influence of attitude on the intention to implement a particular habit has been widely discussed in behavioural models. Ajzen (2005) defined attitude as an individual's assessment of the impact of implementing a particular behaviour or habit that will result in either a favourable or an unfavourable belief. A favourable assessment will enhance the probability that a behaviour will be performed while an unfavourable assessment will hinder that intention (Ram Al Jaffri, Kamil, & Zainol, 2009).

Based on studies conducted by Fulantelli and Allegra (2003), it was found that SMEs have a very weak positive attitude when it comes to the use of any ICT-related technology in their business because they still have misgivings about the security issues associated with ICT.

It is important to grasp the significance of a new technology in business before it is approved for use. Thus, the attitude and perception of SME managers toward ICT need to be enhanced so as to diversify activities and

to cooperate with various parties through the use of broadband Internet (Bazini et al., 2011).

Yet, in order to generate something dynamic, entrepreneurs should have a positive and innovative attitude towards economic and business development, including the introduction and implementation of new ideas as well as product innovation, process innovation, market innovation and organizational innovation to enable the generation of new products to meet the needs of customers today (Xavier, Vieira, & Rodrigues, 2009).

In studies in relation to s-commerce, most researchers touch on attitude from the perspective of the users, including looking at how their previous experience in using technology has influenced the link between attitude and intention to purchase through s-commerce (S.-B. Kim, Sun, & Kim, 2013). In addition, the experience of buying from other users has also been made a basis for users to carry out transactions using s-commerce (K. F. Hashim et al., 2012). The attitude of users towards s-commerce is also often seen from the angle of the user's trust in the seller via the two-way interaction that takes place with the seller (Unsal, Komaromi, & Erickson, 2011).

Self-Efficacy

Self-efficacy is an individual's belief in his or her own abilities in relation to a matter (Bandura, 1978). The basic principle in the theory of self-efficacy is that the achievements and motivations of individuals are determined by their self-confidence, where individuals are more inclined to engage in activities where they have a high level of self-efficacy compared to other activities. In that context, the aim of this study was to examine the effect of the self-efficacy of SME entrepreneurs on their intention to use s-commerce.

In looking at the relationship between self-efficacy and ICT, Hsu dan Chiu (2004), discovered that self-efficacy is positively linked to the general intent to use the internet, and this is consistent with previous studies which stated that self-efficacy is an important determinant of behavioural intent. Meanwhile, Hocevar et al. (2014) found that the concept of self-efficacy with regard to social media showed that it is a strong predictor of the perception of internet users on the reliability of online information and how online information can be used by them for the confirmation of credibility. The results of the study showed that there is a positive relationship between self-efficacy over social media and the reliability of online information.

In addition, the influence of self-efficacy on the intention of entrepreneurs to use something new in their business was also investigated. In fact, Mohd, Kirana, Kamaruddin, Zainuddin, and Ghazali (2014) made the assumption that individuals who are brave (as well as honest), disciplined and have a high level of self-efficacy have the potential to be innovative and to take risks.

For most models involving the behavioural intent of entrepreneurs, attitude and self-efficacy are the two main components that are often used because these are capable of influencing the behavioural intent concerned (Fini, Grimaldi, Marzocchi, & Sobrero, 2009 ; Mohd et al., 2014 ; Huang & Liaw, 2005).

Performance Expectancy

Performance expectancy is defined as the extent to which an individual believes that a system (new technology) that is in use is capable of improving his/her business performance (Venkatesh et al., 2003). The aim of this study was to see the extent of the confidence and belief of SMEs that s-commerce can enhance business performance and whether this can influence the intention of SMEs to use s-commerce.

A study conducted by Salim (2012) in relation to the factors that influence the use of social media in Egypt found that performance expectancy has a great impact on behavioural intent and, at the same time, that there is a significant relationship between the two. A similar finding was obtained in a study on the tendency to use internet marketing among communities in Malaysia and South Korea, where the communities in both countries view performance expectancy as being able to influence the intention of the community to use internet marketing (Khong et al., 2013).

However, Ratten (2013) found that performance expectancy does not affect the behavioural intent of a person, where that person has concluded that consumers will not know the importance of something new until they actually use it.

Generally, however, performance expectancy is a strong predictor of usage and behavioural intent (Venkatesh, Thong, & Xin, 2012; Jeng & Tzeng, 2012; Moghavvemi & Akma Mohd Salleh, 2014). Hence, most of the studies that used performance expectation as a variable found that performance expectancy has a significant impact, influence and relationship with behavioural intent.

Effort Expectancy

Effort expectancy was earlier defined as the level of ease in using a system (Venkatesh et al., 2003) and was later taken to mean the level of ease in using a technology (Venkatesh, Thong, & Xin, 2012a). Nevertheless, its original meaning remains, namely the extent to which the degree of ease in using a technology or system can influence the behavioural intent of consumers. This was proven in a study by Escobar-Rodríguez and Carvajal-Trujillo (2014), which stated that effort expectancy influenced the intention of consumers in Spain to use websites to purchase cheap flight tickets.

In the development of the s-commerce phenomenon, it has also been found that more and more companies are beginning to assess the possibilities to be gained using s-commerce. Thus, effort expectancy has been found to have a moderate effect on the behavioural intent of a person towards the acceptance of s-commerce (Gatautis & Medziausiene, 2014).

Interestingly, effort expectancy has had a greater impact on the more developed countries. This shows that it is easier for people in developed countries to assess the ease of use of a particular technology (Im, Hong, & Kang, 2011). But in terms of group purchases, the relationship between effort expectancy and behavioural intent is not important because the

websites for group purchases are not much different when it comes to design and usage (Q. Wang, Yang, & Liu, 2012). Nevertheless, for Hamdan, Din, Zuraida and Manaf (2012), effort expectancy will continue to have a significant impact on behavioural intent.

Social Influence

Social influence is defined as the extent to which an individual feels that he/she needs to use a system based on the responses of other individuals (Venkatesh et al., 2003), and it is a direct determinant of behavioural intent. In the context of this study, social influence is the degree to which SME entrepreneurs consider the customers' belief that they should use s-commerce and benefit from its use.

On the other hand, social influence is not significant for the intention to use internet marketing among Malaysians and South Koreans. In other words, the influence of other people will not affect the intention of consumers to use internet marketing (Khong et al., 2013).

This was supported by the clinical results of a study conducted among physicians in Taiwan, which showed that social influence has no impact on the intention to use a support system. The conclusion that was drawn was that social influence will never be able to influence those who specialize in decision making (Jeng & Tzeng, 2012).

However, according to the founder of the Unified Theory of Acceptance and Use of Technology, the effect of social influence is most noticeable in the early stages of an individual's experience with technology, and it is more important in the context of compulsory use, more so among older women (Venkatesh et al., 2003).

Facilitating Conditions

Facilitating conditions is the extent to which an individual believes that the existing organization and technical infrastructures can support the use of a system (Venkatesh et al., 2003). Facilitating conditions are seen as the level where entrepreneurs are confident that their business has the infrastructure and the tools that can be used for s-commerce.

It is said that facilitating conditions will not affect behavioural intent but will have an impact on the use of technology (Venkatesh et al., 2003). The results of a descriptive analysis of facilitating conditions showed that users did not need any help in using Facebook but agreed that they needed the proper equipment to use Facebook, and this was found to be significantly related to the use of social media in Egypt (Salim, 2012).

Meanwhile, a study conducted by San Martín and Herrero (2012) among tourists in rural Spain found that performance expectancy and effort expectancy have an impact on the intention to make purchases online but have no significant impact on social influence and facilitating conditions. This has also been proven in studies in relation to the factors that influence s-commerce in Lithuania, which also found that facilitating conditions do not

have much of an impact on the use of s-commerce (Gatautis & Medziausiene, 2014).

However, facilitating conditions still have a significant impact on the online purchase of cheap flight tickets. This means that consumers still need support resources to facilitate their access to the relevant websites (Escobar-Rodríguez & Carvajal-Trujillo, 2014).

CONCLUSION

The factors that influence the adoption and use of s-commerce, as discussed in this study, are supported by the Unified Theory of Acceptance and Use of Technology (UTAUT). The factors of attitude and self-efficacy are two variables that have been removed from this theory, but most of the studies related to the intention of SME entrepreneurs to accept a new technology consider attitude and self-efficacy as factors that need to be investigated (Izquierdo & Buelens, 2011; Shinnar, Hsu, & Powell, 2014; S Moghavvemi & Salleh, 2013).

Other than the factors that have been discussed, researchers can use other factors from the Technology Acceptance Model (TAM) and the Diffusion of Innovation (DOI) in future to support the factors that contribute to the acceptance and use of s-commerce among SMEs. In the future, researchers can also study the impact of the use of s-commerce on the business performance and brand performance of SMEs. Thus, it is hoped that the results of discussions in relation to the factors that influence the acceptance and use of s-commerce among SMEs in Malaysia can convince SMEs to consider the use of s-commerce in their business.

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IMPACT OF SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS ON WILLINGNESS TO PAY FOR FOOD SAFETY ATTRIBUTES

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Abstract

The aim of this paper is to determine whether the dairy customers in Kosovo are willing to pay a higher price for certified products on food safety and which is the impact of socio-demographic factors in WTP. For this purpose, a survey of 303 customers of Viva Fresh Store supermarket network was conducted - the customers were interviewed at the time of purchase, inside the supermarket at the dairy products sector, namely white cheese, milk and yogurt. The survey took place from April 1 to May 5, 2015, in three cities representing three groups of cities by number of inhabitants: Pristine, Gjilani and Vitia. Logit Binary model was applied to analyze the results and test the hypothesis, which showed that the level of education, the level of incomes and the families with preschool children have a significant impact ($p < 0.05$) in WTP. Other tested factors such as: the age, gender, residence (city-village), the number of family members, pensioners and the number of children in schools (6-17 years) in the families didn't show a significant impact ($p > 0.05$). The results are important for the managers of milk processing industry as well as for state institutions.

Key Words

Willingness to pay; food safety; socio-demographic factors; logistic regression; Kosovo.

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INTRODUCTION

Food safety is each day posing a concern for customers, because of the problems and incidents coming out, such as the cases of avian influenza, "crazy" cows, or melamine in baby milk in China, etc. Consequently, consumers also express their willingness to pay extra prices in exchange for additional security of the products they consume. Numerous researchers have paid and continue to pay a special attention on the willingness to pay a premium price for the additional food safety attributes (Grunert, 2005; Fox et al., 1995; Loureiro & Umberger, 2003; Piggott & Marsh, 2004; Baker & Crosbie, 1993; Xu & Wu, 2010; Lončarić et al., 2011).

Though there are few studies of this kind in Kosovo, there is a considerable degree of concern in terms of food safety (Canavari et al., 2014). According to this study, 2/3 of the interviewed customers claim to be quite concerned about food safety.

On the other hand, imported products continue to dominate Kosovo agro-food market, a situation which is still present 15 years after the liberation. Within the overall structure of imports, food products have the central place with over 24.2% (ASK, Jun 2015) while Kosovo has an extremely high deficit in the trade balance. According to the Statistics Agency of Kosovo, the deficit in 2015 was over €21.2 billion in total with degree coverage of 12.8%.

In this unfavorable trade balance, in terms of agro-food market, the dairy processing industry is considered as a sector that witnessed the fastest growth (Haas et al., 2015). However, even in this sector the level of food safety remains at a low level, at least in terms of food safety standards certification. A very small number of companies in this sector have their products certified with food safety standards such as ISO 22000 or food safety system HACCP.

Although a strong patriotism among Kosovo consumers is evident, which show confidence that local dairy milk is safer than the one imported (Haas et al., 2015), in relation to products coming from European Union (in regard to food safety), consumers show more trust compared to local products (Canavari et al. 2014). Products from EU countries represent the largest part of the total imports value with a trend that ranges between 40-45% in the last six years (ASK, June 2015).

As stated above, it can be said that food safety represents an important factor for the market in Kosovo that should be studied through specific dimensions. This is important also for political decision-makers in order to focus domestic policies towards the development of agro-food sector in Kosovo, namely the dairy industry but also the entire value chain, because, in order to increase consumer confidence to local products and therefore improvement trade balance, the investment in food safety should represent a priority alternative.

Therefore, the results of this study will be of particular interest to state institutions that deal with the development of specific policies in rising awareness of consumers about the problems related to insecure foods, and for the standards which should be applied in this sector. Also, the results of

the study are also of interest to dairy processors to recognize best customer behavior for their product services, specifically for food safety aspect.

PROBLEM STATEMENT

As stressed above, it is necessary to understand consumers' willingness to focus on domestic products as a reflection toward the increase of food safety, since this dimension of the market in Kosovo so far is little studied. In many papers (Verbeke, 2005; Shi & Price, 1998; Baker G. A., 1999; Boccaletti & Nardella, 2000; Loureiro & Hine, 2002; Huang et al., 2000) there is a conclusion that costumers express WTP when it comes to improving attributes related to food safety. Incomes, level of education, gender, age, residence, etc., are also important factors that determine costumers' behavior and their WTP.

In this regard, the research problem can be formulated as: a need to better understand WTP additional price for food safety attributes for dairy products and the impact of socio-economic and demographic factors (SEDF) to this willingness.

OBJECTIVE AND HYPOTHESES

So, the objective of this paper is to measure the impact of above mentioned factors on WTP of dairy consumer in Kosovo, which serves as the basis for the research hypotheses such as:

1. The income level of consumers has a positive report with the willingness to pay more for food safety.
2. The level of education has a positive report with the willingness to pay more for food safety.
3. Demographic factors (age, gender, number and the structure of the family (the presence of children and pensioners), type of residence (urban-rural)) affect the willingness to pay more for product safety.

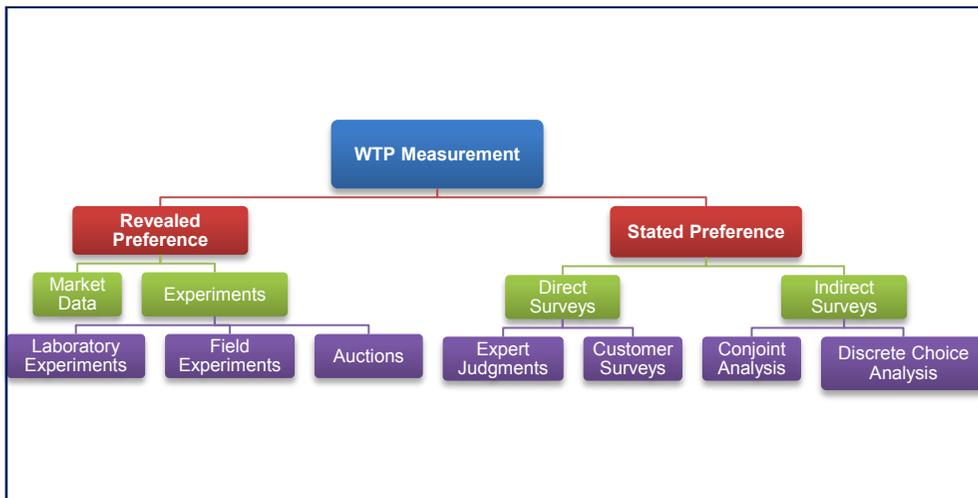
PROCEDURES AND METHODS

Methods

For studying or assessing consumers' behavior, WTP respectively, there are generally two methodological approaches: Revealed Preference and Stated Preference. The first approach focuses the observation on the consumer's behavior in the market to measure its ex-post WTP, while the second approach is based on hypothetical data to measure ex-ante WTP for attributes that are not present in the market yet (Berges & Casellas, 2009). Out of two basic methods derive other sub-divisions depending on the

source of data and the way of collection. Sub-divisions are shown schematically in Figure 1.

