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Consumer motivations and attitude towards carsharing services

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Abstract

Car-sharing services, a form of acces –based consumption, gain currently momentum. This paper presents the results of research into Polish consumers' attitude and motivation towards car-sharing. The following research questions were posed:

- 1. What are the motivations for using carsharing?*
- 2. What emotions dominate in the discourse on carsharing on the Internet?*
- 3. What is the user profile of the carsharing service?*
- 4. What types of carsharing users can be distinguished based on their statements on the web?*

An exploratory, qualitative field study was conducted. The results indicate that the service is perceived as an attractive for clients of such a service, who are mainly young men with own cars. The primary motivations to use car sharing services are curiosity and entertainment.

Key words: carsharing, acces-based consumption, motivation, attitude

Introduction

The dynamic development of sharing economy over the last decade affects many markets, where new types of businesses emerge, offering different ways of accessing products and services (Bardhi and Eckhardt, 2012). Although traditional ownership remains the dominating form of consumer- product relationship, nowadays consumers can satisfy their desires and needs in alternative ways. More often, instead of buying and owning, they can use new products just paying for a temporary access to them. Central to these developments is technology, allowing sharing, and making sharing- based business models commercially viable. These models emerge in different market context, including sharing of cars, bicycles, toys, fashion accessories, apparel, jewellery, movies, household furnishing or office space. Revenues from access- based- consumption are forecasted to reach 300 Billion USD in 2025 (PWC, 2015).

A manifestation of sharing economy is access- based- consumption, defined as “market- mediated transactions that provide consumers with temporarily limited access to goods in return for an access fee, while the legal ownership remains with the service provider” (Schaefers et al., 2015, p. 3). Since such transactions do not involve legal ownership transfer, risk and responsibilities, such the maintenance of a product, remain with a supplier (Bardhi and Eckhardt, 2012; Scheffers et al., 2016). In fact, a consumer pays a fee for usage time in the situation of market- mediation (Durgee and O’Connor, 1995). In the literature, access- based consumption is often

considered as a form of collaborative consumption, but it has distinct characteristics. It takes place in the environment of market relationships opened to all consumers, provided that they fulfil entry requirements formalized by a supplier. An example of access-based consumption is car sharing, which recently has attracted attention from researchers. Over the last 17 years there were 352 articles published on this topic in peer-reviewed journals, with visible growth of interest over the last years (Web of Science, 2017). However, the research into consumers' expectations and behaviours in the context of car sharing is still rather limited.

The analysis of Google searches with Google trends for "car sharing" indicates growing popularity of this topic, with Poland in the group of top 10 locations with the highest number of searches after Germany, Austria, Luxembourg, Switzerland, Czech Republic and USA (Google, 2017).

In Poland, field studies focused on limited locations (metropolitan areas such as Warsaw, Krakow, and Wroclaw), or operators (GoGet, 4Mobility, and Traficar), and gathered mainly declarative information. According to some studies, almost 49% of inhabitants of Warsaw would stop using own car for urban mobility, provided car sharing was available to them (Malasek, 2017). With the entry of new players to the market (such as Panek CS), and expansion of incumbent providers, consumers' awareness and interest in car sharing has grown considerably, allowing research into their real experiences. These developments constitute the departure point for this study, aiming to identify Polish consumers' attitudes towards car sharing and motivations to use such an alternative to car ownership.

The following research questions were posed:

1. What are the motivations for using carsharing?
2. What emotions dominate in the discourse on carsharing on the Internet?
3. What is the user profile of the carsharing service?
4. What types of carsharing users can be distinguished based on their statements on the web?

Literature review

Car sharing services can be defined as a system of collaborative car usage, provided to consumers by an operator for a fee (Wolański and Pieróg, 2017). Car sharing is not particularly innovative idea, as the earliest car sharing programs were introduced in Switzerland already in 1948 (Shaheen, Sperling and Wagner, 1999). At the moment there are three models of car sharing services present on the market: stationary (with fixed stations), free – floating (allowing consumers to pick up and return vehicles within a designated area), and peer-to-peer car sharing (temporarily sharing of private cars to individuals from a specific user community). Besides car sharing, there are other alternative ways to use a car: traditional car rental services, car-pooling, and ride-sharing. The latter ones involve sharing underutilized car space or passenger transportation booked with a mobile application (e.g. Uber).

According to a study by Martin et al. (2010) conducted since 2004, the biggest group of car sharing consumers, both in the US and Europe, has been 35- 45 years old males, well educated, with above-the-average income (middle and upper class), living in smaller – than-average households (composed of one or two members). A study of Millennials (consumers born in the years 1980-2000) indicated that the main

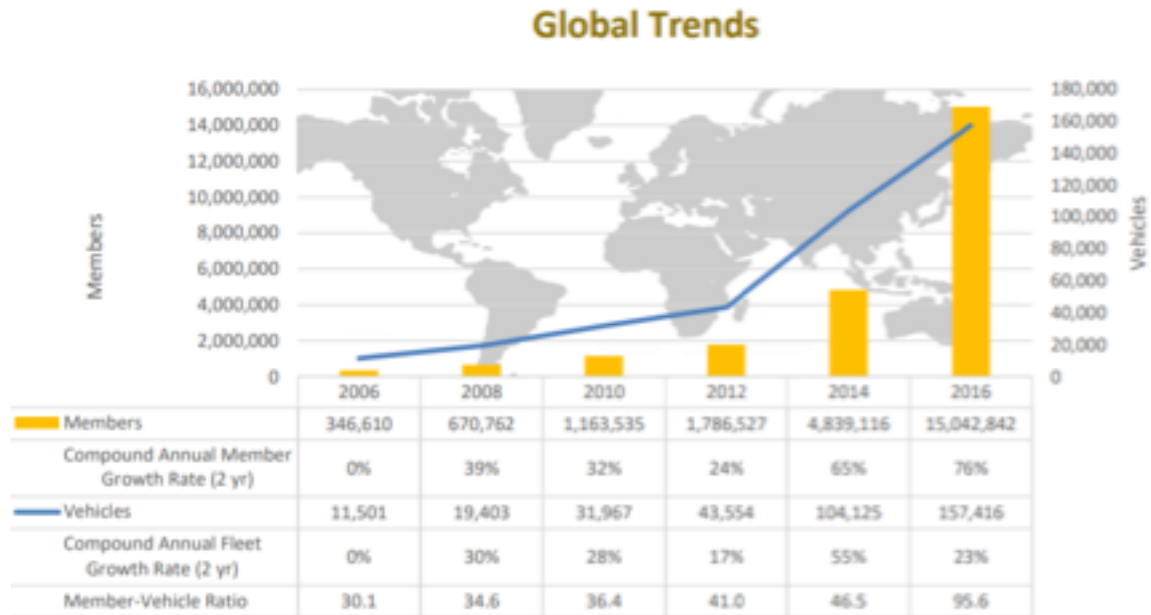
reasons to use cars sharing services were high costs of car ownership and environmental concerns (Wolański and Pieróg, 2017). To these consumers modern technologies proved to be more important than cars, and the lack of a mobile phone would be more severe than of a car. The profile of an average consumer of a car sharing service suggests that it is not competitive, but supplementary to public transport. Paradoxically, the availability of car sharing services seems to stimulate car users, uninterested in using public transport, to change their habits.

Major determinants of consumers' preferences for a vehicle use are price, parking convenience, and the type of a vehicle (Paundra et al., 2017). Consumers prefer transportation modes that are easily available to them (not too far away from their location) (Brown et al., 2016). In the context of a car, availability means parking convenience, and when finding parking is perceived difficult, consumers might exhibit lower willingness to use own car for a trip (De Lorimier and El-Geneidy, 2013). According to Litman (2000) availability within a walking distance from consumer's location should make care sharing service a viable alternative to using private car. Some authors (Kaspi, Raviv and Tzur, 2014) suggest that car sharing services should be more attractive when parking places are included. The selection of vehicles available might also play important role (Carteni et al., 2016). For example, "green consumers" can be attracted by availability of electric cars, allowing them to manifest their "green" identity (Griskevicius et al., 2010). A car is a product in relation to which people exhibit high levels of psychological ownership, as manifested by individual car plates, customisation, and meticulous care. In many cultures cars signalize social status and identity. Paundra et al. (2017) argue that low level of psychological ownership (that is " a state where an individual feels as though the target of ownership or a piece of that target is 'theirs'"(Pierce et al., 2003, p. 5)), might strengthen preference towards car sharing services.

A study of ZipCar users revealed that they did not develop deep feeling of ownership due to temporarily engagement in a product (Bardhi and Eckhart, 2012).

In 2016 there was a real explosion in the number of operators and users of car sharing. As of October 2016, carsharing was operating in 46 countries and six continents, with an estimated 2,095 cities and approximately 15 million members sharing over 157,000 vehicles. Global trends in car sharing presents Figure 1.

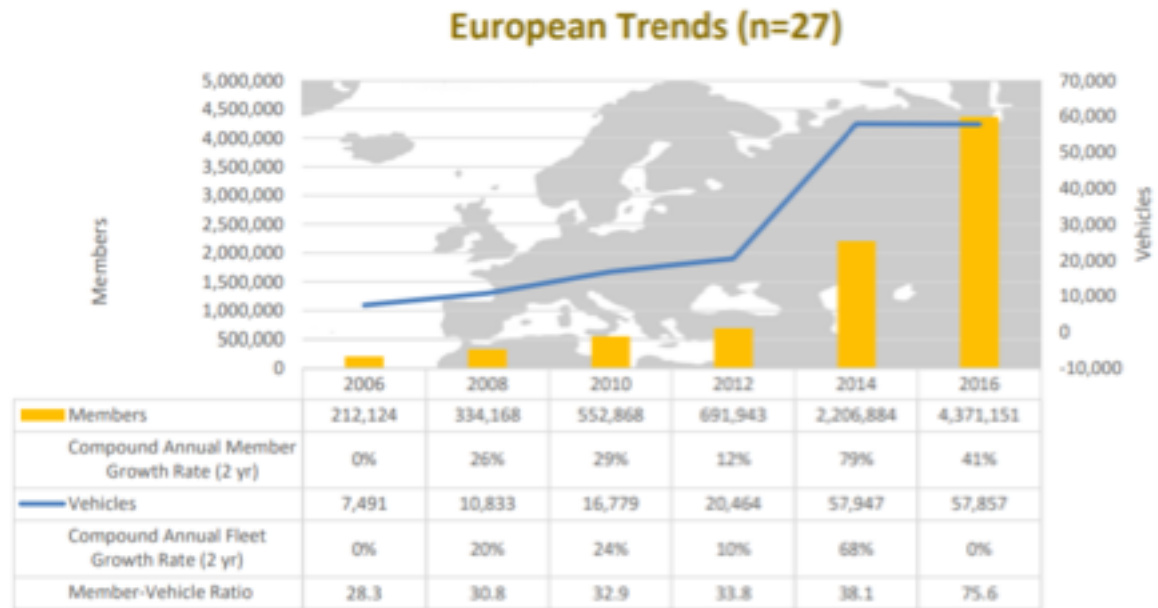
Figure 1. Global trends in car sharing



Source: Shaheen S, Cohen A, Jaffee M, Innovative Mobility: Carsharing Outlook (2018), obtained from <https://cloudfront.escholarship.org/dist/prd/content/qt49j961wb/qt49j961wb.pdf?t=p8dpfj&v=lg>.

Asia, the largest carsharing region measured by membership, accounts for 58% of worldwide membership and 43% of global fleets deployed. The world's second largest carsharing market, Europe, accounts for 29% of worldwide members and 37% of vehicle fleets. The number of carsharing countries increased from 35 in 2014 to 46 as of October 2016. Notably, carsharing expanded to Africa (Morocco in 2015 (pilot) and South Africa in June 2015). Roundtrip and one-way carsharing also ceased operations in Greece around late-2015, where carpooling is a popular option (Shaheen, Cohen, Jaffee 2018). The number of European users and cars in 2006-2016 is shown in Figure 2.

Figure 2. European trends in the car sharing service



Source: Shaheen S, Cohen A, Jaffee M, Innovative Mobility: Carsharing Outlook (2018), obtained from <https://cloudfront.escholarship.org/dist/prd/content/qt49j961wb/qt49j961wb.pdf?t=p8dopfj&v=lg>. Proxies from reports and media sources were used for 12 out of 27 nations in Europe.

The existing research on car sharing services is not conclusive, and focuses mainly on developed countries. Little is known whether it can be an attractive alternative to car ownership for consumers in other locations, including Poland. Similarly, our knowledge of consumers' motivations to engage in access-based consumption, including car sharing services, their profiles and experiences is limited, too.

Research methods

To identify consumers' motivations and attitude towards car sharing services, an exploratory, qualitative field study was conducted. It included netnography (Kozinets, 2015), that is virtual ethnography with brand 24.com - online platform for analysis of key words and monitoring of the content in the Internet. The nature of contemporary netnography is that of "a specific set of related data collection, analysis, ethical and representational research practices," where a significant amount of the data is collected through a very humanist participant-observational research stance (Kozinets 2015, p. 79). From a theoretical point of view, netnography is regarded as one of the most important research tools (Bartl et al., 2016). It enables researchers to access the community members' knowledge online which in turn helps to provide in-depth insights about the consumers.

The applied research procedure is presented in Table 1.

Table 1. The research procedure

Stages of netnographic research according Kozinets (2015)	Conducted research
Research focus	the public use of “car sharing” phrase in Poland from October 2016 to October 2017
Community Identification and selection	Users of the social media (Facebook, Youtube, Instagram, Twitter), forums and blogs.
Data collection	brand 24.com - online platform for analysis of key words and monitoring of the content in the Internet
Analysis	The general analysis - Brand24.com The detailed analysis - MaxQda software.
Findings	The typology of car sharing users.

Source: Own based on Kozinets (2015).