Figure 1. Classification framework of the methods to measure WTP



Source: From "A Review of Methods for Measuring Willingness-To-Pay", by Ch. Breidert, M. Hahsler, Th. Reutterer, 2006, *Innovative Marketing*, 2(4), 8-32.

In case of our research, SEDF involvement in current conditions in Kosovo is possible by carrying out a direct observation through customer surveys. So, quantitative methods in this research will be used since it belongs to stated preferences, which is the one of "face-to-face" questioning of the costumers during the shopping. In this way the data is taken directly from the decision-maker and thus the real preferences of the customers will be better understood (Loureiro & Umberger, 2003).

The model

Econometric model for testing hypotheses is the one of regression where the "willingness to pay for additional safety - WTP" will be a dependent variable, while the others involved in hypotheses 1, 2 and 3 will be independent variables (explanatory) . Since the dependent variable is dichotomous in this case, then dependent dummy model variable will be binary logit model (Osmani, 2010).

$$P_i = \frac{1}{1+e^{-a-b_iX_i}} \quad (1)$$

As shown above, this model is not linear in parameters therefore the Ordinary Last Squares (OLS) cannot be directly used. It can be transformed into linear and behave as such in the following form:

$$L_i = \ln \frac{P_i}{1-P_i} = a + b_iX_i + e_i \quad (2)$$

To simplify the understanding of the model and interpretation, in our case, if the customer reacts positively in paying extra price we define it as a success and will mark 1, while the opposite is non-success and marked with 0. The quotient between the probability for success and non-success of an independent variable model (when the independent variable is categorical) is the expression in equation (2): $\frac{P_i}{1-P_i}$ which is odds. From here on we have the equation of the logistic regression:

$$\log(\text{odds}) = a + b_i X_i + e_i \quad (3)$$

As shown above the coefficient a has no significance in interpretation, it represents log value (odds) when $X=0$. While b_i is the coefficient which shows the existing relationship between independent variable and log (odds) for the occurrence of the event that we have interests of, namely on the changes that occurs with odds for the event that interests us to happen when variable X changes for one unit.

When:

$b_i > 0$ – the relationship is positive;

$b_i < 0$ – the relationship is negative;

$b_i = 0$ – there is no relationship between dependent and independent variables.

In fact b_i represents the change between two categories of variable X (in cases when it is categorical variable) which can also be presented as: $b_i = \log(\text{odds ratio})$. When we do an anti-logarithm and odds ratio is written as OR we win the expression: $OR = e^{b_i}$.

Data

Data are obtained from the survey. A questionnaire that provides answers to the research hypotheses and the model used for their testing is prepared and tested in advance. The survey was conducted within the premises of Viva Fresh Store supermarket network, at the dairy products sector, namely white cheese, milk and yogurt. This is because: (i) the customer was interviewed immediately after the shopping; (ii) during the survey the customer had also present other products which helps in providing more accurate answer about his decision by taking into account the alternatives; (iii) consumers were in a position to express more realistic in terms of the questionings about their decisions, since they have the product in front of them and there is an opportunity to analyze whether they check the content in the label or not.

In the observation conducted between 1 April and 15 May 2015, were involved a total number of 303 consumers, above 18 years old. Customers' selection was random. After conducting an interview, the next one was

conducted with the first customer who bought dairy products and agreed to be interviewed.

Based on the data from quantity sold dairy, in Viva Fresh Store markets, and based on socio-economic and demographic data of the Republic of Kosovo census (ASK, 2013a; ASK, 2013b; ASK, 2013c), and with the aim the sample to be as representative as possible, the studding centers were selected in three different localities with different size and a diverse population.

In capital Pristine, as a representative of the group of cities with over 100 thousand inhabitants, 153 surveys were conducted, in one of the biggest markets located in the vicinity of the city (called Veternik) and at another point inside the city, in the road B, which according to Viva Fresh Store officials has the biggest sale after the one in Veternik. The other selected locality was Gjilani, from the group of towns with 50-100 thousand inhabitants. 110 surveys were carried out in two different markets there. 40 interviews were conducted in a Viva Fresh Store market, in the small town of Vitia (which has less than 50 thousand inhabitants).

Table 1: Aspects of operationalization the data from the surveys with dairy customers

| Hypothesis | Concept | Variable | Measuring options-implementation | Symbols | |
|------------|------------------------------|---------------------------------------|---|--|-----------------------------------|
| | Dependent variable | | | | |
| | Willingness to pay | <i>GPP</i> | Dummy variable 1= willingness to pay 0=lack of willingness | GPP | |
| | Independent variables | | | | |
| | 1` | Level of family incomes | <i>Incomes</i> | Ordinal/interval variable, width 100€ Class 1: - up to 100; C2 -100-200;...; 9 - 900+ | Incomes |
| | 2 | Level of education of the interviewed | <i>Education</i> | Dummy variable: high: middle: elementary. A1) 1-high; 0 -other A2) 1 - middle; 0 other | HighEdu MidleEdu |
| | | <i>The age of the interviewed</i> | | Report variable <i>Number of years</i> | Age |
| | | <i>Gender of the interviewed</i> | | Dummy variable 1=Male, 0=Female | Gender |
| | 3 | Demographic factors | <i>Under 5 years old children presence in the family</i> | Dummy variable 1=there are under 6 years old kids; 0=there is not | NoSchKids |
| | | | <i>Presence of kids between 6-18 years</i> | Dummy variable 1=there are kids over 5 years old; 0=there is not | SchKids |
| | | | <i>Presence of pensioners</i> | Dummy variable 1=there are pensioners; 0=there are no pensioners | PensionNr |
| | Respondent's residence | <i>Residence</i> | Dummy variable 1 - city; 2 - village | Residence | |

Source: Own work

RESULTS

Summary of socio-demographic characteristics of the sample

Table 2. shows a discrepancy with census data, but there is a logical explanation if taken into account the fact that in the sample are included only customers of a network of supermarkets, although hypermarkets and groceries are most preferred shopping centers for dairy products' customers (Haas et al., 2015). Thus compared to 2011 census data, it shows that 65% of the customers in the sample are from the city while 62% of the total population lives in rural areas (ASK, 2013b). We also keep in mind the fact that the interviewing places were in urban areas.

The gender balance in the sample is 65% to 35% in favor of male, while the report in the population is 50:50. As much as we can take for granted the fact that the gender of buyers is dominated by male, also referring to the interviewed is proved that in most cases, female buyers generally rejected being interviewed, while in cases when a couple bought products, it was the men willing to be interviewed.

Table 2: Socio-demographic characteristics of the sample – Descriptive statistics

| Socio-demographic characteristics | Fi | Percentage | Average | Stand. Dev. | Mode | Median |
|-----------------------------------|------------|---------------------|-------------------|-------------|------|------------------|
| Residence: | n=302 | 100 | | | | |
| City | 197 | 65.2 (38) | | | | |
| Village | 105 | 34.8 (62) | | | | |
| Gender | n=303 | 100 | | | | |
| Male | 197 | 65 (50.34) | | | | |
| Female | 106 | 35 (49.66) | | | | |
| Nr. of members in a family | n=303 | 100 | 4.89 (5.9) | 1.834 | 4 | 5 |
| Age | n=303 | 100 | 38.27 | 11.995 | 30 | 37 (26.3) |
| Structure of the family: | n=303 | 100 | | | | |
| Nr. of pensioners: | 0 | 215 | 71 | | | |
| | 1 | 55 | 18.2 | | | |
| | 2 | 33 | 10.9 | | | |
| | | | | | | |
| Nr. of children: | 0 | 90 | 29.7 | | | |
| | 1 | 64 | 21.1 | | | |
| | 2 | 95 | 31.4 | | | |
| | 3 | 35 | 11.6 | | | |
| | 4 | 14 | 4.6 | | | |
| | 5-8 | 5 | 1.6 | | | |
| | | | | | | |
| Incomes | n=300 | | | | 900+ | 400-500 |
| Education level: | n=302 | 100 | | | High | High |
| Without education | 3 | 1.0 (6.22) | | | | |
| Elementary | 37 | 12.3 (50.27) | | | | |
| Secondary | 110 | 36.4 (34.17) | | | | |
| High | 152 | 50.3 (9.34) | | | | |

*- data in brackets were taken from 2011 census

Source: Own work

Even in regard to the level of education, there are differences with 2011 census education which shows that buyers generally have high level of education, with over 50%, a data equal with the research from Haas et al.

(2015). Whereas the average age in the case of this study was 38.27 which is also corresponding to Haas et al (2015) in which is 38.4 with a standard deviation of 12.3. As regard to data from 2011 census, the median age is 26.3, while in our research was 37. The family structure is dominated by families without pensioners 71%, and most families have at least one child¹ while 29.7% are families have no child.

On the family incomes the question was submitted through ordinal alternatives divided into 9 classes starting with the first one limited to €200, followed by €100 intervals for the next groups until the last alternative which was €900 and over. Distribution in this case is asymmetrical which is also influenced by the income differences between cities where the interviews were conducted. Consequently, the most representative average in this case is in the median interval alternatives of 400-500 €.

Consumption of dairy product

Dairy products settle an important place in the daily meal of Kosovo families. Milk is a traditional product in Kosovo and elsewhere in the Balkans in terms of consumption and production (USAID, 2008). It is estimated that the consumption of milk per capita amounts to about 160 liters²/annually (Nushi & Selimi, 2009). But based on various studies there are available different data on consumption, depending on the surveys' specifics. On table 3 are presented the field results of a survey compared with two other researches (Haas et al., 2015; Miftari et al., 2011).

Table 3: Monthly average consumption of dairy products and comparisons with other researches

| Product | N | Mean | Std. Deviation | (Miftari et al., 2011) | | (Haas et al., 2015) | |
|--------------------------|-----|-------|----------------|------------------------|----------|---------------------|-----------|
| | | | | Mean | Std. Dev | Mean | Std. Dev. |
| Milk (l/month) | 294 | 31,81 | 21,792 | 26.30 | 14.53 | 7.07(l/week) | 4.923 |
| Cheese (kg/month) | 300 | 3,13 | 1,966 | 4.67 | 2.53 | 3.31(kg/week) | 3.122 |
| Yogurt (l/month) | 287 | 25,14 | 18,668 | 10.51 | 7.53 | 3.73(kg/week) | 3.058 |

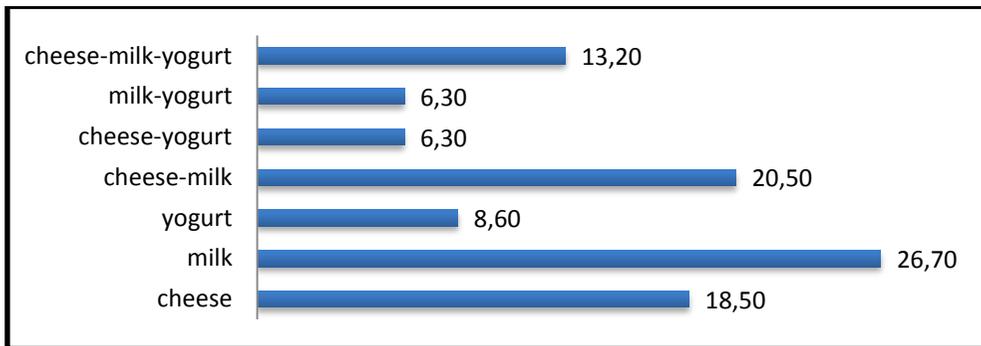
Source: Field survey and Miftari et al., 2011 & Haas et al., 2015

From the dairy products bought by our respondents we got the insight presented in Graphic 1 which shows that out of 303 buyers most of them bought only milk (26.7%), followed by those who have bought milk and cheese also (20.5%) followed by those who bought only cheese (18.5%).

Graph 1: Purchases by type of dairy products executed by respondents

¹ Children are considered those between 0-17 years old

² This amount reflects the equivalence on the amount of milk for all milk products consumed in a year. For instance, a liter of pasteurized milk is equivalent to one liter of raw milk, while a kilo of yellow cheese requires an average of seven liters of raw milk.



Source: Field survey

Logit binary model (logistic regression) and the impact of SEDF in WTP

Logit model helps in explaining the impact of SEDF in the WTP expression. Dependent variables in the model (WTP) separate respondents in two categories: those who are willing to pay and those who are not (Latvala, 2010). Table 4 shows that most of interviewed buyers (74.8%) are willing to pay extra price for the products certified with food safety standards. Let stress that before asking this question which was the last in the questionnaire (on the willingness to pay a higher price compared to the current price of the product), a sufficient explanation was provided to them on food safety concept, in cases when it's apparent that for the customer it was not clear the food safety concept and it was a confusion with the quality concept.

Table 4: Willingness to pay – descriptive statistics

| | | Frequency | Percentage | Valid percentage |
|-------------------------------------|-------|-----------|------------|------------------|
| Are you WTP for certified products? | No | 76 | 25,1 | 25,2 |
| | Yes | 226 | 74,6 | 74,8 |
| | Total | 302 | 99,7 | 100,0 |

Source: Field survey

After inserting in the model statistically important factors only, SPSS in assessing an accurate forecast of observed and predicted values (Table 5) shows that the model has managed to have a successful forecast at 75.2% degree, which indicates a good model.

Table 5: Observed and predicted values produced by logit binary model

| Observed values | Predicted values | | |
|-------------------------|------------------|---------|--------------------|
| | No GPP | Yes GPP | Correct percentage |
| No GPP | 0 | 74 | 0,0 |
| Yes GPP | 0 | 224 | 100,0 |
| Total percentage | | | 75,2 |

Source: Field survey

Results of logistic model, presented in Table 6 indicate which of SEDF have a significant statistical impact in explaining variations in the willingness of buyers to pay extra cost for certification of dairy products with safety standards. Variables that have been tested but have not been statistically significant are not included in the table.

Table 6: Logit binary model (n=303)

| Variables | b | Standard error | Sig. | Odds ratio (e ^b) |
|-----------------------------|-------|----------------|------|------------------------------|
| HighEdu (X ₁) | ,621 | ,312 | ,046 | 1,860 |
| NoSchKids (X ₂) | ,424 | ,199 | ,033 | 1,529 |
| Incomes (X ₃) | ,128 | ,059 | ,030 | 1,137 |
| Constant | -,110 | ,349 | ,752 | ,896 |

Source: Field survey –SPSS processing

From this model the probability can be calculated with the following equation:

$$P = \frac{e^Z}{1+e^Z} \quad (4)$$

$$\text{when } Z = -0.11 + 0.621X_1 + 0.424X_2 + 0.128X_3 \quad (5)$$

Consequently we have also testing hypotheses:

Hypothesis 1: *The level of consumer’s income has positive correlation with the willingness to pay more for food safety.* In our research the family income is a variable interval divided into 9 classes with a range of € 100, starting from the first grade of 0 - 100 € to continue to the last 900 Euros or more. As shown in Table 6, the incomes have positive impact on WTP (p = 0.03 < 0.05) since coefficient b has a positive value (0.128). By moving from a category to another category with higher incomes, odds ratio increases to 1,137. It also shows that the higher the incomes are the probability that consumers express willingness to pay extra price for dairy products safety certainly increases. Consequently we find that hypothesis 1 is correct.

Hypothesis 2: *The level of education shows positive relationship with the willingness to pay more for food safety.* In our research, we divided education in three categories, elementary (up to grade 8-9 years), secondary (12 years) and high (postgraduate). Elementary level was the basis for comparing two other levels. The results showed a significant positive relationship between the category of high education compared to the group of elementary education (p = 0.046 < 0.05 level). But when comparing the secondary education category with the elementary one it shows to be no statistically significant (p <0.05). Even here, we can say that the level of education is significant in terms of WTP, so we find hypothesis 2 also correct.