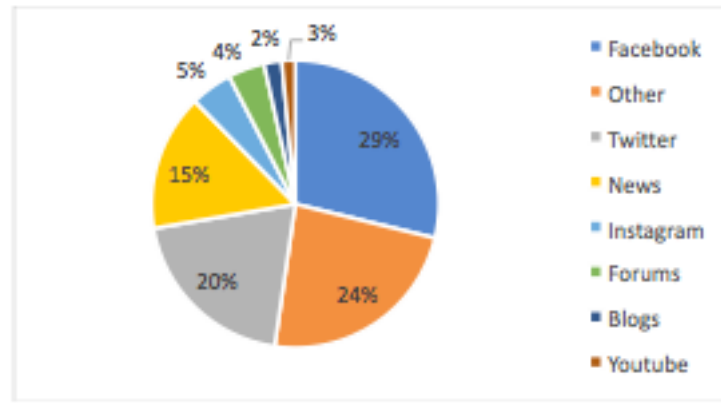
In order to gather online consumer data, the public use of “car sharing” phrase in Poland was monitored from October 2016 to October 2017. The data gathered was analysed with MaxQda software.

Two – step analysis (general and detailed) was applied to analyse all posts gathered with brand24.com. The general analysis aimed to identify who writes about car sharing, the sentiment of these posts, demographic characteristics of the sample (gender), type of post (independent or comment to another post). At this stage the frequency of phrases used in the posts was analysed. 1036 posts by 153 social media users were selected for the detailed analysis phase. Only accounts identifiable with user’s name and surname were included into this stage, with anonymous and corporate accounts being rejected. Only publicly available posts were analysed. The posts were grouped according to the following criteria: type of social medium, name of the profile, author’s gender, post’s content, reach (measured with number of followers), sentiment (positive, neutral or negative). In line with the literature, the authors assumed the following motivations: utilitarian (pragmatic), hedonic, and ecological. These motivations were used for coding the content of posts. The results of this stage of analysis were used to develop the typology of car sharing users. The typology was based on two main criteria: dominating motivation to use car sharing services (utilitarian vs. hedonic) and frequency of use of car sharing services (regular vs occasional). Four types of users were identified: enthusiast, value- seeker, convenience- seeker, and novelty- seeker.

Results

The general analysis revealed that in the analysed period, “car sharing” was mentioned 6771 times, including 3777 times in the social media (1953 on Facebook, and 1351 on Twitter, 321 on Instagram and 151 on other social media). The structure of the media in which posts about car sharing were placed is shown in Figure 3.

Figure 3. The structure of the media in which posts about car sharing were placed



Source: own

As expected, it was more often mentioned by males (80% of all mentions in the social media came from users identified as males). Sentiment analysis revealed predominantly positive posts (84%). 10% of posts were neutral in sentiment. Negative posts (6%) focused mainly on problems with using car sharing services. Users complained about poor or lack communication with service's provider, and limited availability of service. They exhibited negative sentiment with respect to carefree drivers, violating traffic regulations, especially illegal parking, often with photographic proof. More than 2000 posts included comments on online information provided by car sharing companies. The analysis of the frequency of phrases used in the posts revealed that these relating to service itself, such as "car sharing" (669 mentions), "sharing" (132 mentions), "economy" (101 mentions), and to providers, such as "Traficar" (219 mentions) and Panek (185 mentions), were most often used.

1036 posts by 153 non- anonymous social media users were selected for the detailed analysis (posted by users identifiable with name and surname; accounts of car sharing providers' employees or anonymous were rejected). An example of the analyzed post is shown in Figure 4.

Figure 4. User post on Instagram



Source: <https://www.instagram.com/rafaljemiellita/?hl=pl> [2017.12.10]

In- depth analysis of the contents allowed identification of the main motivations to use car sharing services. These included curiosity (willingness to try new locomotion alternative), convenience, and fun. Purely utilitarian (car sharing as a substitute transportation mode) and ecologic (willingness to protect natural environment) motivations were sporadic. Two criteria were used to classify users of car sharing services: the dominating motivation to use the service (utilitarian vs hedonic) and frequency of use. Four types of users were identified: enthusiast, value- seeker, convenience- seeker, and novelty- seeker. The idea of typology is presented in Table 2.

Table 2. The typology of car sharing users

	Dominating motivation	
Frequency of use	More utilitarian	More hedonistic
Regular user	A convenience- seeker	An enthusiast
Occasional user	A value- seeker	A novelty – seeker

Source: own research

An enthusiast is a regular user of a car sharing service, attracted by pleasure and convenience it provides. He shares information usually after service usage, describing driving experiences, car renting process or problems with parking. Posts of an enthusiast reach broad networks of friend and followers. The majority of enthusiasts is young males.

"I have used carsharing many times and I have to admit that it would make sense if the service was cheaper and there was no parking trouble".

A value- seeker uses car sharing services sporadically, and does so mainly due to pragmatic reasons. It is usually a satisfied user, but treats car sharing as a curiosity that can be used only sometimes, due to costs involved. Value- seekers try car sharing because of curiosity or necessity (one's own car is broken).

"I needed to jump out of town to my parents-in-law and my car broke down. The fastest and most convenient alternative was carsharing "

A convenience- seeker uses car sharing services regularly due to pragmatic reasons. For this type of consumer car sharing represents cheaper alternative to car ownership, especially in metropolitan areas. Convenience -seekers are satisfied customers, yet they are aware of service's disadvantages, such as parking problems or price.

"When your bus escapes a few minutes earlier ... what are you doing? I reach for the carsharing application".

A novelty – seeker rarely uses car sharing services, because of car ownership. For this type of consumer the dominating motivations to use car sharing are satisfying curiosity and need of entertainment. The majority of novelty seeker is young women.

"Fantastic experience. With two children and the need to have child seats in the car, however, limited. Rather as a curiosity"

Discussion

Despite dynamic growth, Polish market of car sharing services is a niche one. Users either have their own cars or share one with a family. The primary motivations to use car sharing services are curiosity and entertainment. One can argue that this does not necessarily bode well for the development of viable base of customers, for whom car sharing will be more of a regularly consumed service rather than an incidental entertainment. In general, current users register with multiple providers. Car sharing services are perceived as simple and useful for many people, which might positively influence their rate of acceptance. Although the majority of current users rate them very well, sometimes almost enthusiastically, some consumers voice their negative feelings. One finds critical posts in the social media, with photos of illicitly parked cars, abandoned because of unavailable parking space. Some consumers complain about low quality of customer service or the lack of service at all. Consistently with the existing literature, our study confirmed that car sharing services are more often used by young males, motivated by curiosity and fun. Young males were also found more willing to engage in discussions of car sharing experiences in the social media. It seems then that the real challenges for providers would be finding alternative paths for business development and engaging female consumers.

Limitations

The main limitation of this study results from the applied data gathering method, which relied on publicly available profiles and posts, not necessarily allowing an in-depth analysis of real thoughts of car sharing users, but rather of their public images. It undoubtedly influenced sentiment analysis of the posts, resulting with the predominance of positive posts. However, the data allowed identification of four different profiles of users of car sharing services with their different motivations and usage.

Managerial implications and further research

The results of this study can be applied in the profiling of users of car sharing services. Focusing on the main motivations to use such services, they point at the barriers for their further development. As car sharing has been available in Poland for just a year, Polish users are mainly innovators and early adopters. Providers still need to find new ideas for business development, like offering car sharing service as an alternative in the situation of problems with one's own car. Also, local governments could find our results useful to support car sharing services development as fee per minute inhibits consumers to use such services. Considering further research, a field study of large, representative sample could be conducted to verify the assumptions regarding the types of users of car sharing services.

Conclusion

Car sharing services are perceived by their users as attractive, with majority of consumers being satisfied and planning to use them in the future. However, these consumers are innovators and early adopters, interested in the issue, risk tolerant, well-educated and affluent. It does not seem very likely that almost half of Warsaw's population of car owners would switch for car sharing. Hence, the real challenge for providers of such services is attracting early majority, more conservative consumers with average incomes. A possible solution could be bundling car sharing with other services, such as insurance or hotels, or developing utilitarian, pragmatic benefits for car sharing users. Special parking places, right to use bus lanes or to enter zones closed for private traffic could accelerate market penetration of car sharing services.

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The impact of the public funds for agriculture in substitution of imports – the case of the Republic of Kosovo

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Abstract

The significant growth of import flows as a result of the lack of domestic production and increased domestic demand for goods, has made Kosovo unable for seventeen years to balance export and imports. The purpose of this paper is to analyze the support of the agricultural sector through public funds, their impact on the replacement of agricultural imports through increased domestic production. The export-import ratio has a huge imbalance of around 89% import and only 11% export. The continuous increase of import has affected the trade balance to be negative (-2.669 million euros), which means 24% of this deficit is the agro-food trade deficit, which has continued to grow from year to year.

Kosovo's institutions have undertaken a considerable number of measurements to support this sector through public funds, to increase the competitiveness of agriculture and to replace imports by increasing productivity and introducing new technologies and products.

To come to a conclusion, have the public investments in the agricultural sector affected the growth of production, import substitution and economic growth, the time periods 2007-2016 have been analyzed. The data collection that has been used to conduct this paper are: empirical, descriptive / narrative, cooperative / Comparative and tertiary which have been analyzed through the method of Ordinary Least Squares regression (OLS) with the degree of reliability 95%.

$$rGDP = \beta_0 + \beta_1 AgcGDP + \beta_2 ExAgcp + \beta_3 FDIAgc + \beta_4 SubTr + \beta_5 ImAgcp + \epsilon$$

Keywords: Economic growth, the agricultural sector, import substitution, increased exports

Introduction

Agriculture is one of the main sectors of the economic development of a country. It has been developed alongside with the development of the economy as an inseparable segment. Agriculture is multifunctional because besides the food production, its role is the employment in rural areas, the improvement of social life in the underdeveloped regions, the maintenance of the population balance, the protection of nature and the improvement of collective health. (Letessier, et al, 2008). Agriculture has by far greater economic importance for the countries that aspire to be the EU members (Kosovo, Albania, Macedonia, Montenegro,

Bosnia and Herzegovina and Serbia) than the current EU member states. These states have created favorable policies for supporting agriculture through public funds, thereby adapting conditions and the harsh competition created in the agricultural sector. Pre-accession EU countries have adopted short-term and long-term strategic plans, setting targets for agriculture and rural development making efforts to align with EU principles. As far as these policies are concerned, budgetary funds for agriculture have had positive tendencies, although these tendencies are lower compared to the EU member states. In 2012 budget support to the EU was 480 euros per hectare, while in the EU candidate countries were lower and moved from 25 euros per hectare to Albania to 150 euros per hectare in Macedonia. In Kosovo the budget support per hectare was 70 euros. Direct support for farmers constitutes the greater part of payments, while support for rural and structural development is below the level of direct payments.

Even though most of these payments are used to improve agro-food sector's competitiveness by supporting investments in physical assets on farm, irrigation, water management, farm diversification, etc. countries targeting EU integration are net importers of agricultural products. The trade balance is negative in Kosovo, Montenegro, in Albania in Bosnia and Herzegovina with a coverage ratio of 5-22% of imports with the export of agricultural products, while a better situation is in Macedonia.

Despite numerous challenges, Kosovo has also established policies to support the agricultural sector through which it has aimed to increase the domestic production and competitiveness whereas reducing agricultural imports, and has engaged in the alignment of agricultural policies with the Common Agricultural Policy EU, in order to improve the competitiveness of agricultural sectors. It has not been achieved to determine the comparative potentials and the competitive advantages, and to increase productivity in order to replace imported agro-food products with local products.

The definition for the liberal economy with low tariffs for imported products, the low level of domestic production, poor competitive base, has increased the import of agricultural products, doubling them in the 10 year period 2007-2017, from 384 million euros to 694 million euro in 2017. Even though the agro-food export has been tripled from 18m euros in 2007 to 61m euros in 2017, it still remains low compared to imports with a coverage of imports with exports only 8.8%.

This negative trade balance of agro-food products requires change of the operating environment in order to improve the competitive position in the international market through adequate policies to increase internal capacity that would contribute to the substitution of imports with domestic production and to also increase export. In this effort the replacement of agricultural imports with domestic production remains one of the main challenges for policy makers and other economic development activists to design and implement sound policies that reduce trade deficit.

Different studies on agricultural support policies, import substitution and export growth

Agricultural Support Policies

Scientific studies have analyzed the investments in a complex way in the agricultural sector. (Janvry, 2010) says that agriculture should be considered as a key sector for development. Agriculture development has brought millions of people out of the absolute or relative poverty situation, thus providing an opportunity to develop rapidly. The creation and development of agro-food industries is considered as the first essential step towards industrialized economies. Even if a part of agriculture in a national economy decreases, the agro-industry is the one that needs to grow. The analysis of potentials and comparative advantages in local agricultural production is of a great interest especially to the countries facing the challenges of European integration, based on the fact that agriculture is one of the most complex policies in the European Union. In accordance with the conclusions of the European Council in Copenhagen in June 1993, EU accession requires the existence of a functioning market economy, as well as the capacity to cope with competition and the force market within the European Union (Progress Report 2018). Countries that are aiming for the European integration are focused on structural and institutional reforms which impact on improving the business climate and increasing competition in order to increase the country's export potentials to reduce the macro-deficit, especially in those sectors which are considered to be the key to the development such as agriculture. According to (Byerlee, et al., 2010), the globalization, the integrated value chains, rapid technological and institutional innovations and environmental change have changed the issue of the role of agriculture. Today it is really important to recognize the multifaceted functions of agriculture for development: in promoting economic growth, reducing poverty, reducing income inequality, food security, and providing environmental services. The willingness to invest in agriculture these days requires careful prioritization of agricultural activities to select appropriate instruments in order to achieve the realization of priorities which affect the development of the agricultural sector. Western Balkan countries, including Kosovo, have not managed yet to prioritize agricultural activities for which they have potential and comparative advantages in order to increase the domestic production, to promote economic growth, to reduce agricultural inequality compared to other sectors and to reduce poverty. Funds in the countries aiming to be part of the European Union compared to EU funds are significantly lower, as well as funds for rural development measures and rural development are evidently lower compared to the funds for the direct support of the agricultural producers (Volk, et al., 2014). Recently, there is a tendency of supporting policies for agriculture and trade through increased investment funds, intended to improve the competitiveness of agricultural products, food safety, and agricultural infrastructure. Whereas, research and development tools for knowledge and the transfer of such knowledge to the agricultural producers, according to some research done, are not increasing. This means that there is not much attention paid to the knowledge about the agriculture development.

The increase of the investment funds promotes production and research and development (R & D) agriculture, productivity and quality of agricultural products.

These expenses not only give high returns to agricultural production but also have a major impact on reducing poverty, as most of the poor still live in rural areas and their main source of income is agriculture (Fan & Rao 2003). The opening up of regional and international markets makes the agricultural support policy even more important in order to make it easier for farmers to cope with the growing competition in domestic and international agricultural markets, at a time when the world economy is growing rapidly and domestic and international markets are becoming more and more competitive.

Import substitution policies and export growth

Over the last decades, the rapid growth of the global economy has affected the rapid growth of international trade as a result of technology development, the reduction of trade barriers and the growth of global competition. In such situations it is difficult to determine the model of a sustainable economic development, towards strategies that do not have the right development effects. For the developing countries facing difficulties in economic development, the dilemma becomes even more evident on what will be the long-term economic development strategy along with the integration processes and the effects on the economy which come as a result of economic globalization. Creating the effectiveness of policies that contribute to find the best model for economic development towards competition in the globalized economy has become the subject of study by many authors. Each policy should seek the conditions of efficiency, i.e. the best ways to allocate rare resources and coordinate the activity of different activists in the service of the objectives that it sets (Calme, 2009), in order to change the conditions within a country to increase competitiveness.

There is a great diversity in trade literature and its effects on economic development. Theoretically and empirically, the main issue is on how trade and economic development should interact. In their studies (Romer & Frankel 1999), they have claimed that there is little convincing evidence about the effect of trade in income. Based on their study it has been concluded that trade affects economic growth, but also the economic growth effects on the pattern of international trade.

The results of many studies have shown that trade has an impact on improving real income, boosting employment, but if it is not combined with policies that would impact on balancing imports in relation to exports, that could bring large deficits in the balance of trade and the balance of payments, with effects on the slowdown and deterioration of real income growth (Ocampo & Taylor 1998). The misbalance in the trade balance has made countries deal with this problem, but also international institutions are having the big dilemma of what will be the economic development strategy. The replacement of imports and export promotion has been used as strategy to achieve economic development and it has its advantages and disadvantages. Numerous authors recommend that in the long run, trade policies should be oriented towards export promotion. In the medium to short term, import substitution policy is considered as an appropriate policy for achieving objective developments in the long run.

In the 1950s, developing countries like Brazil, Turkey, Mexico, some African countries, Latin America, East Asian countries have used import substitution to

boost the development of their economy. Through hedging policies they have boosted domestic production growth by creating a base for export. Achievements in local markets have enabled them to succeed in the international market as well.

A large number of authors have claimed that the strategy of import substitution has decreased as an international policy of economic development, yet this strategy is gaining attention as a regional policy for economic growth and development. By the 1970s, import substitution came to American consciousness as a means of promoting national and regional development (Basu, 2005). According to (Kwon, 2009) contemporary societies need to review the substitution of imports as a strategy for economic development. Kwon provides examples of how import substitution has been implemented in the US, with the finding that import substitution could serve as an effective development strategy for small towns and rural areas in the US in almost the same way that has helped developing countries to level international. Research has shown that import substitution has effects in certain sectors such as agriculture, agro-industry, and health care and so on. According to Shafaedin (1998), and Baear (1972) none of the developed countries have achieved their development without supporting their new industries. One of the reasons for the failure of import substitution policies, especially in Latin American countries, has been the full support of companies in their products without any criteria. For a country it is very important to determine where and in which sector should the subsidies by the government go, and what kind of activities should be supported. Also, it is important to determine criteria that the company needs to complete in order to benefit. Rodrik, (2007) has explained that policies should not stimulate the entire industry but specific activities.

Studies have taken into account the fact that import substitution can be as effective as export-based economic activities. Based on this, the substitution of imports in some sectors and the promotion of exports to other sectors is a properly combined approach to economic development. Today, import substitution and base-export development cannot stand alone and therefore a combined approach is needed (Kwon, 2009). Import substitution has the potential to become an alternative to growth-enhancing economic development strategies since import substitution has encouraged local money to circulate within the region rather than being sent to large corporations. Import substitution application is expected to benefit both the producers and the consumers. Financial resources are very important in promoting the successful implementation of import substitution program policies. Governmental, political, financial, administrative and institutional support will maximize these program benefits.

Findlay (1973) and Ahmad (1976) analyzed the phase of import substitution in the manufacturing and export stages of products, concluding that only through substitution of import and domestic production to meet the existing domestic demand is likely to manufacturers gain potential export potential.

According to (Ahmad, 1976) in an empirical study on import substitution and export growth, it was emphasized that there is a dynamic process that carries the industrial sectors of a developing economy from an initial phase of a great dependent on imports through an intensive phase of import substitution to the

production stage for export. Moving from the second to the third stage, the growth of production capacity plays a crucial role. Replacing imports through increased domestic production enables a country to realize its potential of comparative advantages. According to him, the import substitution will have a dominant influence on the domestic production capacity in sectors that are sensitive to the movements of international comparative advantages.

Numerous empirical studies attach importance to domestic production and export growth. Increasing local production meets the growing domestic market demand by replacing imports with local products and generating export opportunities. Referring to the empirical studies of various authors such as Kruger (1978), Chenery (1979), Ram (1985) and Fosu (1990), the importance of domestic production and export growth in the country's economic growth is confirmed. They argue that competition in international markets promotes economies of scale and increases efficiency by focusing resources on sectors in which the country has competitive advantage.

Economic Trends and Trade Balance of Republic of Kosovo

Kosovo is defined for the principles of a market economy and free competition for a liberal trade regime that favors the opening of markets as an opportunity to distribute domestic resources, for a sustainable economy and reduction of poverty. Program policies are oriented towards increasing economic activity, especially in the manufacturing, processing and service industries, supporting export expansion, import reduction and improving the country's trade balance (Government Program 2017-2021). Despite the real GDP growth of 4.1% in 2016 (which is higher compared to the countries of the region) which have lower increase of 2.4% in FYR Macedonia, 3.4% in Albania. Economic growth has not given the proper impact on reducing unemployment and increasing economic well-being. Development policies have not sufficiently reflected in the increase of competitiveness and in the utilization of Kosovo's potential to increase domestic production in a certain sectors where there are competitive advantages. Determining the principles of a market economy and free competition that favors the opening up of markets, is not accompanied by the improvement of the competitiveness of local manufacturing sectors and has not provided its effects for a sustainable economic growth. The low competition in domestic and international markets has year after year deepened the trade deficit. High imports, including the import of agro-food products for which Kosovo has a prerequisite to replace with local products, require a more fundamental study analysis that would guide policy makers to make decision for reforms which can contribute to enter the production chain, to increase productivity, production and exports and to reduce the current account deficit and the imbalance the trade balance.

All the Western Balkan countries, including Kosovo, have been dealing with the current account deficit, including the deficit in the foreign trade. The growth of current account deficit has mainly come as a result of a high trade deficit. According to World Bank data (Regular Economic Report No. 12, 2017), the trade deficit as a percentage of GDP in 2016 was higher in Kosovo with 28.8% and in Montenegro -22.5%, while in Albania it was -16.8, in Bosnia and Herzegovina -17.1, in FYR Macedonia -15.1%, and in Serbia -6.4%. Kosovo has

the highest deficit in the current account and capital reaching the amount of 425.1 million euros in 2017. Compared to 2016, this deficit is 9% lower, as a result of the positive balance of services, the primary and secondary income account, but it still remains high as a result of the deteriorating balance of goods account (Central Bank of the Republic of Kosovo, 2018). The deficit of the trade goods has increased by 7.6% and it has reached 2.7 billion euros. The high trade deficit in Kosovo has affected the reduction of competitiveness in regional and international markets. High imports, low level of foreign exports and investments on the one hand and the level of official transfers and remittances that are uncertain in the future may cause a decline in the economy's growth. To reduce the trade deficit, structural policy measures are required to improve the export-import imbalance, which would contribute to reduce the trade deficit, which has a dominant role in the current account deficit, thus increasing the domestic capacities that affect the import substitution and export growth. Mançellari & Xhepa, (2003) have claimed that the affordability of the current account deficit can be identified with the improvement of the trade balance, however, the effort to reduce import-based consumption would not be fruitful, but any effort would be helpful to replace imports with domestic production that have the same quality, not by putting obstacles but by making sustainable import substitution with the economy restructure and creating a climate suitable for private business consistent to promote export.

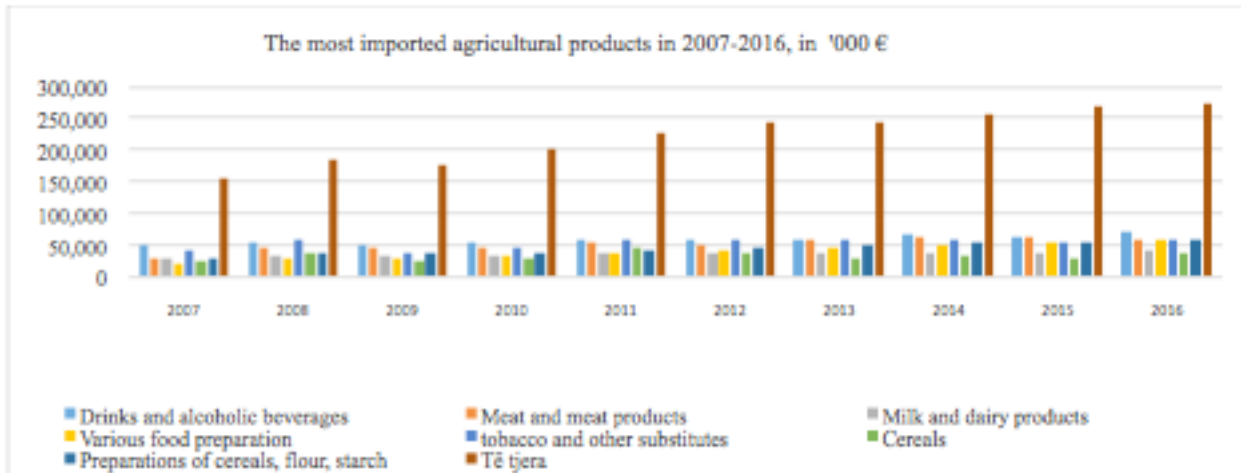
Figure 1. Source: KAS (2018)



The official statistics shown in Figure 1, provide high sums for imports of consumer goods, including consumption of agricultural products. Agricultural industry production has increased by 11% in 2016 compared to 2015, while intermediate consumption has increased by 7%. The added gross value representing the difference between the value of agricultural industry production and the intermediate consumption value has increased by 17% in 2016 compared to 2015. However, the competitive position of food products in the domestic and overseas market has not improved yet. In 2017 from 3.047m euros of total imports, the import of agricultural products was 694m euros, 23.4% as a share of total imports. Although domestic production is growing, the imports continue to remain high as a result of growing consumption per capita. Despite the considerable agricultural resources, the growing trend of investments in the agricultural sector, agricultural imports, as seen in Figure 2, have continued at high rates such as: drinks and alcoholic beverages € 70.3 million, meat and meat

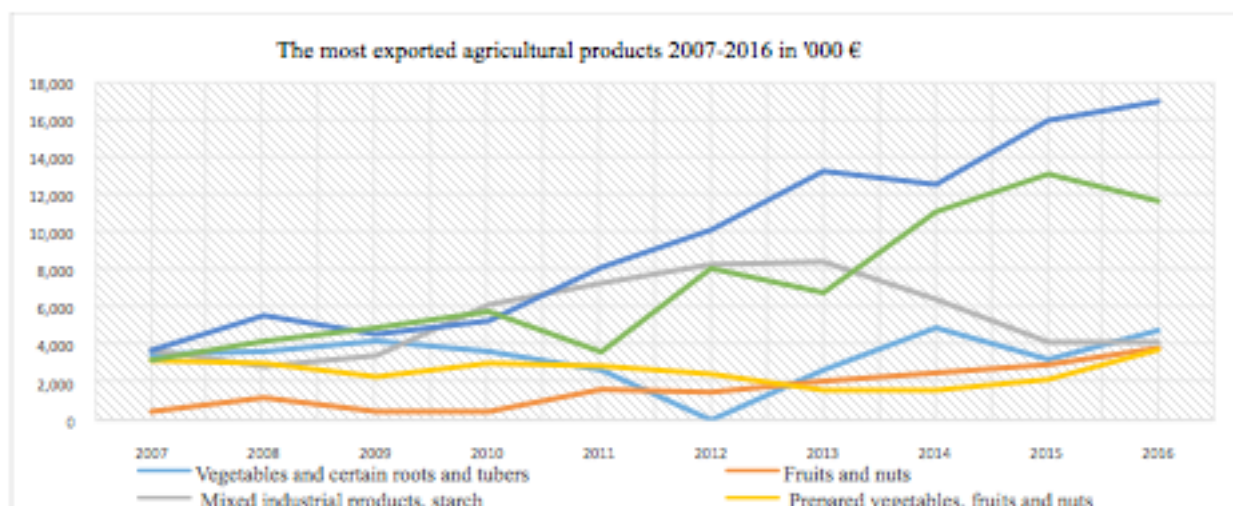
products € 57.8 million; milk and dairy products € 41.4 million, various food preparation € 58.7 million, tobacco and other substitutes 58, 3 million, cereals 36.3 million and so on. (Kosovo Agency of Statistics 2018). The import of these products includes 58% of all imported products.