Hypothesis 3: *Demographic factors (age, gender, number and members and the family structure (the presence of children and pensioners), type of residence (rural-urban) affect the willingness to pay more for product's safety.* Most of the variables tested and which represented counted demographic factors in this hypothesis did not result statistically significant ($p < 0.05$). The only variable statistically significant ($p = 0.033 < 0.05$ level) showed to be the group of buyers who have pre-school children ($b = 0.424$). Therefore we can conclude that demographic factors such as age, gender, number of members in the family, the presence of pensioners, residence, and presence of children of school age have no statistically significant impact in respondents WTP.

Based on hypothesis test results we understand that they confirm the existing knowledge in this area. In regard to the income, Berges & Casellas, (2009) have suggested a positive relationship which comes into play especially in cases of customers informed with issues of food safety and with higher incomes. Positive impact of the customers with higher incomes expressing WTP on food safety has evidenced also Huang, Kan, & Fu (2000). As regards the other factors demographic such as age, gender, number of family members and the structure of the families, the result also confirms the findings of Latvala (2010) and are in line with other studies (Huang, Kan, & Fu, 2000).

CONCLUSIONS

The study shows that most of respondents involved in the survey expressed willingness to pay premium price if dairy products (milk, cheese and yogurt) are certified with food safety standards such is ISO 22000 or certified for applying HACCP system. Most of these respondents are young, mainly coming from cities, and with higher education and incomes.

The study found that precisely the last two factors (income and higher education), as expected, resulted to have a positive impact on consumers' WTP. This willingness is evident also among the consumers with pre-school children, which can be concluded that it comes as a result of concern about the vulnerability of young children from food. Therefore, based on the findings from logistic regression model we can conclude clearly that this category of customers who buy in supermarkets (notably in Viva Fresh Store) is ready to respond positively in favor of products that are certified for food safety.

However, the study also found that demographic factors have no significant impact in increasing the probability that could be positively express in regard to GPP. Age, gender, number of family members, the presence or not of pensioners in the family or the differences between respondents from towns or villages, tested with logistic regression model, showed no significance in explaining WTP variations.

The findings shed light on the research problem and create implications for the processing industry and state institutions.

As regards the producers of dairy products, they should start applying food safety standards certification in line with HACCP or ISO 22000. Within the marketing activities it's required to prioritize the food safety issue and launch awareness campaigns for consumers, which will show that they do respect the food safety standards. The results will also help them create targeted groups for specific campaigns.

The implications for state institutions, suggest that respective ministries must find ways to support producers for certification of food safety standards, through grants or by stimulating them through other fiscal facilities. Also, in coordination with producers the institutions should organize media campaigns but also other forms of information through focus groups, such as students, or employees from various organizations and institutions, either public or private. These activities should focus on food safety aspects as well as the knowledge of standards of food safety and quality. These recommendations should be addressed by the Ministry of Agriculture, Forestry and Rural Development, through the relevant departments and Food and Veterinary Agency as well as the Ministry of Trade and Industry.

The research results produce implications for further research. So, we consider that other factors that could have an impact on WTP should be tested, including consumer knowledge on food safety aspects, the level of information about food safety problems, their confidence to the manufacturers and institutions responsible for food safety control, namely confidence in the agencies that deal with food safety certification.

Like any other research of this kind, this has its own limitations. We consider that an extension of the research in terms of involvement of customer from smaller markets or open markets (known as green markets in which farmers sell they products) would be with interest in order to fulfill the limitations of this study.

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VALUE BASED MANAGEMENT WITH SOME PRACTICAL EXAMPLES IN SLOVENIAN INDUSTRIES

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Abstract

Constantly bigger efficiency in the capital markets requires a more efficient allocation of capital within firms. Therefore a new system of indicators, as for example Value Based Management (VBM) which better reflects opportunities and threats, is urgent and needed. Within the VBM framework the author especially focuses in this paper on the economic value added (EVA) and on the cash value added (CVA). In the theoretical part, besides making a literature review on this topic, and shortly presenting the research methodology basically using Capital Asset Pricing Model, he analyses and estimates advantages and disadvantages of both indicators, at first by comparing them with standardized financial indicators and then by comparing them between each other. In the empirical part, the two indicators are applied on some selected firms from various industries (automotive industry, chemical industry, pharmaceutical industry and mining industry). At the end of this paper, the author emphasizes and advocates the thesis that a simultaneous choice of both indicators, i.e. EVA and CVA, has an important effect on managerial resources, and on the selection of a strategy as well as on the question of how investors (owners) estimate an individual firm as their potential investment.

Key Words

Economic value added; market value added; cash value added; capital-asset-pricing model; coefficient beta; weighted average cost of capital.

INTRODUCTION

Performance measurement is often discussed but rarely defined. Performance measurement is the process of quantifying action, where measurement is the process of quantification and action leads to performance (Neely, Gregory & Platts, 1995). According to the marketing perspective, organizations achieve their goals, that is they perform, by satisfying their customers with greater efficiency and effectiveness than their competitors (Kotler, 1984). Effectiveness refers to the extent to which customer requirements are met, while efficiency is a measure of how economically the firm's resources are utilized when providing a given level of customer satisfaction. How about the satisfaction of the owners? How do effectiveness and efficiency of a firm's performance influence their satisfaction? They want to get either the dividend payouts as much as possible or they want to be rewarded for their capital invested in a firm with higher value of their shares. In this paper we are especially interested in a performance measurement dealing with the owners. In this context a simple question can be posed: what measures are the most appropriate to quantify the value creation?

Shareholder value creation has become the motto of the most blue-chip companies since the late 1990s. The most fundamental objective is to bring an improvement in the value addition to the shareholders investment. In a market-driven economy, there are a number of companies that create wealth whereas others certainly destroy it. As a result, corporate executives may seek to inquire about the fundamental factors that cause the difference between the best and the worst performing companies and ultimately derive the long-term sustainable shareholder value (Narang & Kaur, 2014). These two researchers have carried out an empirical analysis of firm-specific attributes on shareholder value creation of Indian companies. Their study has examined the firm-specific factors, among which the corporate decision makers can navigate their key choices and trade-offs to create shareholder value. The study analyzed that investors tend to reward those companies which have higher profitability, lower market risk, efficient resource management, high leverage, more liquidity, higher marketing expenditures and robust market capitalization. They also suggest that decision makers should strive to push their management teams to think creatively and aggressively about upcoming opportunities leading to the long term shareholder value creation (Narang & Kaur, 2014).

This paper reveals at the very beginning a short literature review on shareholders' value creation presenting some measures which are the most relevant for shareholders' value. Among them the focus is given to economic value added (EVA) and cash value added (CVA). There are more advocates

of these two indicators than opponents and critics, who defend market value added (MVA) as the most appropriate measure for owners' value, and some others, like Tobin's q. Firstly, the advantages of EVA and CVA are presented in comparison with some most commonly used financial ratios, further on we prefer CVA as a more indicative measure and it is also easier and less complicated to compute than EVA. It simply avoids so many adjustments needed to be made in accounting while computing EVA. It follows profitability and value creation better than EVA. These theses are tested and proven in the empirical part of this paper. Several companies have been chosen, each from different industry, for which EVA and CVA have been computed. At the end of the empirical part a short comparative analysis is made, including conclusive findings. The paper ends up also with some suggestions for further research in this particular field.

LITERATURE REVIEW

After having scrutinized the studies dealing with shareholders' value creation we have found out that most of them have focused on the comparison of traditional performance measures on one hand, like earnings, cash flow and productivity parameters, net present value, etc., and value-based measures on the other, like EVA, etc. There are quite a few of researchers who have dealt with such a comparison while identifying the most significant performance measure that best explains the shareholder value, like Lehn and Makhija (1996), Biddle et al. (1997), Chen and Dodd (1997), Fernandez (2001), Kramer and Pushner (1997), Malik (2004), Medeiros (2005), Misra and Kanwai (2004), Ramana (2004), Worthington and West (2004), Kyriazis and Anastassis (2007) and others. The existing literature has not yet developed the factors and determinants sufficiently that shall define the shareholder value creation. The value drivers to be identified emphasized associate shareholder value with specific financial or strategic attributes only. Thus, Kakani (2001) studied the relationship between ownership distribution and shareholder value creation in the stock markets. Some others, like Venkateshwarlu and Kumar (2004) empirically studied the relationship between non-market value performance indicators and market value. They examined accounting profitability, cash flow and growth, etc. Kaur and Narang (2010) examined the corporate attributes that can be associated with the companies' EVA disclosure choices. Some researchers, like Pandey (2006) empirically explored the significance of profitability and growth as drivers of shareholder value, measured by market-to-book value. Pandey's finding has shown that the economic profitability-growth interaction

variable has a positive coefficient. It indicates that growth associated with economic profitability influences shareholder value positively. Literature review on the subject has revealed the need for a further study to explore how the firm-specific attributes contribute to shareholder value.

According to Stern Stewart & Co's¹ EVA is a measure of economic profit and has the following advantages over traditional performance measures:

- EVA is the measure that correctly takes into account value creation or destruction in a company;
- EVA is a measure of the true financial performance of a company;
- there is evidence that increasing EVA is the key for increasing the company's value creation;
- EVA is the only measure that gives the right answer. All the others, including operating income, earnings growth, ROE and ROA may be erroneous;
- more EVA always is unambiguously better for shareholders;
- managing for higher EVA is, by definition, managing for a higher stock price;
- EVA is the performance measure most directly linked to the creation of shareholder wealth over time (www.eva.com).

Biddle, Bowen and Wallace (1997) conducted a study on some companies that used EVA and CVA as parameters for their executives' remuneration. They compared their progress with another set of companies without using these parameters. Among other things the companies that used EVA and CVA bought 112 % more shares on the market (in order to decrease WACC) than those which did not use these parameters.

Kleiman (1999) compared the performance of some ten companies that opted EVA and CVA with that of its most direct competitors that did not adopt these indicators. Among other things the companies that introduced EVA had on average a higher shareholder return, and sale of assets increases significantly after introduction of the EVA.

On the other hand there are also some critics who do not see any particular value added of these two indicators, especially EVA. Some authors, like Kyriazis and Anastassis (2007) investigated the relative explanatory power of the EVA model with respect to stock returns and firms' market value, compared to established accounting variables. Their tests revealed that net and operating income appear to be more value relevant than EVA. They say that EVA even though useful as a performance evaluation tool, need not necessarily be more correlated with shareholder's value than established accounting variables.

¹ Stern Value Management is a global management consulting firm and the world's leading advisor on value management, value strategy and value creation.

Other researchers, like Fernandez (2001) disagrees that EVA and CVA are really creating value for the shareholders. He argues for thesis, that a firm's value and the increase in the firm's value over a certain period are basically determined by the changes in expectations regarding the growth of the firm's cash flows and also by the changes in the firm's risk, which lead to changes in the discount rate. Further, he says, a company creates value for the shareholders when the shareholder return exceeds the equity's cost or the required return to equity, and vice versa a company destroys value when the opposite occurs. The items of the income statement and balance sheet are historic data. For him it is impossible for accounting-based measures to measure value creation. He advocates the equity market value instead. Therefore, it can come as no surprise that shareholder value creation has very little to do with the EVA, irrespective of whatever adjustments may be made to the accounting data used (Fernandez) (2002). He supports his statement with statistical results obtained through analysis of 582 American companies while having calculated the 10-year correlation between the increase in the MVA each year and each year's EVA and some other indicators. He has also found that the correlation between the shareholder return in 90.s and the increase in the CVA of the world's 100 most profitable companies was low (only 1,7 %).

Fernandez sees usefulness of EVA and CVA as management performance indicators only, for they take into account not only the earnings but also the cost of the resources used to generate those earnings. He is convinced that the problem with these parameters starts when it is wished to give these numbers a meaning they do not have: that of value creation.

METHODOLOGY

This research was based on a standard method, on Capital Asset Pricing Model (CAPM) as a partial statistical model.² CAPM is a model that describes the relationship between systematic risk and expected return for assets. CAPM is an important tool used to analyze the relationship between risk and rates of return. Originally CAPM is a static (single-period) model although it is generally treated as if it holds temporally (Merton, 1973). Fama (1970) has provided some justification for this assumption by showing that, if preferences and future investment opportunity sets are not state-dependent, then intertemporal portfolio maximization can be treated as if the investor

² One of the more important developments in modern capital market theory is the Sharpe-Lintner-Mossin mean-variance equilibrium model of exchange, commonly called the capital asset pricing model (Sharpe, 1964; Lintner, 1965; Mossin, 1966).

had a single-period utility function. Merton (1973) has shown in a number of examples that portfolio behavior for an intertemporal maximizer will be significantly different when he faces a changing investment opportunity set instead of a constant one. We can also refer to the definition of Brigham and Houston: »the relevant riskiness of an individual stock is its contribution to the riskiness of a well-diversified portfolio« (2004, 189).

In this research the stocks of four companies in four different industries are the subject of consideration. CAPM is used for the pricing of risky stocks, which generate expected returns for assets. These assets (stocks) are submitted to risk, and cost of capital has to be considered as well. The formula for calculating the risk of a stock given its risk is the following:

$$\bar{r}_a = r_f + \beta_a (\bar{r}_m - r_f),$$

where

r_f = risk free rate

β_a = beta of the stock

\bar{r}_m = expected market return

In the context of VBM, CAPM indicates that investors need to be compensated for their input by time value of money and risk. The first one is represented by the risk-free rate, rate in the formula above. It compensates the investors for putting money in any investment over a certain time period. The risk-free rate represents the yield on government bonds. The other half of the formula represents risk and computes the amount of compensation the investors/owners require for taking on additional risk. This is computed by means of beta, β , a risk measure. Thus, in the CAPM formula a coefficient beta is used. The tendency of a stock to move up and down with the market is reflected in its beta coefficient, β . Beta is a key element of the CAPM and compares the returns of the asset to the market in a given period of time, and to the market premium, i.e. for how much the return of the market is bigger than risk-free rate. Beta measures how risky an asset is in comparison to market risk. Beta is a function of the volatility of the asset and the market. It reflects the correlation between the two (Investopedia, 2016).

Beta is the most relevant measure of any stock's risk, for a stock's beta coefficient determines how the stock affects the riskiness of a diversified portfolio, or as Brigham and Houston (2004, 193) say, since a stock's beta measures its contribution to the riskiness of a portfolio, beta is the theoretically correct measure of the the stock's riskiness.³ CAPM model indicates the expected return of an individual stock equals the rate on a risk-free stock increased by a risk premium. If the expected return does not meet

³ For stocks, the market is usually represented as the S&P 500.

the required return of an investor/owner, the investment should not be undertaken.

The calculations of our both VBM indicators, EVA and CVA, are based on CAPM model.

VALUE BASED MANAGEMENT

Firms perform their activities in a business environment which requires them to implement such a system of indicators that illustrates value and profitability in a better way. Accounting systems, as we have known them so far, are inadequate and do not respond to a growing demand for efficient capital markets and the demand of owners. Constantly increasing efficiency in capital markets requires a more efficient allocation of capital within firms. Therefore, according to Dimc (2005) a new system of indicators, such as Value Based Management (VBM) - management on the basis of value, and management to increase (market) value, which reflects the opportunities and threats much better is urgent and necessary. VBM includes the following indicators: EVA, a term coined by the consultancy firm Stern Stewart, which has done much to develop and promote the concept (Brealey, Myers & Marcus, 2001), CVA, cash flow return on investment (CFROI) and those indicators that are relevant to shareholder value analysis (SVA). Firms may choose one of them to be key in determining their future scorecard.

Indicators currently used by firms to follow their profitability and value creation are not consistent with the mechanism of capital markets and with what market considers being key in determining value. Therefore, we must build on management that is based on value. For internal financial management firms should use VBM instead of an accounting system. Accounting is, of course, required for fiscal reasons and to control business in terms of legislation, but it does not contribute to improving the quality of management structures and all those involved in value creation. For the sake of understanding and managing business operations it is therefore necessary to rely on VBM within firms.

According to Weissenrieder (1998) a firm may be illustrated by two most important areas: the first is directed at the owners (capital market) and the other at the buyers (customers). The latter represents a business reality; these are activities that take place in a real business world. Firms have to manage these activities as effectively as possible to maximize value for shareholders. At the same time firms have to be able to complete these activities in such a way that they satisfy market expectations. This may only be achieved on the part of a firm's management by simulating the reality with

the mechanism of the capital market. By making a financial exemplification of a business reality they acquire the necessary management skills. This gives them a relevant feedback which they need to improve their business activities.

Weissenrieder (1998) says that the boundary between a business reality and the mechanisms of capital markets can be quite rapidly abused, similarly as it can be abused with financial statements. With this every opportunity to prepare for effective corporate management is lost. They become completely misinformed unless they perceive and comprehend a business reality on the basis of VBM. A firm must operate on a strategic feedback loop which means a constant evaluation of strategies in which doing management carry out the evaluation by using information from the strategies in order to make necessary adjustments in their firms later. There are a lot of cases in firms where the scope of a business reality does not work as it should, but there are very rare cases where it functions efficiently. Financial simulation of a business reality, of course, has to take into account a discounted cash flow.

According to Morin and Jarell (2000) value derives from three broad areas of decision-making: strategic, financial and corporate. Strategic determinants include production and marketing strategies and portfolio planning. Financial determinants include the optimization of capital structure and risk management. Corporate determinants include governance, mainly rewarding executive managers and business evaluation.

VBM is a relatively simple framework for setting objectives of those business decisions that add an economic value to a firm in both short and long term. Several approaches to quantifying a corporate value exist and they all have roots in a discounted cash flow model, since this is also the method and manner used by investors and capital markets to actually value their firms and securities. The value of every firm is a function of expected future cash flows correspondingly discounted with relation to risk. This is nothing new, as the discounting method has been used for decades. However, VBM puts this discounting to good use and as an approach extends it to business operations as a whole, thus contributing to strategic decisions about the value and according to Morin and Jarrell (2000) it establishes an increase in these values as a basis for determining a corporate responsibility. According to these authors, the main factors that determine or influence a corporate value are: range and ability of a firm to generate a return that is greater than its cost of capital, growth reflecting both the volume of invested capital and its positive trend of expansion and cost of capital which among other things also reflects a risk of a firm. These factors and their interactions have a tremendous impact on a successful

business strategy, management remuneration and evaluation of business operations. Management is thus helped to detect hidden leadership opportunities for further value creation.

A corporate value which is measured by a free cash flow, discounted at a time and subject to risks, has become popular and widespread as an excellent measure of value creation. Traditional accounting-based criteria such as earnings per share (EPS) and return on equity (ROE) are more focused on past performance than on future cash flows and therefore may not reflect value factors pursued by investors. While these two criteria are in no dependence with the actual value creation, according to Morin and Jarrell (2000) VBM on the other hand provides management with such a link between their actions and strategies that are in the best interest of shareholders.

Economic value added

In order to assess the value addition capabilities of companies Stern Stewart & Company has created two concepts: Economic Value Added (EVA) and Market Value Added (MVA). EVA is a historical figure based on the efficiency with which it used the resources at its disposal in a particular year, its MVA is the market assessment of its ability to create wealth in the future (Stewart, 2000). Quite a few of researchers argued Tobin's Q Ratio to be the most appropriate measure of value creation. The last indicator is calculated as the market value of a firm's assets divided by the replacement value of the firm's assets (Tobin, 1969).

EVA has gained wide acceptance among investors as a measure that links managerial decisions to shareholder value creation (Ramezani et. al, 2002). Stewart (2000) defined EVA to be an estimate of true economic profitability and the performance measure that is most directly linked to the creation of shareholder value over time value creation.

EVA is a model that relies on a firm's accounting. Its mechanism is therefore related to accounting:

$$\begin{array}{l} \text{Net sales revenue} \\ - \text{Operating Expenses (= costs)} \\ - \text{Taxes} \\ \hline \text{Operating profit} \\ - \text{Financial requirements (= costs of financial resources)} \\ \hline = \text{EVA} \end{array}$$

The capital base of EVA is formed by a balance sheet:

Balance sheet x WACC = Financial requirements (= costs of financial resources)

"Financial requirements" are calculated as defined assets (adjusted balance sheet), multiplied by the appropriate weighted average cost of capital (WACC).

Although the advantage of the EVA concept as an indicator, which is here following also Bržan case (2008) still asserting itself, lies in its long-term orientation while taking into account the overall capital cost, according to investors, quite some errors appear in accounting what Stewart (1991) points out. They need be corrected in order to simulate cash flow. Disadvantages exist primarily in the valuation of inventories, depreciation, revenue recognition, capitalization and depreciation of R & D activities, marketing, education, restructuring costs, acquisitions premiums, and so forth.

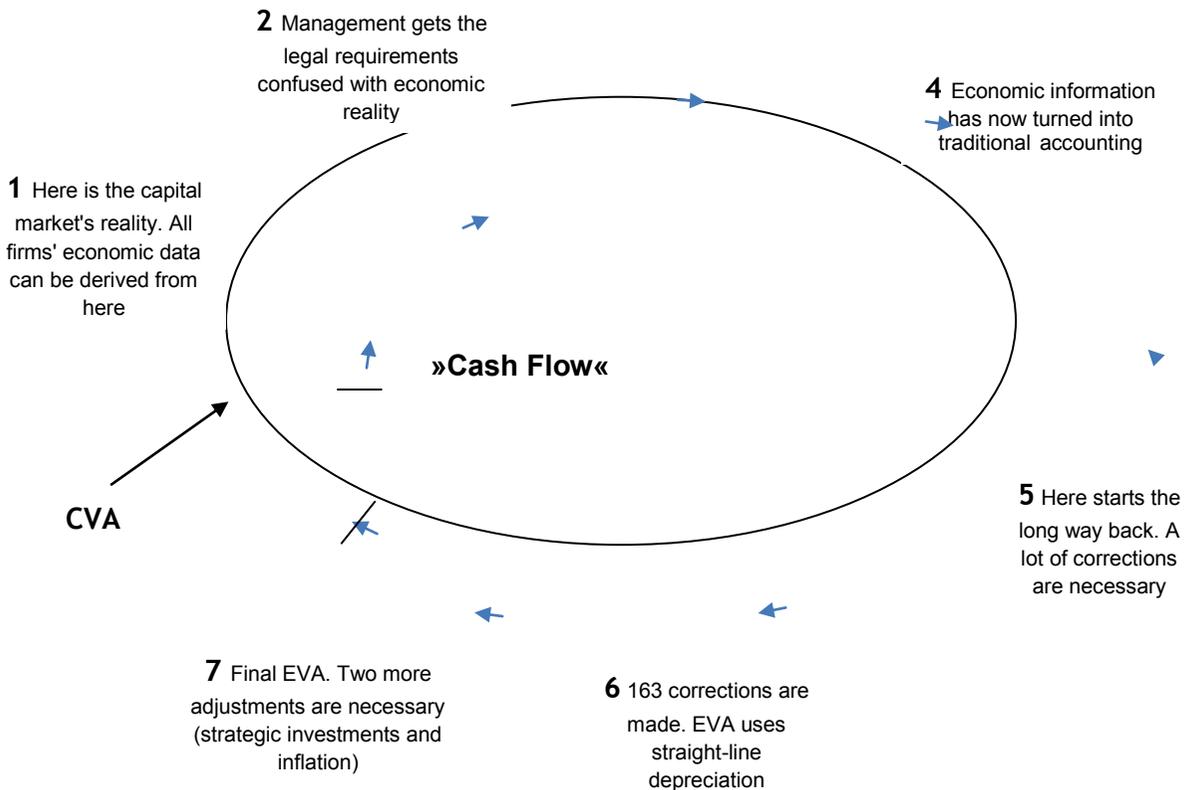
EVA should be a framework for VBM. Is it really? Some of the literature – Pettit (1998), Stern, Stuart and Chew (1995) – argues that EVA increases shareholders' wealth (Kim) (2006). This depends on how well this framework simulates the business reality from the point of view of shareholders, i.e. the reality of financial markets. If it is supposed to be simulated closely, a number of adjustments in accounting are required. And even if we succeed in performing as many adjustments as required by the EVA (original EVA author Bennett Stewart (1991) identified as many as 164 of them) - in practice, of course, this is a bit more difficult - EVA will still not be an ideal indicator. EVA measure is implemented in firms mainly for two reasons:

1. Its objective is to extend a firm's organizational knowledge and the understanding of its process's financial implications, which should improve the decision making process and thereby eventually increase a firm's value.
2. It can be easily understood.

According to Weissenrieder (1998, 8) the idea of EVA can be illustrated by the reference circle shown in Figure 1.

1. Point 1 shows the capital market's reality: investments, cash flow, economic lifetime and cost of capital. In this point, we should measure value and profitability. Here we use the discounted cash flow (DCF). All data about a firm derive from here.
2. In point 2 a firm invests and cash flows are shown on transaction accounts. Managing a firm has legal requirements intertwined with the economic reality.

Figure 1. Reference circle flow flow



Source: Adapted to Fredrik Weissenrieder : Value Based Management: Economic Value Added or Cash Value Added? (1998, 8)

3. In point 3 a firm's bookkeeping is not adjusted for cash flow. Economic information is further burdened with regulatory requirements and recorded in the income statement and balance sheet.
4. In point 4, economic information is converted to traditional accounting information. Managers are no longer in a position to measure profitability or value.
5. In point 5 a long road back begins. At least 164 corrections / adjustments are needed, if cash flow is supposed to be restored on the circle.
6. In point 6, necessary corrections and adjustments are made. In the EVA calculation we use a straight-line depreciation.
7. Point 7 shows EVA and so-called "annuity depreciation". EVA, as we know it today, has remained at 164 corrections and adjustments. But at least two more adjustments are necessary. We will have a look at them later on.

The logic of the above illustration lies in the fact that at the beginning all firms have their operation data shown through the prism of money. These are then placed in a firm's economic framework outlined through an accounting prism. When an accounting process ends, when all past events are properly entered, a firm finds itself on the far right of the upper circle. The mission of the EVA indicator is that it then takes us back to the starting point 1 on the far left upper circle, because only in this point we are in the state according to financial terminology to simulate the business reality of a firm as seen by shareholders.

Cash value added

Weissenrieder (1998) defines CVA as a net present value model which classifies the calculation of net present value at a time and investments into two categories: strategic and non-strategic. Strategic investments are those whose goal is to create new value for shareholders such as firm's growth. Non-strategic investments are those that maintain the value created by strategic ones. A strategic investment, such as, for example, an investment in a new product development or an investment in the acquisition of a new market, is followed by several non-strategic. A strategic investment may be tangible or intangible; traditional view of whether an investment is expenditure or not is here irrelevant. Anyway, all that in a firm counts as cash expense which is associated with creating new values and can be defined as a strategic investment.

Strategic investments form a capital base in the CVA model, because the financial demands of shareholders (i.e. a reward for invested money) should come precisely from the entrepreneurial ventures, from strategic business decisions, but not, for example, from office furniture. This means that all other investments that are intended to preserve the original value of strategic investments have to be considered as "costs" such as, for example, buying new office equipment.

How is thus capital base in the CVA calculated? The operating cash flow demand (OCFD) is calculated for each strategic investment (the first factor out of four, which defines value). The sum of the required operating cash flow of every strategic investment in each business unit is the capital base of this business unit. OCFD is calculated as cash flow (the second factor out of four which defines the value). These are the same amounts in real values of every year. If it is discounted at the appropriate cost of capital (the fourth factor out of four which defines value), we will get net present value equal to zero for a strategic investment during its economic lifetime (the third factor out of four which defines the value). OCFD is a real annuity, adjusted to the

actual annual inflation (not average inflation). If strategic investments are supposed to create value, the operations cash flow (OCF), which is a cash flow before strategic investments, but after non-strategic investments, has to cover OCFD.

OCFD is in no way predictive of what would have to be a future OCF. It is merely a common benchmark for future cash flows. OCFD is "fixed" in current prices during the economic lifetime of an investment, since this is the only way we can illustrate financial logic. Our understanding of how this is related to cash flow of a business unit or an entire firm could be paraphrased by business logic. It is difficult and sometimes even impossible to understand business logic unless we have a constant benchmark at current prices (we will see this later). A strategic investment creates value if at the time period OCF is higher than OCFD which can according to Weissenrieder (1998) be presented as follows:

$$\begin{array}{l}
 + \text{ Net sales revenues} \\
 - \text{ Costs} \\
 \hline
 = \text{ Operating profit or loss (excess of income over expenditure)} \\
 + / - \text{ Changes in working capital} \\
 - \text{ non-strategic investments} \\
 \hline
 = \text{ Cash flow from operating activities} \\
 - \text{ Required cash flow from operating activities} \\
 \hline
 = \text{ Cash value added}
 \end{array}$$

CVA shares common origins with EVA and it represents value creation from the point of view of shareholders. It can be shown for different time periods. Ottosson and Weissenrieder (1996) express it as an index:

$$\frac{\text{Cash flow from operating activities}}{\text{Required cash flow from operating activities}} = \text{CVA index}$$

CVA is based solely on cash flow.

Advantages of EVA and CVA over other indicators of profitability

Conceptually, Lehn and Makhija (1996) are convinced that both EVA and CVA as measures (indicators) of value creation are better than accounting

gains, because they take into account the cost of capital and therefore also the risk of company's operations. Brigham and Houston (2004) say that EVA provides a good measure of the extent to which the firm has added to shareholder value. EVA and CVA are constructed in such a way that their maximization can be set as a goal. Traditional measures do not work like that. Therefore, for example, maximizing accounting gain or accounting rate of return does not lead to the desired outcome. Later on we try to briefly highlight the benefits of EVA and CVA as compared to conventional performance criteria (indicators).

Return on equity is a very general and widely used performance indicator. Different firms calculate this indicator using different formulas and also name it differently, for example, return on investment (ROI), return on invested capital (ROIC), return on capital employed (ROCE), return on net assets (RONA), return on assets (ROA), etc. The main disadvantage of all these rates of return lies in the fact that maximizing the rate of return does not mean maximizing return for shareholders.

Firm's operations should not be based on or guided by the objective of maximizing the rate of return. As a relative indicator, which takes no account of risk, ROI cannot guide operations correctly. Consequently, the ROI-based capital can be invested or allocated incorrectly. In particular, ROI neglects (ignores) the exact requirement that the rate of return should be at least as high as the cost of capital. Secondly, the ROI indicator does not admit that shareholders' wealth is not maximized when the rate of return is maximized. Shareholders want the firm to maximize the absolute return over the cost of capital and do not wish it to maximize the percents. Firms should not ignore projects that bring more than is the cost of capital simply because their return may be lower than the current return of a firm. Cost of capital is a much bigger hindrance than the current firm's ROR. Hočevár (2002) sees the advantages of EVA criteria over the ROI indicator also in comparative judgment and planning.

The difference between EVA and ROI is actually the same as the difference between NPV (net present value) and IRR (internal rate of return). IRR represents a good approach to evaluating investment opportunities and investors should always take into account such an opportunity discount factor which conveys best use of resources with the same risk, but as Tajnikar (2001) points out they should not give priority to one investment project over another with regard to IRR.