Figure 2: Source: KAS, MAFRD, processed



Based on World Bank (WB) data for the period 2004-2015, Western Balkan countries have doubled their share in the EU market, however the ratio of goods and services exports to GDP in Western Balkan countries is on average at a low level of 30%, much lower than the average of 80% of economies in transition and the size of similar countries that are members of the European Union (WB, 2017). The lowest level of exports as a share of GDP is Kosovo with 5.1%, Albania with 6.7%, and Montenegro with 8.7%. However, Serbia is better with 37% of GDP, FYR Macedonia with 35.2%, and Bosnia and Herzegovina with 25.7%. According to the statistics of recent years in Kosovo, there is a slow increase in exports, but the export is not a result of production over the country's general needs. Exports of EUR 166,112 thousand in 2007 grew to EUR 378,010 thousand in 2017, with the share of agricultural exports averaging 12% in total exports.

In the recent years there is a slight tendency to replace agricultural imports with domestic production as a result of investments in the agricultural sector. Agricultural exports have been increased from 2007-2017 from € 18,134 thousand to € 61,336 thousand. The most exported products as seen in Figure 3 are: drinks, alcoholic beverages 16.9 million euro, mixed industrial products 4.1 million, fruits and nuts 3.8 million, vegetables, root vegetables and nuts 4.7 million euros, vegetables and cooked nuts 3.7. So, that accounts 74% of total exports, as shown in Figure 3.

Figure 3: source: ASK, MAFRD, processed

Research conducted in Kosovo shows that with a more efficient use of agricultural resources, there is a possibility of replacing imported products with domestic products that have the same quality, based on the fact that there are comparative advantages within the agricultural sector especially in some sectors, such as those of meat, dairy, fruit, vegetables, and in some other sectors. Based on the domestic and foreign agricultural market developments, as well as local agricultural potentials, the replacement of domestic agricultural imports is seen as a great realistic strategic opportunity of the country to create premises for sustainable economic development and the creation of comparative advantages of Kosovo in the sector and special agricultural cultures (Gjonbalaj, 2008). To create comparative advantages, more research is needed on the agricultural sector. There is also need to increase the budget for the process of substantial reforms that will contribute to stimulate food chain rehabilitation, boosting domestic supply of substitute imports, in the growth of competitiveness as well as in the growth of export.

Financing the Agriculture Sector

Agriculture is one of the most important sectors for the economic development. Trends in the accelerated development of the world economy have made this sector very complex and competitive. In such situation the countries, especially those that are set for European integration, are facing dilemmas to define policies facing the challenges of integration and the changes that come as a result of trade opening and increased competition. The customers' demands for quality products have changed. The free trade has resulted in having better quality imported agricultural products that are competitive with domestic products. This has turned the attention to agricultural policies, to a better legislative framework, to supporting farmers to increase agricultural production through support schemes, market consolidation and improved agro-business climate to boost domestic production. The researchers agree that competitiveness in local and international markets does not depend solely on competitive advantages but it is largely dependent on the policies of supporting agriculture and trade.

The countries that prioritize European integration are selected in agricultural policy reforms and in the need to modernize agriculture. Challenges are approximately the same in harmonizing reforms and policies with common European policies, building institutional capacity, facing the low level of economic development and high trade imbalance. To overcome these challenges, their policies have focused on investments and the growth of agricultural production by increasing funds to support agriculture in order to create stability in agricultural markets, knowing the farmers' difficulties to enter the markets, towards strong competition and increasing demand for quality as well as the needs they have for more support. (Janvry, 2010), claimed that the lack of required quantity of agricultural products in local and international markets imposes the need for rapid growth of public investments, such as for efficient irrigation systems, sector-based infrastructure, transport mechanism and transport developed competencies and advanced knowledge, organized markets, national and international policies in their favor. According to (WB, 2010), it should be a priority for policy makers in Kosovo to increase public spending, for more investment in agriculture, focusing on public spending on grants and private investment. In Kosovo, agricultural development policies in terms of modernization and alignment with EU standards are based on Kosovo Program for Rural and Agricultural Development 2007-2013, including direct which has been in line with the first (I) pillar measures of Common Agricultural Policy and rural development support measures similar to the second pillar of the Common Agricultural Policy, aiming to restrict the agriculture sector in parallel with that of the EU and improving the standard of living of the rural population in Kosovo. The general objectives of Agriculture and Rural Development Plan (ARDP) were:

- Additional income for farmers and rural residents, leading to improved standards of living and working conditions in rural areas,
- The improvement of efficiency and competitiveness in primary agricultural production in order to achieve import substitution and benefit from export markets,
- Improving the processing and marketing of agricultural and forestry products, with increased efficiency and competitiveness,
- Improving the quality and hygiene standards of the farms
- Sustainable rural development and improvement of the quality of life
- Creating employment opportunities in rural areas, through rural and rural diversification
- The alignment of Kosovo's agriculture with that of the EU (ARDP 2007-2013)

According to the orientation plan which has been in support of agricultural producers through: Direct payments and rural development measures as investment support. Direct payments aim at increasing the competitiveness of the market, so that domestic production can compete with imported products. While rural development measures include support in vocational training, physical restructuring in the agro-rural sector, management of aquatic resources for agriculture, improvement of processing and marketing of agricultural products, improvement of natural resource management, farm diversity, rural improvement and heritage conservation, and support for the development strategy of local communities.

On the other hand, Kosovo's rural development policies under the ARDP 2014-2020 are based on the strategic objectives of IPA II policies focusing on 6 priorities.

1. To encourage the transfer of knowledge and innovation in agriculture, forestry and rural areas,
2. To increase competition in all types of agriculture and to increase farm sustainability,
3. Promoting the organization of food chains and risk management in agriculture
4. Restoration, preservation and improvement of ecosystems dependent on agriculture and forestry
5. Promoting resource efficiency and supporting change towards low and sensitive carbon economy
6. Promoting social inclusion, poverty reduction and economic development in rural areas

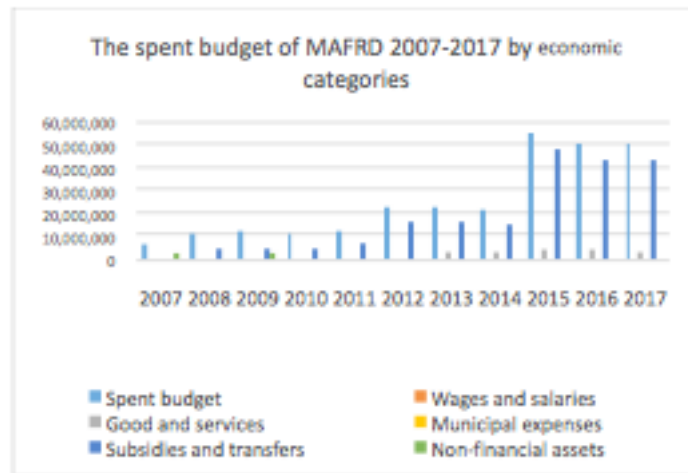
The overall goals of ARDP 2014-2020 are:

- To develop the innovation-based and competitive agro-food sector with increased production and productivity, and capable of producing high-quality products and achieving EU standards.
- To protect the natural resources and the environment in rural areas
- To improve the quality of life and diversify employment opportunities (ARDP 2014-2020).

Development programs like these have also been accompanied by the increase of the budget of the Ministry of Agriculture Forestry and Rural Development (MAFRD) in order to increase competitiveness and innovation in agriculture as well as the knowledge and managerial skills of farmers. In 2007, the MAFRD budget was € 6,545,733, in 2016 the budget increased to € 50,817,594, focusing on increasing direct payments funds in order to encourage farmers to develop agricultural businesses, increase production, increase market competition towards products imported from abroad.

Figure 4 shows the dynamics of increasing public investments in the agricultural sector as well as prioritizing agricultural activities.

Figure 4



Source: MAFRD, MF,processed

Figure 5



Source: MAFRD, AAD, processed

In 2008, direct payments for farmers amounted to EUR 589 thousand, while in 2016 the value of the funds increased to EUR 26 million. The support given to the agricultural sector is more oriented towards subsidies as a lack of structured value chains.

In 2007, the investment grants were realized in the amount of EUR 445 thousand. The value of investment grants for farmers, small and medium-sized enterprises aimed at boosting the development, competitiveness and sustainability of value chains, increased to 23 million in 2016, which are invested in the physical assets of agricultural economies, processing and marketing of agricultural products, diversification of farms and business development. These investments support farmers to add arable land surfaces and increase production and productivity so that these farms are economically viable with the potential to

supply the local market, replace imports and increase exports to the countries of the region and the European Union.

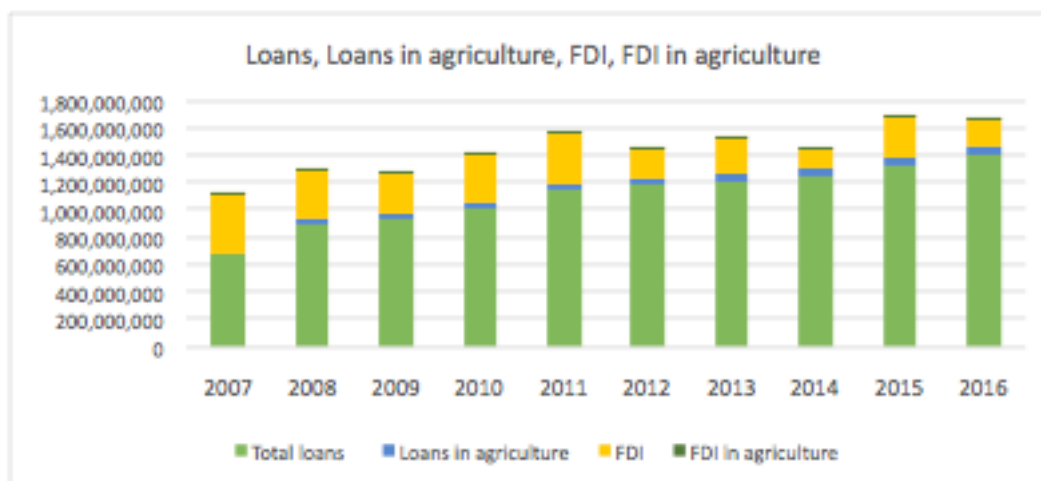
Investments in agriculture in Kosovo 2008-2015

The agriculture sector is funded by donors, donor funding priorities are set in accordance with the Ministry of Agriculture and Rural Development. The largest donor in the period 2008-2015 is the European Union (EU) with 40.6 million euros, USAID with 13.9 million euros, Sweden with 7.43 million, Germany 6.87 million euros, and Finland with 6.14 million euros (MEI, 2015).

As it is shown in Figure 6, the farmers in Kosovo have faced difficulties to obtain loans and there were low foreign direct investments in agriculture. The establishment of a loan guarantee fund in agriculture is expected to give its effects to farmers in order to have more access to loans. The attendance of agriculture, in the overall loans received in Kosovo in 2016, was 4.2%. Whereas Foreign Direct Investments (FDI) in the agriculture sector in 2016 was 1.2 million euros from the total of 220 million euros as it was in FDI.

Investments on agricultural sector impact on the growth of agro-processing industry, employment increase, reduction of trade imbalance by replacing the import of agricultural products with domestic products, thus ensuring a sustainable economic development, to which Kosovo is in need.

Figure 6: CBK, KAS, processed



Increase of public funds for the agricultural products, donor` support, establishment of the loan insurance fund have begun to have effects on the development of agricultural sector, Kosovo`s economic and social development, agricultural competitiveness in the region, and in meeting the EU requirements.

Research methodology and hypotheses

The data collection that has been used to conduct this paper are: empirical, descriptive / narrative, cooperative / Comparative and tertiary which have been

analyzed through the method of Ordinary Least Squares regression (OLS) with the degree of reliability 95%.

$$rGDP = \beta_0 + \beta_1 AgcGDP + \beta_2 ExAgcp + \beta_3 FDI Agc + \beta_4 SubTr + \beta_5 ImAgcp + \epsilon$$

rGDP- Real GDP

β 1- regression

AgcGDP- Agricultural participation in GDP

ExAgcp- Participation in the export of agricultural products

FDI Agc- FDI in agriculture

SubTr- Subsidies and Transfers

ImAgcp- Participation in the import of agricultural products

ϵ - term of error

Factor analysis included in this econometric model will be:

Economic factors which have organic relation in budget income collection and which all together represent Gross Domestic Product.

Hypotheses and research questions

Based on the purpose and the objectives of this study, these hypotheses will be tested and verified;

H1: The participation of agricultural products on export affects the growth of GDP in the Republic of Kosovo

H2: Subsidies and grants have a positive impact on GDP growth

Based on the purpose of the research and the objectives of this study, the research questions which provide the answers are:

1. Has the percentage of investment participation in agriculture increased from the budget of the Republic of Kosovo?
2. Has the value of budget expenditures increased for subsidies and grants?
3. Has there been a positive effect on agriculture support in replacing imports and increasing exports?
4. Has the increase in grants and subsidies in agriculture affected positively?

This study focuses on the effect of support given to agricultural sector with grants and subsidies to increase domestic production, substitution of imports and economic development. In order to achieve the objectives of this study and prove the hypotheses the data has been collected for the period of time between 2007-2016, data on MAFRD spent budget, data on budget expenditures for direct payments and for investment grants. It is also analyzed the participation of agriculture in GDP and its effect on economic growth of the Republic of Kosovo in 2007-2016.

All this data has been analyzed and processed through the model where the hypotheses were tested.

The following tables show the impacts of independent real GDP variables for the years (2007-2016), based on linear regression, to observe the correlation with the variables of the quantity X and the impact of tires on rGDP for these years.

Through these tables it has been proven that there is a direct impact on the GDP growth for 2007 - 2016 allocation of funds for grants and subsidies in agriculture.

Independent variables are: Agriculture participation in GDP, subsidies and transfers, export participation of agricultural products and FDI in agriculture in million euros.

Dependent variable GDP

Unrelated variables such as the share of agriculture in GDP, do not have a significant impact on GDP growth even though there is a positive relationship in terms of the impact of agricultural inputs on GDP growth. It can also be seen in the tables of the model summary below and the data presented without showing actual correlation nor the coefficient of significance between them.

Table 1. Statistical Summary of the Model

Model Summary										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change in R Square	F Change	df1	df2	Sig. Change	F
1	.996 ^a	.992	.981	119575.128	.992	95.246	5	4	.000	

a. Predictors: (Constant), Import share of agricultural products, FDI in agriculture in million euros, FDI in agriculture in million euro, Agricultural participation in GDP, Export share of agricultural products

The export share of agricultural products has a positive and significant impact on GDP growth in the Republic of Kosovo. Based on the following data, there was an effort to find out, through coefficient of standardization, the impact of independent variable, as a significant variable of this study in GDP. According to the data presented below, the export share of agricultural products has a positive and significant impact on GDP growth in the Republic of Kosovo and it is in a fair correlation with other variables that show a consistent relation and significance of the change with growth of GDP.

Coefficients ^a										
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	335542.071	665178.519		.504	.640					
Participation of agriculture in GDP	4.896	2.600	.291	1.883	.133	.782	.685	.086	.087	11.482
Participation on expots of agri products	49.462	16.932	.550	2.921	.043	.979	.825	.133	.059	17.048
FDI in Agriculture	-.012	.016	-.063	-.719	.512	-.737	-.339	-.033	.275	3.636
Subvencione dhe transfere	.012	.009	.233	1.439	.224	.846	.584	.066	.079	12.593
Participation of imports agriculture	-.175	3.166	-.018	-.055	.959	.980	-.028	-.003	.019	52.180

Dependent Variable: GDP

FDI in agriculture has a negative and insignificant impact on GDP growth in the Republic of Kosovo.

Based on the above data it has been tried, through the standardization coefficient, to

Collinearity Diagnostics ^a							
Eigenvalue	Condition Index	Variance Proportions					
		(Constant)	Agriculture participation on GDP	Export participation	FDI in agriculture in millions	Subventions and transfers	Participation of imports in agriculture
4.908	1.000	.00	.00	.00	.00	.00	.00
.867	2.379	.00	.00	.00	.14	.01	.00
.217	4.754	.00	.00	.00	.16	.10	.00
.006	28.945	.14	.00	.56	.32	.35	.00
.002	52.745	.83	.08	.29	.13	.03	.05
.000	133.304	.03	.92	.15	.25	.51	.95

a. Dependent Variable: GDP

find the independent influence of the variables, as an insignificant variable for this study in GDP. According to the data below, FDI in agriculture has a negative and not significant impact on GDP growth in the Republic of Kosovo. It is in a fair correlation with other variables and it indicates a unanimous relation and not significant change to help the GDP growth.

The imports participation of agricultural products has a negative and insignificant impact on GDP growth in the Republic of Kosovo. Based on the above data it has been tried, that through the standardization coefficient, to find the independent influences of the variables as a not significant variable for this study in the GDP. According to the data below, the import of agricultural products has a negative and insignificant impact on GDP growth in the Republic of Kosovo. It is in a fair correlation with other variables and shows a unanimous and insignificant connection of change towards GDP growth.

Results summary, hypotheses testing and conclusions

Based on the purpose and objectives of this study these hypotheses are tested and verified;

H1: The participation of agricultural products on export affects the growth of GDP in the Republic of Kosovo

H2: Subsidies and grants have a positive impact on GDP growth

H1: The participation of agricultural products on export affects the growth of GDP in the Republic of Kosovo

The choice of the model is done by testing the impacts of independent Y variables by years, based on linear regression, to observe the relationship of the quantitative variables X and their impact on GDP. Through the OLS model and the STATA program, H1 hypothesis was tested positively by using as independent variable: agriculture participation in GDP, subsidies and grants, export participation of agricultural products. This hypothesis is proven to be correct.

H2: Subsidies and grants have a positive impact on GDP growth

The choice of the model is done by testing the impacts of independent Y variables by years, based on linear regression, to observe the relationship with the quantitative variables X and their impact on GDP growth. Through the OLS model and the STATA program, hypothesis H2 was verified by using as independent variable: subsidies and grants on one side; and dependent variable, the budget. This hypothesis is verified as correct.

Conclusions

It can be concluded that the participation of investments in agriculture is contributing to GDP growth of the Republic of Kosovo, it can be noted that there is a great participation in budget revenues and any changes will reflect positively on GDP growth.

This is also demonstrated through the multiple linear regression model and through the testing of hypotheses in STATA software.

The export share of agricultural products is important in the growth of GDP in the Republic of Kosovo and it plays an important role.

Based on the results obtained from testing hypotheses and giving answers to research questions we could conclude that the participation of agriculture in GDP does not have

a significant impact on GDP growth, even though it has a positive relationship to the impact of agricultural incomes in GDP growth, which is a decisive factor and plays an important role in the development of this segment of interest to the country.

Also, the export share of agricultural products has a positive and significant impact on GDP growth in the Republic of Kosovo. This proves that the growth of agricultural products destined for export destination will play an important role for the country's economy.

Another factor, such as FDI in agriculture, has been analyzed and after the results obtained it was found that it has a negative and not significant impact on GDP growth in the Republic of Kosovo, it should be taken into account that this factor is important in providing of the conditions for the acquisition of foreign investors in this economic segment. Also, subsidies and grants have a positive but not significant impact on GDP growth or economic growth. On the other hand, the imports share of agricultural products is negative and not significant to GDP growth in the Republic of Kosovo.

Recommendations

- The Republic of Kosovo faces the challenge of shortages in manufacture to fulfill domestic demand. The small supply of domestic production has been expressed in the ongoing deepening of the trade deficit that hampers the integration to international and EU mechanisms. Currently there is no legal regulation that stimulates domestic products to meet the domestic needs for agricultural products, which would affect imports substitution and export stimulation. Under these conditions it is necessary to encourage investment policies in those branches and sectors of the economy that have comparative advantages.
- In trade with the countries of the region there is no reciprocity or equal trade conditions, as a consequence of this, the country is characterized by rapid growth of imports and reduction of exports that worsens the foreign trade balance and the current account abroad. Agricultural imports from the trading partners of the Republic of Kosovo, which receive subsidies for production and export, place Kosovo farmers in a competitive position at a disadvantage. Local policies should be encouraging, through investment grants to stimulate the use of domestic resources, increase domestic production and replace imports.
- Kosovo needs to continue its efforts to create a functioning market economy able to cope with competition by directing the budget to growth-generating investments, and to strengthen competitiveness that would have positive effects, also on reducing external imbalances, by replacing imports with domestic products and increasing export

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The circular economy and natural capital: A case study of European clothing and fashion retailers

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Abstract

Clothing and fashion industry retailing faces a number of challenges, including inventory management and omni-channel retailing, but many commentators suggest that sustainability has become an increasing pressing challenge. The concepts of the circular economy and natural capital are increasingly common features of the sustainability narratives of a growing number of companies, and this case study explores the ways leading European based clothing and fashion retailers are addressing the circular economy and natural capital. The case study reveals that the leading European clothing and fashion retailers have employed the concept of the circular economy in a variety of ways, but the concept of natural capital has received much less attention. More generally, the authors argue that both concepts raise a number of issues, relating to different and contesting meanings, measurement and accounting, relationships to sustainability and business imperatives and economic growth.

Keywords: Circular Economy, Natural Capital, European Clothing and Fashion Retailers, Sustainability

Introduction

The fashion and clothing industry 'is an international and globalised industry, with clothing often designed in one country, manufactured in another, and sold in a third' (Strahle and Muller 2017) and this is reflected in investments, revenue, and employment, worldwide. Fashion industry statistics (Fashion United 2016) reveal that within the European Union, for example, which is the world's largest market for clothing and textile products, the textile and clothing industry had an annual turnover of 171 billion Euros, it generated annual investment of 4.8 billion Euros and some 1.7 million people worked within the industry. The textile and fashion industry encompasses the production of raw materials principally fibres and textiles, the production of clothes by designers and manufacturers, retailers who sell clothes to consumers and the advertising industry which promotes a range of fashion brands. For the majority of the population, retailing is the public face of the industry and 'large fashion retailers can play a key role in promoting sustainability, because they are the intermediaries between producers and manufacturers on the one hand and customers on the other hand' (Strahle and Muller 2017). While clothing and fashion retailers face a number of major challenges including omni-channel retailing, inventory management in the face of rapidly changing consumer demand, the creation of a unique experience for customers and sustainability, many trade and

academic commentators suggest that sustainability has become an increasingly pressing challenge.

Rebecca Thomson (2018), for example, writing under the banner of *Drapers*, the business to business magazine and website covering the retail fashion industry, claimed 'sustainability is no longer optional for fashion retail' and Strahle and Muller (2017) emphasised 'the rising importance of sustainability in fashion retail.' In many ways, sustainability is both an umbrella and a contested term, which has taken on many meanings and interpretations, but the concepts of the circular economy and natural capital are increasingly common features of the sustainability narratives of a growing number of companies and organisations. Both concepts might be seen to be particularly applicable to clothing and fashion retailing in that its supply chains rely in large measure on natural materials and for many consumers, clothes, particularly at the fashion end of the market, have a short lifespan prior to being discarded. With these thoughts in mind, this case study explores the ways leading European based clothing and fashion retailers are addressing the circular economy and natural capital. The case study outlines the concepts of the circular economy and natural capital, reviews if, and how, the ten leading European fashion and clothing retailers are publicly addressing both concepts and offers some reflections on the circular economy and natural capital in promoting sustainability within the fashion and clothing sector of the retail economy.

The Concepts of the Circular Economy and Natural Capital

While Murray et al. (2015) suggested that the term circular economy has 'been linked with a number of meanings and associations by different authors' they argued that in its most basic form 'a circular economy can be loosely defined as one which balances economic development with environmental and resource protection.' The Ellen McArthur Foundation, which was established in 2010 with the aim of accelerating the transition to a circular economy, argued that 'a [circular economy](#) is restorative and regenerative by design, and aims to keep products, components, and materials at their highest utility and value at all times' (Ellen McArthur Foundation 2015). The concept of the circular economy is certainly gaining increasing momentum in both political and corporate thinking about the transition to a more sustainable future. The European Commission (2015), for example, argued that 'the transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste is minimised, is an essential contribution to the European Union's efforts to develop a sustainable, low carbon, resource efficient and competitive economy.'

The circular economy embraces all stages of the product life cycle from both the product design and the production process, through marketing and consumption to waste management, recycling and re-use. Accenture Strategy (2015), for example, suggested 'transitioning to the circular economy may be the biggest revolution and opportunity for how we organize production and consumption in our global economy' and that 'at its essence, the circular economy represents a new way of looking at the relationships between markets, customers and natural resources.' In a similar vein, PricewaterhouseCoopers (2017) argued 'ultimately the circular economy is about

rethinking everything, including business models themselves, so we can reduce consumption.' Consumers will certainly have a vital role to play in any transition to a more circular economy and here the focus will need to be on looking to provide consumers with clearer information on the environmental impacts of their buying behaviour and on promoting more responsible environmental attitudes to consumption.

The concept of natural capital, namely 'the elements of the natural environment, that provide valuable goods and services to people' (Natural Capital Committee 2015), is attracting increasing attention from both environmental and economic policy makers. Foster and Gough (2005) suggested that the economist David Pearce first introduced the concept of natural capital in 1988 as a way of interpreting sustainable development. More recently natural capital has essentially been seen as one, arguably 'the most fundamental' (European Environment Agency 2015), of the forms of capital which also includes financial capital, social capital, instructional capital and human capital. At a general level there is a consensus about the general meaning of the term natural capital but a variety of definitions can be identified. The World Forum on Natural Capital (2015), for example, defined natural capital as 'the world's stocks of natural assets which includes geology, soil, air, water and all living things.' The National Capital Committee(2015) offer a more expansive definition namely 'the elements of nature that directly and indirectly produce value or benefits to people, including ecosystems, species, freshwater, land, minerals, the air and oceans as well as natural processes and functions.'

Voorra and Venema (2008) suggested that natural capital can be 'described as renewable or non-renewable.' More specially 'renewable or active natural capital is self-maintaining due to its ability to harness solar energy' while the non-renewable capital assets 'are formed over long geological time periods and are passive' (Voorra and Venema 2018). The European Environment Agency (2015) suggested that natural capital comprises two components namely 'abiotic natural capital' and 'biotic natural capital' with the former comprising 'subsoil assets (e.g. fossil fuels, minerals) and abiotic flows (e.g. wind and solar energy)' while the latter 'consists of ecosystems, which deliver a wide range of valuable services which are essential for human well-being.' A number of frameworks have been put forward to define and measure and account for natural capital though such tasks are fraught with difficulties. Tani (2014) outlined attempts to develop international frameworks and standards by the World Bank and the United Nations Environment Programme but she argued that 'there is no simple assessment that can be made about the depreciation of natural capital' and that 'until this is addressed our national accounts will provide erroneous signals about future economic prospects.'

The role of both concepts within the fashion and clothing industry has attracted attention from academics and trade sources. Business of Fashion (2018), for example, in reporting on a debate entitled 'How Can Fashion Embrace the Circular Economy', held at its 'Annual Gathering' in December 2017 identified a number of key points that emerged during a discussion held under Chatham House Rules. These points included the belief that the industry cannot take a lead from customers or wait for them to change their purchasing habits; the suggestion that it may be necessary to reframe the way people participate in the fashion system, which might

see a growing rental market and the development of a tiered system of borrowing; expressions of concerns about a loss of jobs within the industry; and the need to find new ways of cross industry cooperation and collaboration.

The National Capital Coalition (2016) produced a 'Natural Capital Protocol' for the 'Apparel Sector', designed 'to help businesses identify, measure, and value their impacts and dependences on natural capital.' The focus is on 'the natural capital impacts and dependencies of businesses operating across the apparel value chain including the consumer use and end-of-use stages, as well as input companies throughout the value chain' (Natural Capital Coalition 2016). Further the Natural Capital Coalition (2016) recommended that 'recycling, reuse, and other end-of-life options are considered within every stage of the value chain and can be a critical mechanism for reducing impacts and dependencies.'