Mäkeläinen (1998) deems it to good to know that in corporate control EVA and CVA (as well as NPV) go hand in hand, just as ROI and IRR. The first three show the effects on shareholders' wealth, while the other two show the rate of return. There is no reason to abandon ROI and IRR. They are in fact

appropriate and illustrative indicators which tell us about rate of return. IRR can always be used in conjunction with NPV in investment calculations while ROI can always be used with EVA and CVA in evaluating business operations. We should not, however, pursue the objective of maximizing IRR and ROI, and base our decisions on these two criteria. IRR and ROI give us additional information, although all decisions could be made without them. Maximizing rate of return (IRR, ROI) is not important if the objective is to maximize returns for shareholders. Mäkeläinen believes (1998) that EVA and CVA (as well as NPV) should play a leading role in corporate control while ROI and IRR are supposed to play the role of giving further details.

In the case of ROE which measures profitability of ordinary equity Tekavčič and Rejc (1999) consider that we come across the same flaws as with ROI. Risk is not included and therefore there is no comparison. ROE also does not tell the owners if a firm creates or diminishes their property's value. With ROE this deficiency is more pronounced than with ROI, because a simple increase in the leverage (debt) can increase ROE. As we know, a deterioration of solvency does not always improve financial position of shareholders due to increased (financial) risk. Just as ROI and IRR the return on equity (ROE) is likewise an informative indicator and should not be used in firms for conducting the operations.

Why CVA follows profitability and value creation better than EVA

Someone might think that EVA and CVA are similar. In theory they are, but not in reality. In theory, they are alike, because CVA is located on the far left of the circle in Figure 1, which is the point on the circle, where EVA would like to bring us. As we know, Ekar (2000) reminds us that in reality only a few corrections and adjustments are carried out, so that we do not travel too long along the circle. According to Weissenrieder (1998) they are therefore not similar in real life.

The first of the two adjustments which are necessary in order to use CVA as a relevant criterion for decision making relates to the so called non-strategic investments. Why should we not, say, office furniture, which is included in the accounting data and financial requirements of EVA include into financial needs of the company? Because owners of firms are not interested in this. But they are very interested in which strategies create value and which do not.

Why should management of a firm be directed by accounting principles rather than business logic in making investments? Some costs associated with development, research, and marketing should be treated and regarded as an investment in firms, and vice versa, certain payments which are today

regarded as capital expenditures should take their place among running costs.

Traditionally, accounting has a fairly sharp view of what is an investment. The confusion in today's business environment, where cash expenditure for a machine is far from achieving success by selling a product or service in the global market, has many faces. All of a sudden, "hidden values" are found within firms and those holding responsibility in firms rush looking for the value of intangible assets (intangible investments) and intellectual capital, rather than triggering a change in the basic economic framework of a firm. Can we really be surprised by the fact that firms often create money out of investments that are not listed in their balance sheets? Hopefully not. The balance sheet is produced by accountants with regard to the relevant legislation and accounting standards, not business reality and business logic. Therefore, discussions regarding the nature of the overall strategic assets of a firm (tangible and intangible) are very important and should according to the previously mentioned author Weissenrieder (1998) be focused on relevant topics.

Value of the firm is created by long-term and short-term strategic assets. The firm's managers have to understand their mutual relationship well, because only on this basis do the business reality and reality in financial markets join. Relying merely on the financial concept of investments only increases the confusion.

Effective VBM structures strategic assets to intangible and tangible assets and makes no distinction between the two. Thus, capital will have its price or cost and all of a sudden a debate about the value of the capital structure (strategic assets) will become important. When comparing the value of strategic assets with the market value of equity, we must be careful because the latter will not include only the present value of the existing strategic assets, but also the net present value of future strategic investments. Net present value of future strategic investment may be positive or negative.

If we include non-strategic investments in cash flow from operations instead of activating them as investments, financial requirements will be very close to the required cash flow of the CVA indicator. This is followed by another necessary adjustment.

After all this we can ask ourselves a simple question: why travel on a circle in the figure above from the point on the far left to the point at the far right in order to return to the point from where we left off. We were at the beginning and why not stay there? From this point on the circle it is not possible to measure historical performance and value until CVA is developed. Now that we have developed it, firms have strategic and operational tool that focuses solely on strategic investment (tangible and intangible assets), their cash

flow, their economic life and cost of capital. In such firms we can now link their business reality with the reality in financial markets.

Let's go back to the process of VBM. To achieve a successful VBM, we have to improve the three already existing functions. A process is successful if it increases wealth for shareholders (value of shares and dividends).

A firm has a properly oriented concept of VBM if management focus on important issues, if they rely on four factors that determine value: strategic investments (both tangible and intangible assets), their cash flow from operations, their economic lifetime and in their cost of capital. Accounting, unfortunately, does not focus on these four factors. EVA can to some extent help us (it is well designed in theory), but we are still in accounting.

The concept of VBM, which is based on financial theory, gives a firm an opportunity to increase the quality of financial analysis. EVA offers a firm a little better analysis, but is still far from what should in the real world be our ambitions.

The two functions will have an effect on the intrinsic value of a firm, which will in the long term have an impact on market value. If a firm is to equate its intrinsic value to the market value at a time, then the function of investors' (owners') relationships should also rely on value. The following issues become important in a firm: allocation of capital (what are strategic investments for a firm), investment strategies, information about areas of profitable growth, analysis of cash flow from operations, and others. Some analysts will not immediately perceive this information, because they are not yet observing the market mechanism today, i.e. discounted cash flow. The latter will in future become a key factor.

Discounted cash flow should much better fulfill the requirements of the shown process than those concepts which rely on financial statements. Some firms will still choose the criterion measure of EVA instead of CVA because their management have smaller ambitions with the VBM process. If ambition in a firm within the framework of the value of property for shareholders is smaller, then EVA may be a perfectly appropriate criterion. Making up to ten corrections and adjustments in accounting is not such a difficult task. Some proponents of the EVA criteria, like Stewart (2000), suggest that EVA is all we have to know and that it is also simple. It is simple because it draws data from the accounting. Some authors, as for example Korošec (2001) go a step further and suggest that for the assessment of achievements it is advisable to use also other long-term criteria in addition to the EVA amount, as well as non-financial criteria. We also want to somewhat move away from the latter. CVA is also simple if we have any knowledge of corporate finance. CVA focuses on relevant factors, while EVA does not. CVA is more correct. We simply cannot meet our expectations with the

criterion of EVA, when our ambitions for the quality of information from our VBM process are bigger, or if we want to change a firm in the direction of understanding the meaning of "property value for shareholders." In other words, if we want to travel for more than about 10% along the circle in Figure 1, where we have to make a number of accounting adjustments, then we according to Weissenrieder (1998) certainly benefit more if we use a concept that is based on cash flow starting at the point on the left side of the circle. In this case accounting adjustments are no longer needed. We pursue the discounted cash flow, wherever it appears.

EMPIRICAL APPLICATION OF EVA AND CVA

In the empirical part of this paper EVA and CVA performance indicators are applied on some concrete economic entities. Four big Slovenian companies (they wish to remain anonymous) have been chosen, company A is a parts manufacturer for the European automotive industry, company B is a manufacturer of pharmaceutical products, a company C is a producer of chemical products, and company D is a producer of pre-coated silica sand and cores for the foundries.

In the Apendix the entire process of calculating the two indicators, first EVA and then CVA for the period from 2010 to 2014 is given only for the company A, for the other three only the final results are shown. Further within this section the key findings on the basis of the results are summarized.

Conclusive findings for company A (automotive industry)

Let us show both the calculated criteria of business performance, EVA and CVA, for our company A during the past five years in a joint Table 1.

Table 1: A review of EVA and CVA for the company A in the period from year 2010 to year 2014

| Year | 2010 | 2011 | 2012 | 2013 | 2014 |
|------|-------|-------|-------|-------|-------|
| EVA | 6.093 | 6.560 | 1.548 | 5.339 | 4.935 |
| CVA | 8.396 | 7.136 | 2.904 | 5.916 | 5.115 |

Source: Table 8 and Table 12 in Appendix

We find that both the criteria for their absolute values differ one from another largely due to consideration of depreciation in the calculation of CVA, but they indicate approximately the same trend in changing business performance of an economic entity. EVA and CVA have throughout the period from year 2010 to year 2014 always been positive. They have both essentially dropped in 2012. In this year sales revenues have dropped for 5 % according to the previous year. This year has owing to exceptionally high growth of business in society seen a great increase in the demand for additional working capital. The company financed it by short-term borrowed resources, which resulted in an increase in the cost of debt capital. The relationship between the equity and total debt of the company also deteriorated, and its financial leverage increased. Depreciation as a result of increased investment in tangible assets (increase in production capacity, while technological upgrading) has also contributed to the increased lower value of the EVA indicator.

The comparison of the two time series shows that the business performance of our commodity producer, the company A, in the automotive industry despite the drop in sales revenues in 2012 has been improving in 2013 and 2014. The company despite almost the same volume of sales of its products in the European automotive market (approximately € 190 million) over the years 2010 and 2014 and even with slightly increased adjusted invested capital in the last two years achieved a relatively better business outcome as measured by the two criteria than the year before (in 2012). Such a change can be attributed to a significant decrease in the prices of raw materials and components with unchanged selling prices of finished goods. These have decreased at the expense of so-called productivity which manufacturers of car parts have to grant to their customers in the amount of up to 5% every year. Exceptionally well performed are the years 2010 and 2011. In 2011 the company increased the sales for 21 %, what influenced the values of EVA and CVA in that year.

Furthermore, the company in the year 2014 immediately embarked on cost reduction (cost cutting) based on the rationalization of its business (at the increased level of sales, the material costs remained practically the same). It also reduced the stocks (for one tenth), took certain measures in collecting receivables (although most of its customers are fairly reliable payers), reduced short-term payables and made all its hired labor redundant, etc. Through this short analysis we can confirm the company A has been successfully able to create value for its shareholders. On comparing industry-wise composite frequencies for EVA for all years, it was found that there has been a significant increasing trend in EVA of the automobile

industry firms which means that companies have a positive trend to improve their firm values (Selvi & Vijayakumar, 2007, 459-460).

Comparative analysis of EVAs and CVAs for all selected industries

After having calculated EVAs and CVAs for all four companies, based on data from their income statements, balance sheets and other internal data of the four companies (see the calculations in Appendix), the final statements can be rounded up as it follows:

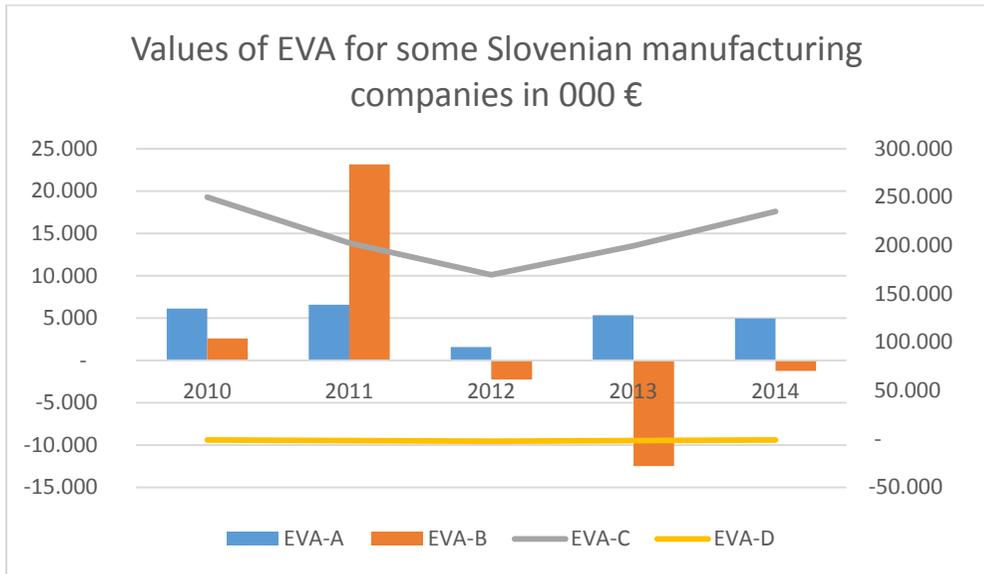
- The trend of course for EVAs are equal to the trend of course for CVAs for all the companies; it means if EVA increases in an individual year CVA increases as well, and if EVA drops in an individual year, similarly CVA diminishes, too regardless if the values for these two indicators are positive or negative. Direction of tendency is with both indicators the same. This tendency can be seen in the figures 2 and 3 below and for each company in the appendix.
- If the absolute value of these two indicators are taken into consideration, in our case we find out that for two companies (company A and company B) EVAs have bigger values than CVAs.
- On average the company D has the highest WACC; it is a cost of capital and directly influences CVAs. This is also a reason why this company has negative CVA during the whole 5-year period.
- The company B had extremely high NOPATs in 2011 and 2012; relatively good performance in those two years can be explained by the record-breaking sales revenues, also by the improved productivity. Although WACC increased in 2012 almost to 14 %, this influenced significantly the values of CVAs in those two years. Similarly EVA is extremely high in 2011. The main reason can be ascribed to the high value of the changes in long-term provisions that company had made in that year.
- Owing to exceptionally high growth of business in 2011 the company B had to increase its net working capital. In that year accounts payable as a short-term funds increased significantly, for 20 % in comparison to year before. The need for additional working capital was also in 2012.
- What was also specific for the company B - this is not the case with the other three though – is its deleveraging. The company was relatively high indebted in 2010. Already in 2011 short-term financial debt was cut in two, and the company succeeded to reduce its long-term credits down to almost one third.
- The company D among the four companies selected in this sample is the only one having negative values of EVAs and CVAs in the whole 5-year period. This particular company is an excellent example showing us that the ratios like NOPAT, ROIC, etc. are not sufficient for measuring company performance, its efficiency. On the contrary,

EVA and CVA show that the shareholders are not recompensed for what they had invested into the company. These two indicators are much better though, more indicative, and real measures of shareholders' value.

- It is obvious that pharmaceutical industry is the most prospective industry. The figures of company C in Table 15 above confirm this statement. The company is a worldwide independent producer of drugs (mainly generic). It is r&d intensive – it invests approximately from 9 to 10 % of its annual sales revenues into research and development of new products. If we add investments into marketing research this percentage becomes significantly higher (around 12 %). It's average annual growth rate of sales is about 5 %. The company has constantly increased its adjusted operating invested capital, between 5 and 7 % a year. However this is not the case for the other three companies. For company B the adjusted operating invested capital has been shrinking in the last two years. For the companies A and D it stayed practically at the same level in all five years or for the last two years respectively.
- Coefficients Beta have the highest values for the company D (always above 1), and for the company A (above 1 in the last three years). The coefficient Beta is the lowest for the company C, what could have been expected while having in consideration the basic characteristics of the pharmaceutical industry. For the company A, automotive industry, Beta coefficient has been constantly increasing since 2011. The automotive industry was in big recession till the second half of 2010 when it has started to recover from a significant sales drop in 2008 and from then on.
- Although the company D, mining industry, was not leveraged excessively, for the Slovenian economy far below the average, this means on the other hand the cost of own funds are the most expensive, the required rate of return on invested capital (equity) is the highest among the four companies in our sample. This implies high cost of capital and makes the values of EVA and CVA negative. On top of that, ROIC for this company is also relatively low, only around 1,2% on average.