On the academic side Koszewska (2018) identified a number of challenges the textile and fashion industry had to face in moving towards a more circular model and she suggested 'a transition towards a circular economy should start with waste prevention and the minimization of landfilled waste.' More specifically Koszewska (2018) suggested 'this process has three phases that are crucial for the circular economy model: product design and development, waste collection and sorting; and effective recycling. Each of them comes with barriers and difficulties, but also offers ample opportunities.' Here the major barriers were seen to revolve around 'consumer behavior and education', 'disposal practices, collection and sorting infrastructure and processes and 'recycling technologies' (Koszewska 2018). Bianchi and Birtwistle (2010) examined the antecedents of three forms of clothing disposal methods, namely selling, giving to family members or friends, and donation to charities, in Scotland and Australia, and concluded that 'general recycling behaviour was found to be the strongest predictor for donating to charities.'

Joy and Pena (2017) examined sustainability in the fashion industry and argued for 'increasing consumers' awareness of the natural world, with the goal of broadening their perspectives to include not only personal gratification but also the pressing need to combat processes harmful to nature.' Further they argued that 'by applying traceability—the ability to trace an item through every stage of production—to the realm of fashion supply chains, consumers can make informed purchase decisions based on what appeals to them on a personal level and also on a given item's environmental and social impact' (Joy and Pena 2017).

Frame of Reference and Method of Enquiry

In an attempt to undertake an exploratory review of if, and how, Europe's clothing and fashion retailers are addressing the circular economy and natural capital, the top ten leading fashion retailers in Europe (Selecta 2018), as measured by the number of stores, were chosen for study. The retailers are Inditex, Arcadia, H&M, Calzedonia, C&A, Marks and Spencer, New Look, Next, J D Sports and Primark. As large players within the retail clothing and fashion retailing the selected companies might be seen to reflect cutting edge thinking in their approach to the circular economy and natural capital as important elements in their sustainability strategies. Many of the selected clothing fashion retailers trade in a number of countries and all

have global supply chains and as such should be addressing international, as well as domestic, agendas in their sustainability strategies.

Inditex, established in 1963 and headquartered in Spain, is one of the world's largest fashion retailers and has eight major retail brands, including Zara, Mossimo Dotti and Bershka, and over 7,000 stores across all five continents. Arcadia also trades from a number of brands, including Dorothy Perkins, Topshop and Topman, has over 3,500 stores in 38 countries and ships to over 100 countries through its online websites. H&M is a Swedish multinational fashion retailer with over 4,500 stores in 62 countries. Calzedonia is an Italian fashion company and trades from 1,750 stores worldwide. C&A, originally founded in 1841 as a Dutch textile company and now headquartered in Belgium and Germany, has over 1,500 stores in 19 European countries and serves a number of major markets in Asia, North America and South America, where it has a total of 450 stores. Marks and Spencer is a UK based multinational retailer, whose product range includes home products and food as well as clothes, and has over 1,000 stores in the UK as well as 428 stores in 56 other countries. New Look is a British global fashion retailer, established in 1969, and has over 1,100 stores in 19 countries. Next is a multinational fashion and footwear retailer with over 500 stores in the UK and a further 200 in Europe, Asia and the Middle East. J D Sports is a UK based sports fashion retailer founded in 1981, while Primark is an Irish based fast fashion retailer with stores in a number of European countries and the US.

Retailers have employed a range of methods to report on their sustainability commitments and achievements, but publication on corporate websites has become the most popular and the most accessible reporting mechanism (Morhardt 2009). With this in mind, the authors conducted an Internet search for information, using the two key phrases 'circular economy' and 'natural capital' and the name of each of the selected European based clothing and fashion retailers. This search was conducted in November 2018, using Google as the search engine. The information obtained from this search process provided the empirical information for this paper. The specific examples and selected quotations drawn from the corporate websites are used for illustrative purposes, with the principal aim being to review the ways in which the selected clothing and fashion retailers employ the concepts of the circular economy and natural capital. Unless specifically cited all quotations are drawn from the selected retailers' corporate websites. The case study is based on information that is in the public domain and the authors took the considered view that they did not need to contact the selected retailers to obtain formal permission to use this information prior to conducting their research.

Findings

There are marked variations in how the selected clothing and fashion retailers addressed the concepts of the circular economy and natural capital as part of their sustainability strategies, though in a minority of cases the two concepts were linked. The concept of the circular economy received more attention than that of natural capital, but the retailers' interpretation of the circular economy and the extent of their public commitments to the concept varied considerably. Under the banner 'Circular Fashion' C&A, for example, claimed 'we believe in circular fashion', and that 'our

vision is one of a restorative circular economy, where nothing is wasted in the creation or disposal of our clothing.' More generally, the company emphasised 'we want to evolve the apparel industry to a future where every material is used and reused safely' and 'where ecosystems are protected.'

Further C&A argued that 'for the apparel industry to become truly circular each part of the value chain must evolve' and reported on its participation in the Ellen MacArthur Foundation's 'Make Fashion Circular Initiative. This initiative looks to drive collaboration between industry leaders and 'its ambition is to ensure clothes are made from safe and renewable materials, new business models increase their use , and old clothes are turned into new.' In this spirit, C&A identified 'six enablers of a circular fashion industry', namely technology to recover fibres: higher value of down-cycled textiles; the capability to reduce post-industrial waste; consumer participation in collecting used clothes; automated sorting of collected materials; and the capability to sort and reduce post-industrial waste.' C&A suggested that its commitment to a more circular fashion industry was demonstrated through its 'GOLD level Cradle-to-Cradle Certified products' which are supported by 'our in-store take-back programme that allows customers to recycle clothing that has reached its end of use.'

C&A also publicly reported on 'Our 2017 Performance.' Under the headline 'Pioneering circularity in Stores', the company reported that in 2017 it had brought the first GOLD level Cradle-to-Cradle Certified products to market in stores across Europe and in Brazil and Mexico. This was followed by the introduction of many more of these products to stores later that year and the collection was expanded from its initial focus on ladies wear to include men's' and children's' wear. In total, C&A reported that over 1.3 million pieces of Cradle-to-Cradle Certified apparel had been brought to market by the end of 2017. The company also reported that its 'in-store-take-back' programme, initially introduced in the Netherlands, had been rolled out in Belgium, Luxembourg and Switzerland, with a view to further expansion by 2020. Further C&A reported on 'accelerating change' through its 'Fashion for Good' initiative, which looks to develop innovative developments and good practice across the fashion and clothing industry.

In his Chief Executive Officer's message in the preface to H&M's 2017 Sustainability report, Karl-Johan Persson claimed 'we are dedicated to continue to making great fashion and design affordable by having a circular approach and being a fair and equal company.' In a similar vein, Anna Gedda, Head of Sustainability at H&M, claimed 'accelerating the move towards full circularity is one of our main priorities' and she suggested 'here our focus is on the continued quest for more recycled and sustainable sourced materials, improved design, production processes and product lifespan.' More generally, H&M suggested 'the fashion industry is running out of the natural resources it uses to make products and cannot continue to operate in the same way' and reaffirmed its belief that 'an industry wide shift from a linear to a circular business model is the only solution.' H&M claimed to be addressing this shift 'by building circularity into every stage of our value chain, including the products we design and make, the materials and processes we use, and how our customers care for and dispose of our products.'

In addressing 'Becoming 100% Circular' H&M identified 'five key stages within our value chain', namely, design; material choice; production processes; product use; and product reuse and recycling. In focussing on design, for example, the company argued that 'circular design involves finding ways to expand product lifespan, creating greater durability and greater opportunities for rewear, reuse and recycling.' In addition to product design, the company is also exploring how it can work with a circular approach when designing stores and here the goal is to increase both the operational efficiency and the longevity of stores. In focusing on materials, the company suggested that 'by choosing to work with more recycled and other sustainable sourced materials, we can reduce the negative impacts of material production in our value chain.' In a similar vein, H&M recognised the vital importance of water and chemicals in the production process and stressed that the way it addresses chemical and water management is crucial in achieving sustainable production and its 100% circular ambition.

H&M's belief is that 'innovation will be key to achieving our 100% circularity ambition' and that 'many challenges that the industry currently faces can and will be overcome through new innovation' and suggested 'that's why we are supporting ground breaking companies such as re:newcell, Worn Again and Treetotextile.' The company also outlined its Key Performance Indicators and its progress in meeting them, between 2014 and 2017. The percentage of recycled or sustainably sourced material of total material used, for example, rose from 13% to 35% during this period and the corresponding figures for cotton from sustainable sources and stores with recycling systems for main types of store waste from 22% to 59% and 58% to 64% respectively. During the same period, the tonnes of garments collected through the garment collecting initiative rose from 7,684 tonnes to 17,771 tonnes.

Under the banner 'closing the Loop', Inditex claimed 'we want to close the loop and move towards a circular economy – developing a complete and efficient life cycle for our products, in which nothing goes to waste.' The company claimed 'by 2020 one of our aims is no longer send anything to landfill from our own headquarters, logistics centres, stores and factories' and that 'we are also making it easier for our customers to drop off their used garments with us, so that we can aim to give a second life or recycle them.' In moving 'towards a circular economy', the company emphasised the importance of its 'Right to Wear' philosophy, which calls for 'responsibility in all production stages' and which embraces raw materials, design, manufacturing, logistics and retail stores.

Inditex also publicly provided some limited reporting information on its achievements in 'Closing the Loop.' The company reported that in 2017 it collected over 12,200 tons of garments, through almost 600 clothing containers in stores and a further 1,800 in Spanish streets, which were donated to people in need, reused for industrial materials or upcycled and transformed into new fibres. The company's Zara brand is leading the way here and all its stores in Spain, Portugal, UK, Ireland, the Netherlands, Sweden, Denmark, China, Hong Kong and Macao had clothes collection containers, and pilot collection programmes had been set up in Austria, Canada, Japan and the Lebanon. Inditex also reported that more than 40% of its energy consumption in its stores, headquarters, logistics centres and its own

factories came from renewable sources in 2017 and claimed to be planning to increase this figure to 80% by 2015.

Marks and Spencer claimed to be supporting 'the transition to a sustainable circular economy', prioritising 'business model innovation' and putting 'circular ways of working into practice.' Further, Marks and Spencer recognised that 'a waste-centric approach to resource efficiency is no longer sufficient and potentially gets in the way of resources being used in the most efficient and effective way.' Rather the company argued 'we need to transition to a circular economy where the value of materials and energy used in products are kept for as long as possible.' In looking to put 'the circular economy into action', Marks and Spencer reported that its approach focused on becoming a net waste business, helping its suppliers to reduce and recycle waste and to send no waste to landfill, to create partnerships to help customers to reuse and recycle products and to prioritise business model innovation.' More generally, the company cited that it was a signatory to the Sustainable Clothing Action Plan 2020 Commitment, which looks to tackle the environmental impacts of clothing.

None of the other six selected clothing and fashion retailers explicitly recognised the concept of the circular economy on their corporate websites, though they all addressed the issue of recycling. Next, for example, reported that two of the foci of its corporate responsibility strategy were 'recycling unwanted products' and 'waste recycling and water use' while J D Sports reported its commitment to 'maximising the amount of our waste that is or can be recycled.' In a similar vein, New Look reported its commitment to wastewater treatment and to reduce, reuse and recycle waste, Calzedonia asserted its belief that 'that recycling is an issue that concerns us all' while Arcadia emphasised its commitment to reduce its waste footprint across all its brands.' Primark argued 'recycling is an important way that all of us can better look after the planet and reduce the amount of waste that ends up in landfill', and claimed 'we want to find a good home for any clothes that we don't sell.' Here the company reported 'in Europe we have been donating all our unsold clothing and buying samples to the charity Newlife since 2010.'

Only two of the selected clothing and fashion retailers, namely C&A and Marks and Spencer, explicitly addressed the concept of natural capital, though the majority emphasised the importance of looking to adopt a more sustainable approach to natural resources. C&A reported supporting a 'project on natural capital dependencies of cotton production', run by the University of Cambridge Institute for Sustainability Leadership. Here the focus was on 'water, biodiversity and soil, particularly at the growing stage of the supply chain where natural capital challenges are most prevalent.' More generally, C&A outlined its commitment to 'certified organic cotton,' which it described as 'a cornerstone business objective.' The company emphasised that organic cotton 'protects soil quality, biodiversity and water supply while preventing water pollution' and that 'it's safer for farmers and their communities' health.' Further, C&A reported that in 2017, 40% of the cotton used in its garments was certified organic, and the company argued 'by offering organic cotton garments and communicating the benefits to our customers we can continue to help drive demand for it.'

Marks and Spencer reported on its participation in the Accounting for Sustainability Chief Financial Officer Network, which looks to identify how positive business outcomes can be achieved through the integration of environmental, social and economic considerations. As part of this work, Marks and Spencer have been 'engaged on natural capital accounting, whole life costing and how we communicate on these matters to our investors.' That said, Marks and Spencer suggested that further work was required on natural capital 'definitions and methodologies' and that the company was 'taking part in the development and testing of natural capital protocols.' More generally, Marks and Spencer recognised 'we rely on natural resources to produce our high quality products and run our stores and operations' and that 'growing pressure on diminishing resources and poor global stewardship could increase our costs, restrict our access to key raw materials and make our global supply chains more volatile.' Equally tellingly, and under the banner 'Business and Nature cannot be separate', Mike Batty, Director of Sustainable Business at Marks and Spencer argued 'nature is at the heart of any consumer goods business' and that 'soil, water, clean air, forests and pollinators are the basic building blocks of commerce.'

Some of the other selected clothing and fashion retailers emphasised their commitment to adopting a sustainable approach to the natural resources on which the industry depends. Inditex, for example, stressed its commitment to use 'more sustainable raw materials.' More specifically, the company outlined that in using cotton as a raw material in the creation of many of its garments, a 'focus on organic or ecological cotton allows us to reduce the environmental impacts of production, as unlike conventional cotton, its cultivation is carried out with organic seeds and more sustainable methods.' New Look recognised that 'each stage of production comes with its own environmental challenges, from the high volumes of water needed to grow raw materials to the treatment of pollution from chemicals used in the dyeing process.' In looking to address these challenges, New Look emphasised its commitment 'to protecting the environment, conserving natural resources and conducting business in an environmentally responsible manner.'

Discussion

The findings reveal that the leading European clothing and fashion retailers have addressed the concept of the circular economy in a variety of ways within their sustainability strategies but that, to date, the concept of natural capital has received much less attention within these strategies. That said, a number of sets of issues merit reflection and discussion. Firstly, the concepts of the circular economy and natural capital have a variety of definitions and can hold different meanings. Korhonen et al. (2018), for example, argued that the circular economy was 'an essentially contested concept', which is 'loosely based on a fragmented collection of ideas derived from a variety of scientific disciplines and semi-scientific concepts.' Korhonen's et al. (2018) literature review of papers on the circular economy identified 11 definitions of the term circular economy and perhaps more surprisingly this review revealed that 13 papers 'had neither a definition nor a description of what circular economy was supposed to mean in their studies.' Arguably more critically, Gregson et al. (2015) suggested the idea of the circular economy is 'more often celebrated than critically interrogated' and that 'its actual enactment is limited and fragile.'

In a similar vein, natural capital is also a contested concept. Gough (2005) argued that as originally introduced by David Pearce in 1988, 'natural capital was a device to develop an approach to sustainable development from within the established dominant paradigm of economics', while for others 'it was fundamental to the mounting of a challenge to that paradigm which emphasised ecosystem processes and ecological knowledge over the accounting of environmental assets.' More recently Read and Scott Catto (2014) suggested that these competing positions are deeply entrenched and that 'the argument between those who would substitute financial for natural capital' and those who see 'natural capital as primary and sacrosanct' is unlikely to be resolved. At the present time the overwhelmingly dominant government and business policy responses to the perceived natural capital challenge are rooted in attempts to frame nature and natural resources in economic and financial terms and to assess the financial value of natural capital.

Secondly, there are issues about measurement and accounting. Measuring circularity, for example, presents a major challenge, but in looking to move towards a more circular economy, a number of approaches to measurement have been developed. The Ellen McArthur Foundation, Granta Material Intelligence and Life (2015), for example, developed a 'Circularity Indicators Project', which looks to measure 'the circularity of products and businesses.' While recognising that 'measuring the circularity of a product or service can be a challenge due to the complexity and variety of actions, activities and projects that could be called circular', the US Chamber of Commerce Foundation (2018a) has developed a 'Circular Economy Toolbox', which includes a number of metrics to measure impact. The proposed circular economy metrics include the carbon footprint, estimated cost savings when leasing rather than buying, estimated resource and emission offsets and the percentage of a product that can be recycled or repaired at the end of its useful life. At the same time the US Chamber of Commerce Foundation (2018b), asserted 'there is currently no single accepted framework to enable organizations to assess and report on their progress in moving towards circularity' and argued that the lack of such a 'framework represents one of the greatest needs, and greatest opportunities, in the circular economy.'

In looking to explore the relationship between natural capital and economic theory, Nadal (2016) recognised that 'the natural capital metaphor is currently being introduced to provide a framework for the economic measurement of environmental degradation.' However, he argued that there were 'deep problems affecting the use of this metaphor' and that the 'natural capital approach will not be able to deliver on its promises to measure natural capital stocks or the stream of natural capital services' (Nadal 2016). More specifically, Nadal (2016) suggested that the valuation techniques currently being used for natural capital have major limitations and that the 'data they generate may lead to gross misallocation of resources and cannot provide guidance for environmental policy making.'

Fenichel and Abbott (2014) argued that 'the value of natural capital remains crudely measured at best' and that 'the paucity of estimates of the value of natural capital that are grounded in economic capital theory suggests that in practice the treatment of natural capital remains largely metaphorical.' Perhaps more polemically, Friends of the Earth Europe (2014) argued that 'calculations of natural capital do not represent, and can rarely capture, the true value of nature.' Arguably more worryingly, Friends of the Earth Europe (2014) suggested 'if the value of nature is expressed in purely monetary terms there is a high risk that nature can then be legitimately destroyed as

long as a payment is made, often with a promise that nature will be protected or created elsewhere through offsetting schemes.'

Thirdly, there are issues about the relationship between both the circular economy and natural capital and sustainability. Christie, Lee and Murphy (2016), for example, suggested that natural capital 'has the potential to be a vital component in delivering local and national sustainability' but argued that 'natural capital risks being used as yet another measure of relative sustainability and resource efficiency gains' whereas 'it needs to be considered in the context of absolute sustainability.' The issues of both spatial and time scales can be important here. On the one hand, for example, increases in natural capital claimed for a development at the local scale may not enhance sustainability at regional, national or global scales. On the other hand, a claimed local net gain in natural capital, associated with offsetting biodiversity losses, for example, may lead to the growth of invasive species, which, over time, may diminish natural capital. Christie, Lee and Murphy (2016) further posed the question 'in adding to natural capital, are we simply making relative gains that could be diminished or lost because of breaches in absolute sustainability boundaries.' Rather pessimistically, Christie, Lee and Murphy (2016) concluded that 'extensions in natural capital cannot be enough to keep us, at global scale, within absolute ecological limits for development, such as the worldwide carbon budget that must be respected if we are to avoid forced global warming of 2 degrees centigrade or more.'

In a similar vein, Geissdoerfer et al. (2017) claimed that 'the conceptual relationship between the circular economy and sustainability is not clear' and argued that this 'has potential detrimental implications for the advancement of sustainability science and the diffusion of practices based on these concepts.' Further Geissdoerfer et al. (2017) argued that the principal focus is on 'the environmental performance of the circular economy rather than taking a holistic view on all three dimensions of sustainability.' At the same time Geissdoerfer et al. (2017) also argued that the focus of circular economy initiatives is often on 'individual economic benefits through input reduction, efficiency gains and waste avoidance with relatively immediate results compared to sustainability' and that 'long term viability seems to be excluded from most discussions.'

Finally, many of the selected retailers couched their commitments to the circular economy and to natural capital and resources in terms of continuing business imperatives, not least efficiency and continuing growth, as well as sustainability. This is reflected, for example, in H&M's argument that 'our vision is not only necessary from a social and environmental perspective - it also makes good business sense' in that 'long term investments in sustainability provide us with long term business opportunities.' On the one hand, this might be seen to resonate with the concept of shared value, which has been defined by Porter and Kramer (2011) as 'policies and practices that enhance the competitiveness of a company while simultaneously addressing the economic and social conditions in the communities in which it operates.' However, Crane et al. (2014) identified a number of weaknesses and shortcomings in the creation of the shared value model. They argued, for example, that the model 'ignores the tensions between social and economic goals', that it is 'naïve about the challenges of business compliance' and that it is 'based on a shallow conception of the corporation's role in society' (Crane et al. 2014). In justifying this assertion, they conclude that the model seeks to 'rethink the purpose of the corporation without questioning the sanctity of corporate self-interest' (Crane 2014).

On the other hand, and arguably more contentiously, there are concerns, that the concepts might be captured by corporate interests, and more specifically by corporate capitalism, to justify continuing economic growth despite concerns about the overconsumption of natural resources and the damaging environmental effects of such growth. Valenzuela and Bohm (2017), for example, argued that the terms circular economy and sustainability were effectively being 'captured by politico-economic elites claiming that rapid economic growth can be achieved in a way that manages to remain responsible to environment and society.' In their conclusions, Valenzuela and Bohm (2017) pessimistically suggest that 'the closer we get to the ideal of a fully circular economy, the more we are allowed to consume without taking an ethico-political stance.'

Conclusion

The concepts of the circular economy and natural capital are increasingly common features of the sustainability narratives of a growing number of companies. This case study explores if, and how, Europe's leading clothing and fashion retailers have addressed both of these concepts as part of their sustainability strategies. The case study reveals that while the leading European clothing and fashion retailers have employed the concept of the circular economy in a variety of ways, the concept of natural capital has received much less attention. More generally, the authors argue that both concepts raise a number of issues, relating to different and contesting meanings, measurement and accounting, relationships to sustainability and business imperatives and economic growth. The authors are aware that the case study has a number of limitations, not least, that it is based on information drawn from the leading European clothing and fashion retailers' corporate websites and that the retailers' engagement with the concepts of the circular economy and natural capital is in its early stages. However, the authors believe that their approach is appropriate in what is an exploratory case study and that, as such, it provides a platform for future research. Looking to the future, academic researchers might, for example, undertake more detailed case studies of how specific clothing and fashion retailers are addressing the circular economy and natural capital and also focus on how these retailers are looking to prioritise both concepts throughout their supply chains.

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Impact of non-financial metrics on business performance: A case study of tRAVEL agencies in Bosnia and Hercegovina

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Abstract

Companies trigger significant resources for business activities. Key performance indicators (KPIs) are vital for strategic decision-making. The company identifies the ones specific to the industry. They need to be in line with company goals and the strategy. Apart from financial KPIs, there are non-financial KPIs that provide insights into the business. The company can use them as leading indicators of future business performance potential. Non-financial indicators give the explanation what the company needs to do to achieve financial goals. Using only financial performance indicators companies might decide to boost short-term profits. On the contrary, non-financial metrics are reflecting the long-term viability and health of the organization. New studies report that use of non-financial KPIs is going to increase even more in coming years, entering into the finance team's domain. This paper identifies to which extent are travel agencies in Bosnia and Herzegovina using non-financial metric for improving business performance. The goal is to determine which metrics have a significant impact on business performance and to what extent there is a correlation between them. This paper deals with selected non-financial metrics: brand preference, customer retention, customer experience, innovation, and market share. The paper tests hypothesis that market share is a primary measure of business performance. Descriptive statistics and statistical tests are used for the analysis of primary data from the research.

Keywords: non-financial metrics, business improvement, market share, long-term sustainability, innovation

Introduction

Companies are focused on activities that differentiate them from the competition. Therefore, when identifying goals and strategies, it is necessary to select key performance indicators that measure business performance. Performance appraisal systems in the financial domain mainly focus on annual or short-term results. Traditional management systems with a strict orientation to only financial performance measures failed to measure and integrate all factors critical to business success (Kaplan, 1984). Traditional measurements focus on internal business components, without taking into account external influences on financial performance indicators.

Service industries are dependent on the impact of customers on their reputation, repeated purchases, loyalty, and the attraction of new clients. Changes in customers' behavior in tourism have also emerged as an impact of information technology. Travel agencies are working in the highly competitive market. There is a wide range

of choices and special offers available online. While prices transparency is increasing, customer loyalty is decreasing. Clients of travel agencies are increasingly choosing to avoid intermediaries when planning a trip, and prefer to make online reservations independently and buy services directly from suppliers. Travel agencies should adapt to a competitive environment and measure customer satisfaction, enhance a brand, innovate and offer unique services for experienced travelers.

Long-term business sustainability depends on both financial and non-financial performance indicators. Non-financial indicators point to the impact of non-material factors on company's future business activities. According to study Adaptive Insights CFO Indicator Q3 2016, about 76% of CFOs report that their finance teams are tracking non-financial KPIs (2016, webpage). Non-financial KPIs have a rising value in forecasting. Business environment is dynamic and success depends on meeting the changing needs of all stakeholders. In addition to internal, there is a need to evaluate business performance from an external perspective. Taking into account company's need for more accurate insight into business results, Franco-Santos and Bourne (2005) deal with the development of the performance measurement system. They identified top management commitment as a precondition for gaining positive performance indicators.

First models of organizational performance measurement involving both financial and non-financial performance, were introduced in 1990's. They were designed to provide balance in performance measurements. In addition to internal measures, models involved measures of external success as well. Companies can estimate business potential and evaluate past performance (Bourne et al, 2000). Kaplan and Norton (1992) developed Balanced Scorecard model that measures four key perspectives: financial perspective; customer perspective; internal business processes, and learning perspective and employee growth.

Balanced Scorecard helps companies to deal with three major issues: effective measurement of organizational performance; increase of intangible assets and challenges of strategy implementation (Niven, 2007, p 19). Fitzgerald and Moon (1996) developed the Building Block Model which at the time was an upgrade to a balanced scorecard. The model was primarily designed for the use in service industry. Model is based on the three building blocks: dimensions, standards, and rewards. It differs from other models because it takes into account reward systems and creates a framework of specific metrics that aligns the goals of individual performance with the goals of the company.

Performance Pyramid (Lynch and Cross, 1992) links the strategy with its operations throughout the company by translating objectives from the top down and performance measures from the bottom up (Tangen, 2004). The performance pyramid consists of four levels of objectives that affect both organizational external effectiveness and internal efficiency. It links strategy to day to day operations. Performance Pyramid provides support to managers and is adaptable to their needs (Neely et al., 2001). The model distinguishes the measures for which external parties are interested, such as customer satisfaction, quality and delivery, and the measures for which the company is interested, such as productivity and cycle time (Anderson and McAdam, 2004).

Unlike the performance pyramid that mostly focuses on customers and shareholders, the model performance prism (Neely et al., 2000) focuses on all stakeholders. As the starting point for the development of performance measures, this model takes stakeholders' expectations rather than the strategy of the company. In addition to these models, other well-known models developed in that period are the Performance Measurement Questionnaire (PMQ) by Dixon et al. (1990); Performance Measurement Matrix (PMM) by Keegan et al. (1989); Integrated performance measurement system (IPMS) reference model by Bititci et al. (1997) etc.

Company goals are changing in time, which also affects the need to change some of the performance indicators (Striteska and Spickova, 2012). Organizational performance measurement models are primarily intended for practical use in companies, and for managers and executives to improve business performance and enable long-term sustainability. Companies need to pay equal attention to both competitors and customers. Information and communication technologies have an increasing impact on changes in business environment. New business models emerged and competition is getting stronger. Customers' behavior is changing as well as the way managers think and decide.

Models created 20 years ago also evolved along with changes in the way that companies operate. Managers make decisions using data from ERP systems. Thus, the balanced scorecard evolved to the fourth generation, taking into account the uncertainty and risks of doing business. This approach supports strategies and business decision-making under conditions of uncertainty and change. The Execution Premium (Kaplan and Norton, 2008) delivers a systematic framework for achieving the financial results in line with the strategy. In addition to the increased interest in monitoring non-financial KPIs, there is a need for operational data from non-financial functions.