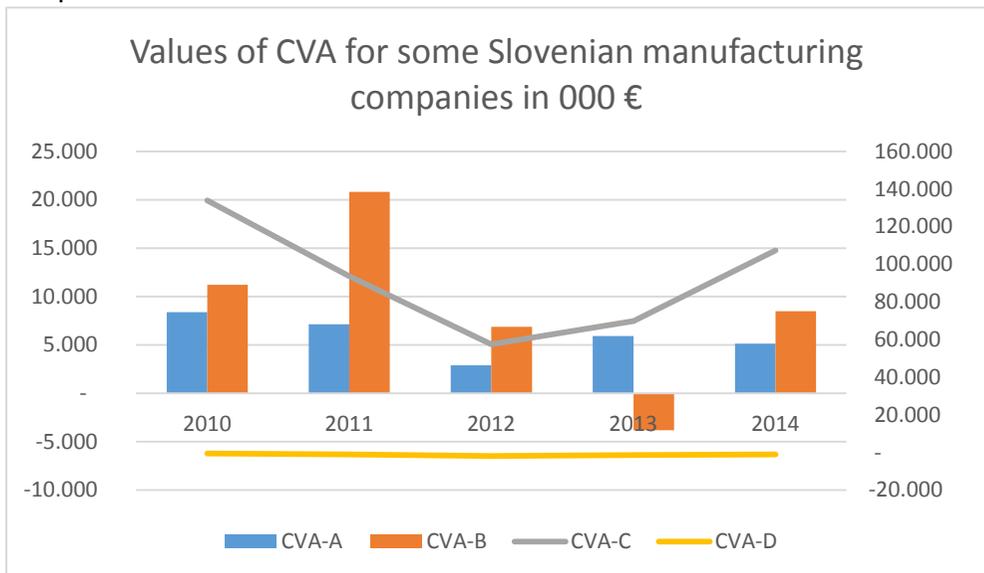
We have used some concrete examples to show that EVA and CVA are relatively good alternative criteria of so called residual income statement of a company. CVA is designed in such a way that it tries to bring a company's profit and cash flow together while still maintaining the advantage that EVA has over standard indicators of performance when considering the cost of capital. The main shortcoming of the CVA indicator lies in the fact that it can get us into a dangerous illusion, believing that cash flow is the only thing that matters in capital market, so we have to devise a measure right on it. Such thinking may be wrong, or as Young & O'Byrne (2000) put it "money may be the king, but only in the form of the expected free cash flow".

Figure 2. The tendency trends of EVA for the selected manufacturing companies



Source: Calculations in Appendix

Figure 3. The tendency trends of CVA for the selected manufacturing companies.



Source: Calculations in Appendix

6. CONCLUSION

For an ongoing strategic development of every economic entity measuring business performance is extremely important. As Turk says (2002), shortcomings of traditional, standard indicators of business performance, while looking at business performance and a relationship between the attainment of the aims expressed by outputs from operations and set goals expressed by outputs from operations, have long been subject of many discussions of economists, especially because traditional indicators attempt to measure only past business performance. Any criterion of a firm's profitability, which does not take into account the total cost of capital and which does not incorporate all the relevant information for strategic decision making, may be misleading. With the classic indicators of business performance short-term aspect is highlighted, which may, for example, quickly lead an economic entity to irrationally reduce investments in research and development. Thus the short-term business performance increases, but in the long run such economic entities run into difficulties and may fall out of the market.

These and similar shortcomings should be resolved by EVA and CVA measures. Their advantage lies in their long-term orientation and in their consideration of the total cost of capital. Managers who make investment decisions focused also on the opportunity cost of their own resources create a basis for increasing the value of owners' property. Both criteria, EVA and CVA, reflect business performance in the temporal scope. They are indicators which represent a criterion for decision making, where emphasis lies on the added value on the invested resources of the owners.

The last decade and a half has seen academic discussions revolving around a single concept on which useful value of EVA indicator is designed. Questions are raised whether EVA is suitable enough as a benchmark, albeit at an indicative value it exceeds the standard indicators and is at the same time a simple and easily understood indicator. Let us only recall the problem of its adjustments, which must be implemented urgently if the indicator should have an indicative value. Odar (2001) here warns us that users of accounting information that represent a record of past events and owners for decision-making need also more recent and other information, as they are usually focused on the future.

For this reason and also because of criticism directed at the accounting concept of EVA, where no notice is taken of future operations, the idea of CVA came into existence. All the louder are also the advocates of the so-called market value added (MVA). The aim of the value-based management (VBM) is to increase the value of an owner's property as much as possible.

But how can we measure this? Authorities with strong expertise in the field of VBM, such as, for example, Stewart (2000), thus introduced a MVA measure. They argue that owners' property only maximizes by maximizing the difference between the total value of a firm and the total capital invested by owners - investors. This difference is named MVA. Grant and Abate (2001) in this respect even equate it with the present value of the future EVA. However, one of the major disadvantages of this criterion once again lies in complete adjustment of the balance sheet, when defining the capital in the calculation of MVA.

In conclusion of this paper it can be emphasized that, despite numerous attempts in academic circles to find on the one hand, a comprehensive, integrated, all inclusive and on the other hand simple and easy to evaluate measure of business performance, no measure of a firm's performance is ideal, or such that we could with it, expressed in absolute values or in relative numbers, unambiguously and subject to many factors, stakeholders, mainly shareholders and aspects, including the time dimension, measure business performance of a firm. EVA and CVA definitely represent a step further away from traditional or standard performance indicators. It is opportune to calculate both criteria simultaneously. If the former focuses more on past performance the latter strongly focuses on future, because the CVA concept is built on strategic investments. Although the criteria are based on two different concepts, EVA on accounting and CVA on finance, there is a strong correlation between the two. In the time series they both indicate the same trend in changing business performance. We have also seen this in our cases. Their combined use may be quite a fortunate combination or such a system of indicators devised on the value-based management, which on the one hand expresses value and profitability, and on the other it reflects the opportunities and points out the dangers. The owners/ investors can with this strongly bind the management of the firm to striving to increase the value of their property.

A thesis can also be advocated that a simultaneous selection of the two indicators has a significant impact both on management resources and strategy selection, as well as on the question of how investors/owners evaluate a certain firm as their potential investment.

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APPENDIX

Let us calculate EVA and CVA for the company A. In 2014 Company A had 1 528 employees and annual net sales of approximately € 193 million. The company has recorded a relatively high and dynamic growth in 2011. After drop in 2012 the sales revenues have started to grow again but at the moderate rate of 2 and 3 % respectively.

1. EVA calculation for company A (automotive industry)

EVA = NOPAT - (WACC * Adjusted Invested Capital)

1.1. NOPAT

Net Operating Profit After Taxes (NOPAT)) or operating profit after taxes is a profit adjusted by accounting gained from operating activities after adjusted taxes – VAT is deducted from the operating profit as if a basis for it was an operating profit. Net operating profit after taxes but before financing costs (Net Operating Profit Less Adjusted Tax) can be calculated as follows:

$$\text{NOPAT} = \text{EBIT} \times (1 - \text{tax rate}), \text{ or } \text{EBIT} - \text{tax on EBIT}.$$

This is a basic principle of calculating unadjusted NOPAT. In calculating EVA, we adjusted NOPAT in the way shown in Table 2.

In calculating EVA, we included "ADJUSTED NOPAT (III)." This was obtained by adding interest income to EBIT and deducting the paid income taxes and tax shield on interest expense. In this way we got "ADJUSTED NOPAT (I)." Some adjustments were added to account for changes in provisions in long term deferred revenue for capitalized research and development expense and capitalized marketing expense. The sum was named "ADJUSTED NOPAT (II). This was then deducted by income taxes paid and we got "ADJUSTED NOPAT (III)", which is also used in the calculation of EVA.

Table 2: Adjustments in the income statement (NOPAT adjustments)

| | ADJUSTMENTS IN INCOME STATEMENT | 2010 | 2011 | 2012 | 2013 | 2014 |
|---------------------|------------------------------------|-------|-------|-------|--------|-------|
| PN (I) = A+B+C+D | ADJUSTED NOPAT (I) (NOPAT CVA) | 7502 | 7.486 | 6.205 | 11.559 | 9.909 |
| A | Operating income e (EBIT) | 5.905 | 6.322 | 4.596 | 10.039 | 8.353 |
| B | + interest income | 3.177 | 2.897 | 2.438 | 2.222 | 1.970 |

| | | | | | | |
|-------------------------|--|--------|--------|--------|--------|--------|
| C | -Income taxes | 292 | 547 | -50 | -1 | -102 |
| $D = i * e$ | -(tax shield on interest expense) | 1.288 | 1.186 | 879 | 703 | 516 |
| i | Interest expense | 6.442 | 5.929 | 4.881 | 4.133 | 3.035 |
| e | Effective tax rate | 0,20 | 0,20 | 0,18 | 0,17 | 0,17 |
| $P = dr+rr+ti$ | ADJUSTMENTS EVA | 4.017 | 5.419 | 4.282 | 5.035 | 5.999 |
| dr | Changes in provisions in long term deferred revenues | | 559 | -336 | 328 | 1168 |
| rr | Capitalized r&d expenses | 4.017 | 4.860 | 4.618 | 4.707 | 4.831 |
| ti | Capitalized marketing expense | | | | | |
| $PN (II) = PN (I) + P$ | ADJUSTED NOPAT (II) | 11.519 | 12.905 | 10.488 | 16.595 | 15.908 |
| t | Income taxes paid | | | | | |
| $PNE (III) = N + P - t$ | ADJUSTED NOPAT EVA (III) | 11.518 | 12.905 | 10.488 | 16.595 | 15.908 |

Source: Income statement and balance sheet of the A company for the period from year 2010 to year 2014

Adjustments for research and development expense (capitalized research and development expense) were taken into account in the amount of 1.5% of the value of net sales each year. Even though the company allots up to approximately 3% of the value of its net sales to research and development, according to IAS 38 (International Financial Reporting Standards (2008) out of these we could only rightly capitalize i.e. recognize as deferred development costs and intangible assets arising from development, or developmental stages of an internal project, in the exact indicated height.

1.2. WACC

Weighted Average Cost of Capital is the price of the invested capital, which is calculated as a weighted average cost of debt and equity capital. The basic purpose of WACC is to identify the opportunity costs of capital that are important for investment decisions. Cost of capital represents the rate of return that owners and investors can expect if they invest their capital elsewhere, in projects or firms with comparable risk.

CALCULATION : $WACC = (D/IC) \times R_d \times (1-T) + (E/IC) \times R_e$,

where:

D = debt

T = tax rate

IC = invested capital

E = equity

R_d = cost of debt

R_e = cost of equity

IC (Invested Capital) is the volume of both debt and equity capital invested.

Table 3. Total capital invested as the sum of equity and debt capital

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-----------|--|--------|--------|--------|--------|--------|
| K=L+J | Total cap. inv. (long-term fin. resources) | 87.548 | 92.977 | 89.089 | 93.457 | 92.607 |
| L | Equity capital | 33.723 | 35.668 | 37.527 | 44.362 | 50.814 |
| J = k + m | Debt cap. (short term and long term debt) | 53.825 | 57.309 | 51.562 | 49.095 | 41.793 |

Source: Balance sheet of the A company for the period from year 2010 to year 2014

In calculating the cost of debt capital we also have to take into account the statutory tax rate in Slovenia, which was in that period 22%.

The cost of debt is represented by the average interest rate of commercial banks for long-term and short-term loans granted to the company A in the past period, the cost of debt securities as for example ordinary corporate bonds is determined on the stock exchange. The calculation of the final cost of debt capital, adjusted for tax, which is part of WACC is as follows:

Costs of debt capital in WACC:

(*LTD = long-term debt, STD = short-term debt)

= (share of LTD in the whole invested capital) x (cost of LTD) (share of STD in the whole invested capital) x (cost of STD)

The cost of LTD = the share of LTD in the entire debt capital x weighted average interest rate for LTD)

The cost of STD = the share of STD in the entire debt capital x weighted average interest rate for STD)

Table 4: Calculation of the cost of debt as part of WACC

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------------------|---|-------|-------|-------|-------|-------|
| $2 = I + II$ | WACC (linked to the cost of debt) | 2,29% | 1,67% | 2,15% | 1,85% | 0,93% |
| $I = C \times D$ | Costs of long - term debts financing in total WACC | 2,24% | 1,39% | 2,10% | 1,78% | 0,07% |
| $II = E \times F$ | Costs of short - term debts financing in total WACC | 0,05% | 0,28% | 0,05% | 0,07% | 0,86% |

Source: The A company's internal data for the period from year 2010 to year 2014; the website of the Bank of Slovenia (2008)

The cost of equity:

Determining economic profit takes into account that equity sources of financing also have their price. According to Bergant (1998) an economic gain of a certain period is a current value of equity. In calculating the cost of equity we need to establish the value of equity (item "Equity" in the balance sheet). Then we calculate its cost with the help of the Capital Asset Pricing Model (CAPM):

Required capital rate of return = risk-free rate + Beta * Market risk premium rate + Risk premium

Data for beta are shown in the Table 5 below.

Table 5. Calculating Beta coefficient

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------|---|-------|-------|--------|--------|--------|
| e | Risk free rate (rate of return on the risk free assets) | 4,04% | 5,24% | 6,07% | 6,00% | 3,28% |
| $f = g \times h$ | Risk premium (o) = e*f | 5,17% | 6,83% | 11,23% | 13,85% | 15,07% |
| g | BETA coefficient for industry (e) | 0,90 | 0,94 | 1,33 | 1,58 | 1,59 |
| h | Market risk premium rate (f) | 5,75% | 7,28% | 8,43% | 8,75% | 9,50% |

Source: Betas; Damodaran Online: Home Page for Aswath Damodaran (2012)

What follows is the calculation of the cost of equity.

Table 6. Calculation of the cost of equity as part of WACC and the required capital rate of return

| Year | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------------|--|--------|--------|--------|--------|--------|
| 2 = III | WACC (linked to the cost of equity financing) | 3,55% | 4,63% | 7,29% | 9,42% | 10,07% |
| III = G x H | Cost of equity financing in total WACC | 3,55% | 4,63% | 7,29% | 9,42% | 10,07% |
| G | Equity capital portion in total capital invested | 38,52% | 38,36% | 42,12% | 47,47% | 54,87% |
| H = e + f | Required capital rate of return (cost of equity) | 9,21% | 12,07% | 17,30% | 19,85% | 18,35% |

Source: Internal data of the company A for the period from 2010 to 2014 and the Damodaran On-line website for information about the required capital rate of return.

(Data on market risk premium rate by country and data on the BETA coefficient by country; see the source above).

Data on the yield of government securities, the Bank of Slovenia (2008).

After we calculate the cost of debt and equity capital, we sum them up and get the WACC as the total cost of using both types of capital.

Table 7. Calculation of WACC (the sum of the cost of debt and cost of equity)

| Year | | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------|------|-------|-------|-------|--------|--------|
| 2 = I + II + III | WACC | 5,83% | 6,31% | 9,44% | 11,28% | 11,00% |

Source: Private data of the company A for the period from year 2010 to 2014 and Damodaran web site (see Table 4 and Table 6)

1.3. Adjusted Invested Capital

Invested capital is an important item in the calculation of EVA, but it also requires some adjustments. It is calculated as follows.

Table 8: Calculation of adjusted invested capital for the calculation of EVA

v 000 €

| Year | | 2010 | 2011 | 2012 | 2013 | 2014 |
|---------|--------------------|--------|---------|--------|--------|--------|
| T + I + | ADJUSTED OPERATING | 93.019 | 100.589 | 94.699 | 99.769 | 99.749 |

| | | | | | | |
|-------|--|--------|--------|--------|--------|--------|
| N + A | INVESTED CAPITAL | | | | | |
| | Inventories | 25.608 | 31.775 | 25.710 | 27.760 | 25.340 |
| | Short-term financial investments | 42.940 | 50.441 | 40.878 | 46.715 | 43.880 |
| | Deferred costs and accrued revenue | 48 | 172 | 366 | 589 | 540 |
| N | Current operating assets | 68.596 | 82.388 | 66.954 | 75.073 | 69.760 |
| | Short-term operating liabilities | 34.825 | 38.594 | 31.430 | 34.832 | 30.910 |
| | Short-term accrued costs and deferred revenue | 2.401 | 1.674 | 1.315 | 1.152 | 1.846 |
| O | Non-Interest bearing current liabilities (Operating current liabilities) | 37.226 | 40.268 | 32.745 | 35.984 | 32.756 |
| T = | OPERATING NET | | | | | |
| N - O | WORKING CAPITAL | 31.370 | 42.120 | 34.209 | 39.089 | 37.004 |
| | Intangible assets and long-term deferred costs and accrued revenue | 904 | 651 | 539 | 710 | 737 |
| | Long-term operating financial investments | 14.913 | 16.994 | 16.312 | 15.648 | 15.655 |
| | Property, plant and equipment | 35.587 | 35.265 | 37.083 | 38.391 | 37.660 |
| | Long-term operating receivables | 0 | 0 | 225 | 45 | 0 |
| I | LONG TERM OPERATING | 51.404 | 52.910 | 54.159 | 54.794 | 54.052 |

| | | | | | | |
|---|------------------------------|-------|-------|-------|-------|-------|
| | INVESTMENTS | | | | | |
| N | CASH AND CASH EQUIVALENTS | 6.228 | 140 | 2.049 | 851 | 2.694 |
| A | ADJUSTMENTS | 4.017 | 5.419 | 4.282 | 5.036 | 5.999 |

Source: Balance sheet of the company A for the period from year 2010 to year 2014

Adjusted invested capital are current assets financed by long-term sources, long-term investments, cash, and certain adjustments.

We can now calculate the final value of EVA = Adjusted NOPAT (III) - (WACC * Adjusted Invested Capital).

Table 9. The final calculation of EVA

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-----------|--------------------------------------|--------------|--------------|--------------|--------------|--------------|
| a | ADJUSTED NOPAT EVA | 11.518 | 12.905 | 10.488 | 16.595 | 15.908 |
| b | ADJUSTED OPERAT. INVESTED CAPITAL | 93.018 | 100.589 | 94.699 | 99.769 | 99.749 |
| c (a/b) | ROIC | 12,38% | 12,83% | 11,07% | 16,63% | 15,95% |
| d | WACC | 5,83% | 6,31% | 9,44% | 11,28% | 11,00% |
| e (c-d)*b | EVA | 6.093 | 6.560 | 1.548 | 5.339 | 4.935 |

Source: The income statement, balance sheet and A company's internal data for the period from year 2010 to year 2014

2. CVA calculation for company A (automotive industry)

CVA = NOPAT (on cash basis) - Cost of Capital

2.1. NOPAT on cash basis

According to Young & O'Byrne (2001, p. 438) it is as follows:

Cash-based NOPAT = NOPAT (Table 1) + Depreciation (as a write-down of assets in the Income statement) + Changes in other long-term liabilities

Table 10: Calculation of NOPAT

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|--|--------|--------|--------|--------|--------|
| A | NOPAT | 7.502 | 7.486 | 6.205 | 11.559 | 9.909 |
| B | Depreciation | 6.462 | 6.034 | 5.780 | 5.686 | 6.201 |
| C | Changes in other long-term liabilities | | | | | |
| A+B+C | Cash-based NOPAT | 13.964 | 13.520 | 11.985 | 17.245 | 16.110 |

Source: The income statement and balance sheet of the company A for the period from year 2010 to year 2014

2.2. Cost of capital

Cost of capital = WACC (see calculation of EVA) x cash-based invested capital

Cash-based invested capital = Unadjusted Invested Capital + accumulated assets depreciation (the sum of value adjustments)

Unadjusted invested capital is in its basis capital employed without any adjustments. Such was used in the calculation of EVA.

Table 11: Cash-based invested capital

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|--|--------|---------|--------|---------|--------|
| a | Unadjusted invested capital | 89.002 | 95.170 | 90.417 | 94.734 | 93.750 |
| b | Accum. assets depreciation (sum of value adjustments: NW-SW) | 6.462 | 6.034 | 5.780 | 5.686 | 6.201 |
| a + b | Cash-based invested capital | 95.464 | 101.204 | 96.197 | 100.420 | 99.951 |

Source: Internal data of the company A for the period from year 2010 to year 2014

The table below shows the calculation of the cost of capital.

Table 12. Cost of capital for the calculation of CVA

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|--|--|------|------|------|------|------|
| | | | | | | |

| | | | | | | |
|-----|-----------------------------|--------|---------|--------|---------|--------|
| a | Cash-based invested capital | 95.464 | 101.204 | 96.197 | 100.420 | 99.951 |
| b | WACC | 5,83% | 6,31% | 9,44% | 11,28% | 11,00% |
| a*b | Cost of capital | 5.568 | 6.384 | 9.081 | 11.329 | 10.995 |

Source: Internal data of the company A for the period from year 2010 to year 2014

Thus we can now calculate the final value for CVA which is the difference between cash-based NOPAT and cost of capital.

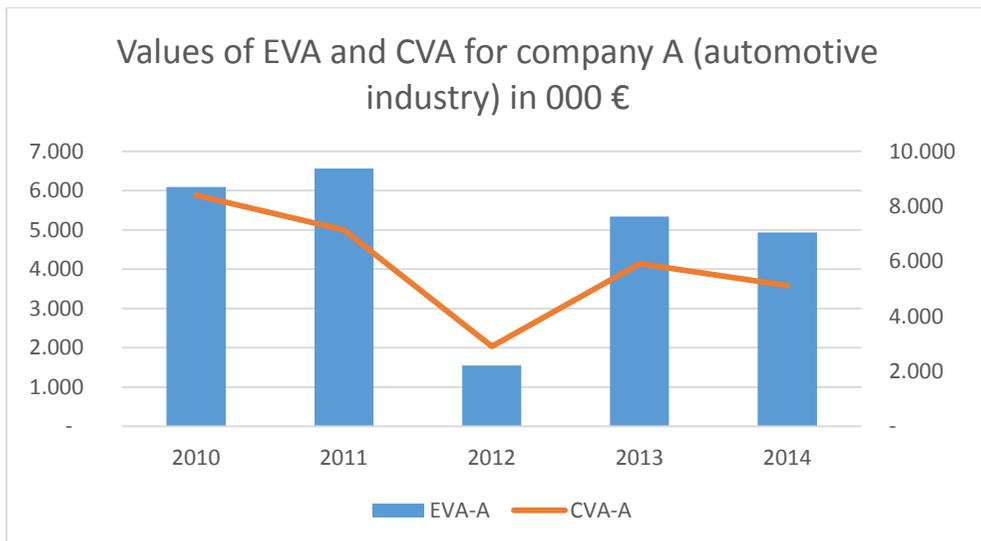
Table 13: The CVA calculation

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|------------------|--------|--------|--------|--------|--------|
| A | Cash-based NOPAT | 13.964 | 13.520 | 11.985 | 17.245 | 16.110 |
| B | Cost of capital | 5.568 | 6.348 | 9.081 | 11.329 | 10.995 |
| A - B | CVA | 8.396 | 7.136 | 2.905 | 5.916 | 5.115 |

Source: The income statement and balance sheet of the A company for the period from year 2010 to year 2014

In the Figure 4 the same tendency trends of EVA and CVA for the company A (automotive industry) are presented.

Figure 4. The same tendency trends of EVA and CVA for the company A



Source: Table 9 and Table 13

3. EVA and CVA calculation for other industries

Within the empirical part included into this Appendix EVA and CVA have been calculated for the other three companies, company B in chemical industry, company C in pharmaceutical industry and company D in mining industry. As already said, for each of them only the main results are given in the tables below.

Let us calculate EVA and CVA for the company B (chemical industry). In 2014 Company B had 989 employees and annual net sales of approximately € 161 million. The company has recorded a relatively high and dynamic growth in 2011. Since then the sales revenues have been decreasing at the annual rate of 6, 4 and 3 % respectively.

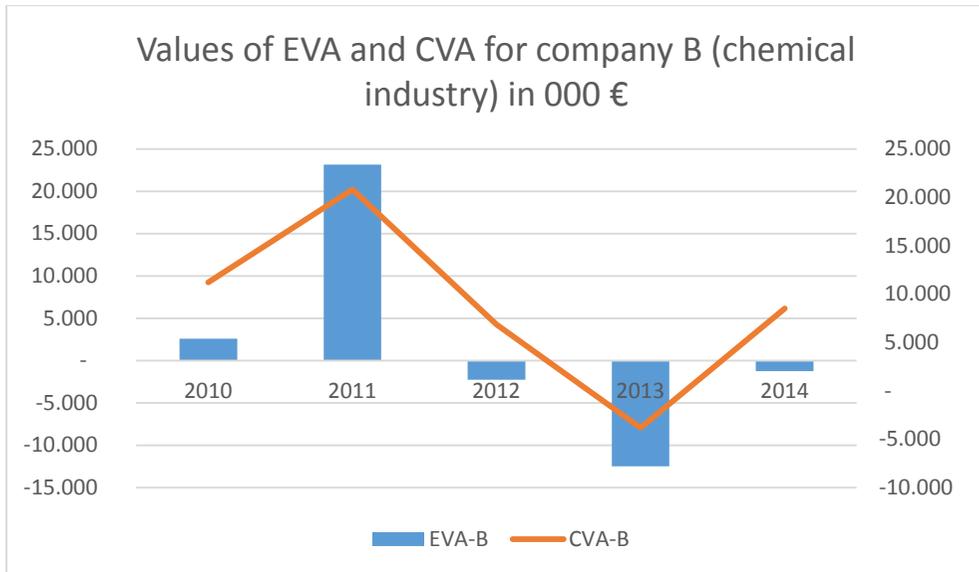
Table 14: The final calculation of EVA and CVA for company B (chemical industry)

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|----------|------------------------------|---------|---------|---------|---------|---------|
| a | ADJUSTED NOPAT EVA | 14.508 | 42.458 | 23.070 | 11.625 | 16.073 |
| b | ADJUST. OPERAT. INV. CAPITAL | 172.885 | 190.662 | 182.030 | 167.960 | 166.071 |
| c (a/b) | ROIC | 8,39% | 22,27% | 12,67% | 6,92% | 9,68% |
| | BETA coefficient | 0,79 | 0,83 | 1,12 | 1,00 | 0,75 |
| d | WACC | 6,90% | 10,14% | 13,93% | 14,37% | 10,43% |
| e | EVA | 2.587 | 23.131 | -2.281 | -12.507 | -1.244 |
| (c- d)*b | | | | | | |
| | NOPAT | 11.441 | 26.667 | 20.246 | 8.891 | 14.229 |
| | Depreciation | 12.311 | 13.195 | 13.443 | 12.865 | 12.712 |
| | Cash-based invested capital | 182.128 | 188.066 | 192.649 | 178.091 | 176.939 |
| | CVA | 11.192 | 20.798 | 6.859 | -3.831 | 8.491 |

Source: The income statement, balance sheet and B company's internal data for the period from year 2010 to year 2014

In the Figure 5 the same tendency trends of EVA and CVA for the company B (chemical industry) are presented.

Figure 5. The same tendency trends of EVA and CVA for the company B



Source: Table 14

Let us calculate EVA and CVA for the company C (pharmaceutical industry). In 2014 Company C had 4 680 employees and annual net sales of approximately € 1.134 million. The company has recorded a relatively high and dynamic growth in 2012 and 2013 (8 % per year). Since then the sales revenues have been still growing but at a moderate rate (only 2 % in 2014).

Table 15: The final calculation of EVA and CVA for company C (pharmaceutical industry)

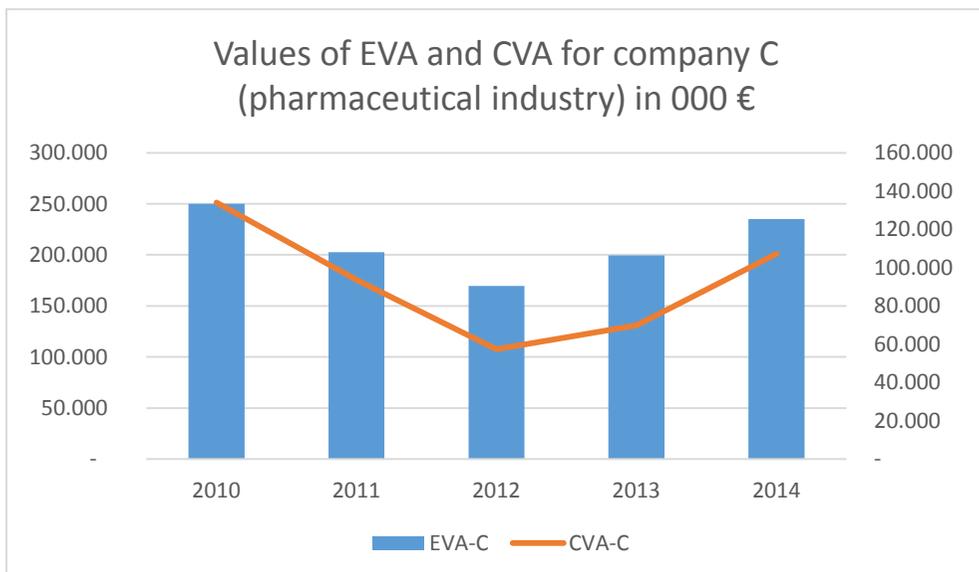
| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|---------|-----------------------------------|-----------|-----------|-----------|---------------|-----------|
| a | ADJUSTED NOPAT EVA | 359.375 | 354.495 | 367.660 | 414.443 | 477.216 |
| b | ADJUST. OP. INV. CAPITAL | 1.403.857 | 1.450.657 | 1.526.826 | 1.633.56 6 | 1.737.112 |
| c (a/b) | ROIC | 25,60% | 24,44% | 24,08% | 25,37% | 27,47% |
| | BETA | 0,77 | 0,81 | 0,89 | 0,89 | 1,16 |

| | | | | | | |
|---------|-----------------------------|-----------|-----------|-----------|-----------|-----------|
| | coefficient | | | | | |
| d | WACC | 7,80% | 10,47% | 12,97% | 13,16% | 13,94% |
| e | EVA | 249.862 | 202.585 | 169.671 | 199.503 | 235.054 |
| (c-d)*b | | | | | | |
| | NOPAT | 172.902 | 166.320 | 162.305 | 193.640 | 256.698 |
| | Depreciation | 60.375 | 66.414 | 76.316 | 71.466 | 72.050 |
| | Cash-based invested capital | 1.278.119 | 1.328.897 | 1.397.787 | 1.484.229 | 1.588.644 |
| | CVA | 133.932 | 93.575 | 57.365 | 69.815 | 107.283 |

Source: The income statement, balance sheet and C company’s internal data for the period from year 2010 to year 2014

In the Figure 6 the same tendency trends of EVA and CVA for the company C (pharmaceutical industry) are presented.

Figure 6. The same tendency trends of EVA and CVA for the company C



Source: Table 15

Let us calculate EVA and CVA for the company D (mining industry). In 2014 Company D had 130 employees and annual net sales of approximately

€ 16,3 million. It is a medium size company. The company has recorded a relatively high and dynamic growth in 2013 and 2014. In that period the sales revenues have grown at 13 and 24 % annual rate respectively.

Table 16: The final calculation of EVA and CVA for company D (mining industry)

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------------|---------------------------------|--------|--------|--------|--------|--------|
| a | ADJUSTED NOPAT EVA | 239 | 311 | 25 | 414 | 831 |
| b | ADJUST. OPERAT. INV. CAPITAL | 13.781 | 14.745 | 14.845 | 14.798 | 14.590 |
| c (a/b) | ROIC | 1,74% | 2,11% | 0,17% | 2,80% | 5,69% |
| | BETA coefficient | 1,33 | 1,39 | 1,48 | 1,30 | 1,09 |
| d | WACC | 10,47 | 13,40 | 16,36 | 15,74 | 13,34 |
| e (c – d)*b | EVA | -1.241 | -1.665 | -2.403 | -1.914 | -1.116 |
| | NOPAT | 168 | 200 | -78 | 214 | 263 |
| | Depreciation | 830 | 815 | 830 | 773 | 761 |
| | Cash-based invested capital | 14.512 | 15.412 | 15.732 | 15.359 | 15.401 |
| | CVA | -560 | -1.051 | -1.821 | -1.430 | -1.032 |

Source: The income statement, balance sheet and D company’s internal data for the period from year 2010 to year 2014

In the Figure 7 the same tendency trends of EVA and CVA for the company D (mining industry) are presented.

Figure 7. The same tendency trends of EVA and CVA for the company C



Source: Table 16

SWIPE RIGHT WITH A CHANCE OF RAIN: WEATHER APP USAGE ON SMARTPHONES

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Abstract

Prior to the IT revolution, weather information was typically broadcast through non-electronic and electronic media. However, through the advent of technology, populations are now able to receive routine weather information through media other than the traditional sources of television and radio. These media channels include various forms of computing devices, such as personal computers, laptops, tablets, phablets and smartphones. In view of the growth, the ever-increasing penetration and adoption of smartphones, coupled with the mobility of societal lifestyle patterns, the 'smartphone' would seem to be well suited as a device for consumer acceptance of weather information by means of weather apps.

As part of a larger study into the acceptance, trust and value of weather apps by smartphone users, a number of key consumer-based insights are illustrated within this paper. These insights may have implications for both marketers of smartphones and developers of weather apps.

Key Words

Location based services; weather apps; usage; smartphones; consumers.

INTRODUCTION

In view of the growing dependence of technology for weather information, this research aims to examine weather applications (apps) used on smartphones. Weather apps, for example, can now deliver weather information from the global meteorological organisations to various ICT (Information Communication Technology) devices of end users; notably the smartphone. Extant literature clearly identifies app market growth and accelerated rates of global smartphone penetration and adoption. Coupled with the nomadic nature of societal lifestyle patterns, it would appear that the smartphone is currently a technologically and commercially well suited device for consumer ready weather information via weather apps. Therefore, research seeking to understand key influences into weather app usage on smartphones is worthy of attention.

LITERATURE REVIEW

Many smartphone weather apps fall within the classification of location-based services (LBS), in that these mobile apps rely upon the location of a mobile device that is capable of determining and transmitting the locations within a mobile network (Kennedy-Eden & Gretzel 2012; Vanjire et al. 2014; Virrantaus et al. 2001). LBS are widely used on smartphones, tablets and phablets adding functionality to an app and being extremely useful for location finding through the commercially available Global Positioning System (GPS), by delivering information based on the end users location. For example using a weather app with LBS activated on a smartphone enables the user to view the latest weather conditions from their current location (Turner 2012; weatherzone 2014). Examples of LBS apps available from the Google Play Store, Apple's App store and Microsoft's Windows are listed in Table 1.

Table 1: Examples of Location Based Services Apps

| Classification | App type | Source Availability |
|--------------------|-----------|---|
| Emergency Services | Emergency | Google Play Store, iTunes Preview , Windows |
| Travel | Mobiata | Google Play Store, iTunes Preview, Windows |

| | | |
|----------------|---|--|
| Weather | WeatherZone, WeatherPro, AccuWeather | Google Play Store, iTunes Preview Windows |
| Communications | Yellow Pages | Google Play Store, iTunes Preview, Windows |
| Transport | Brisbane Yellow Cabs, Taxi Catcher | Google Play Store, iTunes Preview, Windows |

Source: Developed for the research

Location services date back to the 1970's when the United States Department of Defense introduced the GPS, a satellite system used for the positioning and navigation of people and objects, initially for military use (Schiller & Voisard 2004). Later in the 1980's, the United States Government opened up GPS for use in commercial markets, leading to the rapid adoption of GPS-based services in areas such as the emergency services, travel, commerce, entertainment and recreation (Google Play 2014; Grossi 2011; iTunes Preview 2014; Windows 2014; Kushwaha & Kushwaha 2011; Steiniger, Neun & Edwardes 2006; Sturdevant 2009; Vanjire et al. 2014).

Schiller and Voisard (2004) believed a new era of electronic communications services was emerging with the ubiquitous use of LBS in new and traditional markets. Rao and Minakakis (2003) expected the slow growth of LBS apps would be due in part to security issues of privacy, technical solutions and sustainable business models, noting however that widespread adoption of location based apps would take place with effective technical solutions and marketing strategies implemented (Kaasinen 2005a).

The technical and commercial issues referred to by Rao and Minakakis (2003) have been progressively addressed throughout the years since LBS apps first appeared commercially. This would appear to be indicated by the current widespread acceptance of LBS apps on smartphones (Kennedy-Eden & Gretzel 2012; Portico Research 2013). The terminology, 'App' is the common expression used to identify software computing applications.

Apps can be downloaded onto various computing devices that have Internet access, such as desktops, laptops, some basic mobile phones, smartphones and tablets. Some travel based apps, such as compasses and speedometers, including a planned new map app release by Nokia in 2014 (Grundberg 2014), can run by simply turning on location services functionality, enabling the use of GPS without any Internet data being utilised. Downloads of apps are available from several online app stores that support various Operating Systems (OS) such as Android, iOS, Windows Blackberry, Symbian and others. However the three major online stores are

currently Google Play Store, the App Store (developed by Apple Inc), and the Windows app store. Identified by current app and smartphone penetration statistics, there would appear to be some justification for Rao and Minakakis (2003) and Schiller and Voisard (2004) cautious optimism mentioned previously of future widespread adoption of LBS apps.

According to Apple Press Info (2014), the App Store offers more than one million apps to iPhone, iPad and iPod touch users in 155 countries around the world. Google Play offers apps for Android systems and as reported by Nickinson (2011), this online store had 250,000 apps available with 6 billion total downloads recorded. Available apps from the App Store, Google Play Store and Windows include a large number that are LBS apps with collectively several hundred weather apps available from all three mentioned major app stores as either a no cost download or for low cost purchase.

It can be seen from the previous discussion of LBS, that there are positive indications of increased usage of smartphone LBS apps. However, little empirical research into user acceptance and adoption of weather apps on smartphones exists. This paper therefore provides some important consumer-based influences in speaking to the shortage of research into this area.

METHOD

A quantitative, web-based survey instrument was utilised in this study. Respondents invited to participate in the research encompassed users of weather apps on smartphones from a specific target population, namely students and staff from Southern Cross University, a regionally university based in Australia. Thus a nonprobability self-selection sampling technique was utilised for the data collection.

DATA ANALYSIS AND DISCUSSION

Data analysis was carried out using SPSS. Data collection resulted in 305 usable responses being received. To establish whether the data appeared to be normal, indicators such as mean, standard deviations and measures for skewness and kurtosis were inspected (Tabachnick & Fidell 2001). A review of these key indicators underlined a reasonable assumption that normality has been met.

Of the 305 responses used for analysis, 67.9% (n=207) were females and 32.1% (n=98) were males. The quantitative instrument also presented six

choices with respect to age groupings. In Group 1, 18-25 years olds represented 29.8% (n=91) of respondents. In Group 2, 26-35 year olds represented 27.2% (n=83) of respondents. In Group 3, 36-45 years olds represented 22.6% (n=69) of respondents, with Group 4, 46-55 years olds representing 13.8% (n=42) of respondents. It should be noted in the survey the fifth group was listed as 56 – 65 and group six consisted of ages 66 and over. As there was only 1 respondent recorded in group 6, it was felt this would skew the results and therefore was collapsed into a new category of 56 year old and over. Thus the distribution for the fifth group of 56 years old and over represented 6% (n=19) of respondents.

Results from the survey revealed that 26.9% of respondents were studying or had completed an undergraduate university degree and 20.7% indicated they were studying or completed a post graduate university degree. The Australian Bureau of Statistics (2013) reported that 37% of the total population of Australia had a university degree. For respondents to the current research, 47.6% indicated they were studying or had completed a university degree.

Respondents were also asked to indicate how many years they have used a smartphone. Underpinning this question were 7 options: 1 year or less, 1-2 years, 2-3 years, 3-4 years, 4-5 years, 5-6 years, 6+ years. Respondents using a smartphone for 3-4 years was the largest group of respondents, representing 21% (n=64) of respondents. This was closely followed by respondents with 2-3 years usage at 20% (n=61) and 4-5 years of usage representing 19% (n=58) of the number of smartphone users.

Several questions in the survey sought information about the respondent's smartphone, weather application in use and usage of the weather application. A choice of the current smartphone operating systems were presented to respondents, asking: What operating system does your smartphone use? The results showed by far the majority of respondents, being 62.6% (n=191), indicated they used the iOS (iPhone) operating system, 35.1% (n=107) utilising the Android operating system, with 2.3% (n=7) using Windows as the operating system on their smartphone.

Survey respondents were asked which statement described the weather application(s) they were using: 1) I am using the weather app pre-installed on my smartphone; 2) I am using the weather app I downloaded onto my smartphone; and 3) I am using multiple weather apps on my smartphone.

The results showed that 41.6% (n=127) respondents used a preinstalled weather app. The majority of respondents indicated they downloaded a weather app (58.4% or 178 respondents). These respondents comprised 34.8% (n=106) who downloaded a weather app, and 23.6% (n=72) who used multiple weather apps. By definition, respondents who indicated that they

used multiple weather apps would have needed to download one or more weather apps onto their smartphone. The survey also posed the question: How frequently do you use a weather app on your smartphone? Seven choices were presented to respondents: Rarely, Yearly, Monthly, Fortnightly, Weekly, Daily and Hourly. The frequency of usage shows the largest group (47.5% or 145 respondents) uses the weather app on their smartphone Daily. This result was followed by 31.8% (97) of respondents using a weather app on a Weekly basis. The remainder of the respondents (20.7% or 63 respondents) indicated using their weather app: Hourly (5), Fortnightly (24), Monthly (20), Less than a month (10) and Rarely (4).

Gender Influence – Type of Smartphone and Type of Weather App

Analysis of the data revealed that gender was seen to influence a number of consumer-based aspects reviewed as part of this study. The first influence gender made was on choice of smartphone. Even though the question was “What operating system does your smartphone use”, choosing iOS identifies the brand iPhone. From the total number of female survey respondents, 70% of females used the iOS (iPhone) operating system, whereas only 46.9% of male respondents used iPhones. There are several possible reasons that may explain the gender preference for the iOS platform of smartphones which are now posited.

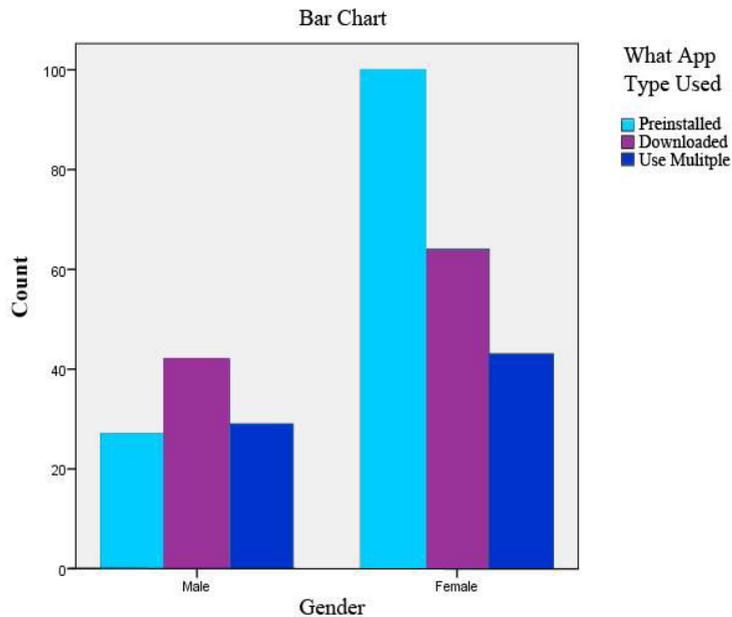
One possible reason for females choosing to use an iPhone comes from an Intel Corporation researcher and anthropologist, Genevieve Bell, who indicated women are now believed to be the lead adopters of new technologies (Barclay 2012). Hence female respondents may reasonably perceive the iPhone to be one of the world’s most popular smartphones, as in fact it is the most popular smartphone in the United States of America (comScore 2014).

Nielsen (2010) conducted a survey that found females were more likely to choose an iPhone than males whom were found to prefer Android smartphones. Furthermore, females, whom are generally considered to be more astute in terms of fashion consciousness than males, are possibly making a fashion statement by using an iPhone (Pentecost & Andrews 2010; Lewis 2013).

The second influence gender made was on the use of preinstalled, downloaded or multiple weather apps in use. Females were more likely than males to use the preinstalled weather application shipped with their smartphone. Figure 1 illustrates the type of weather app used by female and male genders.

As can clearly be seen in Figure 1, females are far more likely to use the preinstalled weather app on their smartphone than are males.

Figure 1: Type of Weather App Used



Source: Data from current research

Other Key Influences

Other influences revealed by the Mann-Whitney U test dealt with the items associated with the ease of use and ease of adoption of weather apps. In all cases females found it easier to adopt and use their weather apps. The researchers suspect this may be due the predominance of iPhone use by females and that 48.3% of females were content to use the preinstalled weather application shipped with their smartphone.

Cross tabulations identified other possible influences. A Mann-Whitney U test (iOS and Android, n=298) identified that the operating system showed significant influence on measures describing ease of use, ease to configuration (significance .000), ease to become skilled (significance .000), and ease to customise (significance .001). In all cases iPhone users perceived these measures in relation to weather applications, to be easier to handle than Android users. A final influence, related to trusting a weather app, was found when looking at aspects of security within this quantitative instrument. iPhone users (significance .000) perceived the weather app on their iOS phone to be more secure than apps based on the Android operating system.

CONCLUSION

This exploratory paper has highlighted a number of key consumer-focused insights, in relation to the use and adoption of location-based smartphone weather apps. Key findings included:

- The majority of respondents prefer to download their own weather application (58.4%).
- Females show a clear preference for iPhones (70%).
- Females were more likely than males to use the preinstalled weather application shipped with their smartphone.
- iPhone users perceived their smartphone weather app to be more secure.
- iPhone users perceived their smartphone weather app easier to configure, customise and become skilled with.

The aforementioned points may have implications for both the manufacturers and marketers of smartphones, in addition to the developers of LBS weather apps. These implications may include a greater emphasis on targeted marketing, based on key user preferences highlighted in the current research. Additionally, the findings of this research have the potential to impact a wider range of other Location Based Services (LBS) apps on smartphones. LBS are available to users of smartphones and other ICT compatible devices where usage is seen as having application in: the military, emergency services, government industries and the commercial sectors. Some of these include (but are not limited to): travel, entertainment, emergency services and information services.

While the scope of this research was limited to a study of users of weather apps *exclusively on smartphones* it is acknowledged weather information is delivered to societies via numerous Information Communication Technology (ICT) devices. Therefore future research could aim to further embed user influences as they pertain to weather apps in an expanded set of geographical locations across a range of ICT devices including: smartphones, laptops, tablets, phablets (a larger screen format of a smartphone) and wearable smart technology devices.

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