According to Adaptive Insights CFO Indicator Q3 2016, cca 80% of companies that report having effective metrics also have finance teams that track non-financial KPIs. Headcount, customer satisfaction, safety, and customer count are among the many diverse metrics referenced as the most important (2016,webpage). These metrics, along with brand preferences, customer retention, customer experience and innovation, affect the market share. Measuring customers' contribution to current and future revenues are essential for the assessment how the company turns customer relationship into the sustainable competitive advantage (Duffy, 2000).

Theoretical background and hypothesis Market share and innovation

Market share is the primary measure of company success. Relative market share compares the company with the largest competitor in the market. Absolute market share shows how the company stands compared to all of the competitors. There are different approaches and research results explaining the relationship between market share and profitability. Profit Impact Marketing Strategy (PIMS) study (Buzell et al., 1975; Buzell and Gale, 1987) found the positive relationship between market share and profitability. Absolute positive or average positive impact of market share on profitability is supported by many authors (Porter, 1979; Szymanski et al., 1993; Shepard, 1972; Mueller, 1986; Buzzel, 2004; Bonoma and Clark 1988; Farris et al.,

2010; Leverty, 2001). Some authors found that a positive link between market share and profitability is a result of management quality (Jacobson and Aaker, 1985; Rumelt and Wensley, 1980), while some authors found negative relationship between two variables (Armstrong and Green, 2007; O'Regan, 2002; Woo, 1981; Jacobson, 1988).

Regardless of opposing views about its relation to profitability, market share is popular metric. Given the fact that non-financial parameters are focused on long-term sustainability and company health, increasing market share requires investment, time and focus on quality and brand enhancement. Managers mostly agree that market share is useful intermediate measure, in effect, a leading indicator of future success (Bendle and Baga, 2016). In the same article, authors emphasized the need to identify whether market share drives profitability in the given industry. They concluded that although there is a correlation between these two metrics, the increase in market share does not necessarily increase the profit in the short term. However, non-financial metrics are focused on long-term sustainability and business development.

Companies can quantify the impact of strategies on business results through the market share. It is also possible to determine whether company's activities differentiate from those undertaken by competitors. Some companies mostly use internal metrics, such as satisfaction, loyalty and revenue growth. Satisfactory internal indicators can mislead companies if they compare their results with the competition. Market share is useful non-financial metric, especially in conjunction with other non-financial metrics. When the growth of market share is not set as the ultimate objective, it gives results and points to the business perspectives compared to the competition.

In doing so, the company examines the alternative customers' choices which are beyond the reach of direct competition. This is the case with the aforementioned online booking without the intermediation of travel agencies. Travel agencies need to offer new products and experiences that exceed the possibility of achieving the expected travel experience using the online travel service. In this sense, innovation represents the company's ability to successfully launch new products on the market. The number of new products and their adoption rate indicates how well company brings value to the market. Innovation involves a transformation of an idea into new service meeting and satisfying customers' expectations and needs (Kuhn and Marisck, 2010).

Brand preference

A brand is a certificate of product quality (Keegan and Green, 2008). According to Keller (2011, p 38), the key to the company's success is, first of all, an excellent product, and then it is a brand. The process of creating a brand begins with investing in a marketing program whose primary goal is to influence the customers' attitude towards the brand. Brand associations consist of all brand-related thoughts (Kotler and Keller 2006, p188). Brand preference is customers' choice through which he places a brand into a specific category of products and services he uses. Most often it presents a percentage of target users who use a particular brand. It is a measure of marketing results in the domain of promotion, customer experience, product improvements.

The brand preference is a measure in which consumers favor a particular brand compared to competitors (Hellier et al., 2003). While considering brands, customers expect services to be good, fast and affordable. Brand preference also includes innovations that enhance the brand's attractiveness to existing and prospective customers. Customers make a brand differentiation on multiple levels. At the logical level, they compare the functional attributes of brands (Petruzzellis, 2010; Grimm, 2005), but preferences are not based exclusively on them. They prefer brands that motivate them emotionally (Allen et al., 2005; Zajonc and Markus, 1982) and creative, so that can build their preferences at these levels too.

According to Zajonc and Markus (1982, p 128), preference is a behavioral tendency which presents how an individual is acting toward the object, not what he/she thinks about it. Customer behavior implies decisions, activities or experiences that satisfy their needs (Solomon, 1996). Travel agencies are competing at the market where competitiveness depends on the provision of experiences. Clients expect memorable experiences (Schmitt, B. 2009). Satisfaction or dissatisfaction with the service can lead to changes in brand preferences. Changes in consumer brand preferences are reflected in the brand performance and market shares (Sriram et al., 2006).

Customer experience and customer retention

Experience has a direct impact on customers retention and brand affinity. It also includes all touchpoints in which the customer contacts the company, such as services, products, websites, advertising, contact centers. The specificity of customer experience in tourism arises from the fact that in addition to contacting a travel agency, customers experience also includes on-site contacts at the place of use of services. Therefore, travel agencies are responsible to make proper selections of reliable partners, since agencies guaranty on behalf of the direct service provider that the quality will correspond to the specification of the offer. Quality is assessed by costumers, comparing perceptions with expectations (Peter et al. 1995, p.203). Customers gain their experience in different environments. They form attitudes and make decisions on repeated purchases based either on their own experience or based on recommendations, before arriving at the destination (Choi et al., 2012).

Loyalty is often interpreted as actual retention. Retained customers use a wider range of services than new customers. They share their experiences with prospective customers by word of mouth or through social networks. Walker study, Customers 2020: a progress report, (2017, webpage) indicates that in the year 2020, customer experience will overtake the price and product as a key brand differentiator. Customer experience has been observed for decades, with an attempt to define the term from various aspects. The early definitions focus on the experience as accumulated knowledge (Abbot, 1955).

According to Schmitt (1999), the elements of experience are private, induced and multi-dimensional. Customers trust their personal experiences and consider them as the best teacher (West et al., 1996). Heilman et al. (2000) conclude that new customers will not develop their preferences unless they gain experience. Niedrich and Swain, (2003) found that there is a direct impact of customer experience on brand preferences. Experiences are acquired by interacting directly with the brand through consumption or indirectly through passive information from a virtual presentation or advertising (Brakus et al., 2009; Hamilton and Thompson, 2007).

In the digital era, customers can explore services without direct contact with the travel agency, until they decide which agency to contact. The power of customers in the service sector is stronger than ever. Choosing and leaving brands takes place without any effort and sometimes without too much thinking. It takes seconds to start looking online for other offers.

Based on elaborated theoretical postulates, following hypotheses are set:

H0: market share is the main non-financial metric for measuring travel agencies' business performance

H1: there is a correlation between non-financial metrics

Research methodology

The data collected by the survey is processed in the statistical program SPSS.20, using: descriptive statistics; Pearson's correlation and linearity test. The following parameters are calculated within the descriptive statistics: minimal and maximal value; mean value by using an arithmetic medium; standard deviation as an absolute measure of variability and coefficient variations as a relative measure of variability. Pearson's correlation determines the relationship between two variables, ranging from -1 to +1. If the value is closer to one, the connection is stronger. In this paper, Pearson correlation is used to identify the links between non-financial parameters, and whether the growth of one variable follows the growth of the other. The significance of Pearson's correlation is evaluated by a linearity test. If the value is less than 0.005 then the correlation is significant.

Findings and discussion

The survey covered 35 travel agencies in Bosnia and Herzegovina. Managers and owners responded to the questions related to the impact of non-financial parameters on business performance. In some of the agencies, the owners were managers as well, so the final sample size was 44. Given the total number of travel agencies in Bosnia and Herzegovina, the sample is representative. The results are used to test the hypothesis:

H0: market share is the main non-financial metric for measuring travel agencies' business performance

H1: there is a correlation between non-financial metrics

The basic demographic characteristics of the respondents presented in Tables 1,2,3, and 4 include gender, age, education level and function in the company. Most of the respondents are between 36 and 45 years old (40.9%). From 46 to 55 years old are 31.8% of the respondents and only 4.5 % of respondents are up to 25 years old. Most of the respondents are male (54.5%) and the same percentage of respondents have completed a bachelor degree. 63.6% of respondents are owners of travel agencies.

Table 1. Age of respondents

Your age in years is					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Up to 25 years	2	4.5	4.5	4.5
	From 26 to 35 years	7	15.9	15.9	20.5
	From 36 to 45 years	18	40.9	40.9	61.4
	From 46 55 years	14	31.8	31.8	93.2
	Over 56 years	3	6.8	6.8	100.0
	Total	44	100.0	100.0	

Table 2. Gender of respondents

Your gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	24	54.5	54.5	54.5
	Female	20	45.5	45.5	100.0
	Total	44	100.0	100.0	

Table 3. Professional qualifications of respondents

Your professional qualification, or the highest level of education you have achieved so far, is					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school	11	25.0	25.0	25.0
	Bachelor	24	54.5	54.5	79.5
	Master	9	20.5	20.5	100.0
	Total	44	100.0	100.0	

Table 4. Position in the company

What is your role in the agency?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CEO of tourist agency	16	36.4	36.4	36.4
	Owner of tourist agency	28	63.6	63.6	100.0
	Total	44	100.0	100.0	

When it comes to respondents' attitudes regarding the brand preferences, Table 5 present following results:

Table 5. Brand preference

	N	Min	Max	Mean	Std. Deviation
Our agency is among the top 10 in BiH	44	1.00	5.00	2.4773	.92733
Our competitiveness mostly relies on the speed of service delivery	44	2.00	5.00	3.9091	.70935
10% of our regular customers positively respond to special offers	44	1.00	5.00	3.0909	.91036
The agency has exclusive rights to sell some products	44	1.00	5.00	3.5455	1.04447
Our agency is known throughout BiH	44	1.00	5.00	3.1818	1.18661
Our agency is known in the city or canton where we are headquartered	44	3.00	5.00	4.4773	.54936
We examine the factors why customers choose our agency (price, destination, special offers, product range, service package, speed of service, quality of service, availability of information , 24/7 availability)	44	2.00	5.00	4.0455	.71380
We use internet marketing to advertise our products	44	3.00	5.00	4.3636	.61345
We keep track of consumers' behavior on our website (daily site visit, on-site visit time, most popular content, the degree of conversion of visitors to customers, from which sites customers most often come on the agency's website)	44	2.00	5.00	3.7045	.79474

Table 5 includes non-financial indicators and their impact on operations. The respondents mostly disagree with the statement that their agency is among top 10 in Bosna and Hercegovina. Although they use internet marketing for advertising and examine why clients use their agency, respondents' opinion is that their agencies are known locally more than at state level. Most agencies consider that speed of service delivery is important and influence their competitiveness. Respondents somewhat agree that their agency is known for having an exclusive right to special offers. This answer shows that most of the respondents still have an exclusive right to some destinations. The respondent's opinions are divided regarding the claim that 10% of their regular customers positively respond to special offers. Respondents agree that they examine the factors why customers choose their agency, as well as keep track of customers behavior on their website. Deviations around the arithmetic mean are acceptable, since the standard deviation ranges from 0.54 to 1.18, which is acceptable and has no negative impact on the response values.

Table 6. Customer retention

Descriptive Statistics					
	N	Min	Max	Mean	Std. Deviation
Clients are always returning in our agency for new offers	44	2.00	5.00	3.9091	.70935
Over 50% of clients are regular customers	44	1.00	4.00	2.3182	.73998
To retain our customers is more important than to attract new ones	44	1.00	4.00	2.1818	.78571
Key factors for retaining customers are (price, destination, special offer, assortment, service package, speed of service, quality of service, availability of 24 day information online and offline)	44	3.00	5.00	4.2727	.54404
There are special benefits for repurchasing	44	3.00	5.00	4.0682	.66114
Reasons for customers' churn are (price, destination, disadvantage of payment, dissatisfaction with communication, inconvenience in travel, untimely resolution of their requests)	44	3.00	5.00	4.1136	.65471
We regularly track the frequency of customer purchases	44	2.00	5.00	3.6818	.93443
We regularly track our clients' online reviews	44	2.00	5.00	3.7955	.66750

As for customer retention (Table 6), respondents agree that customers in most cases are returning for new offers. The respondents disagree with the claim that 50% of their clients are regular customers. They also disagree with the claim that retaining their customers is more important than attracting new ones. Respondents agree that the main factors for retaining customers are prices, destinations, special offers, assortment, service packages, service speed, etc. They agree that there are discounts for repurchasing. The same reasons influence customers' churn and customers' retention. Respondents somewhat agree with the claim that they regularly track the frequency of customers' purchases and online reviews. Arithmetic mean does not exceed the limit that influences the average value, which leads to the conclusion that there is a high degree of homogeneity of the obtained responses.

Respondents disagree with the claim about measuring customer satisfaction on a regular base and agree that the frequency of purchase is the best measure of positive customers' experience. They agree that the sales agents are available to throughout service delivery. Somehow they agree about using customers' feedback to improve service quality. Respondents agree that they attract new customers by using online marketing. They are absolutely consistent with the statement that customers' feedback mostly relates to experiences at destinations, overall service, transportation, communication, a comparison between expected and received service. The respondent's opinions were divided on the claim that new customers use their services as a result of the recommendations of regular customers.

Table 7. Customer experience

	N	Min	Max	Mean	Std. Deviation
We measure customers' satisfaction on regular base	44	1.00	5.00	2.8409	.88772
Sales agents are always on disposal to our customers	44	4.00	5.00	4.3182	.47116
We are at disposal to our customers from the first contact to the realization of the service at destinations	44	4.00	5.00	4.5227	.50526
We use customers' feedback to improve the quality of services	44	2.00	5.00	3.7273	.69428
New clients mainly come on the basis of the recommendations of loyal customers	44	2.00	5.00	3.3182	.80037
New clients mostly come as a result of online marketing	44	2.00	5.00	3.9773	.66433
Customers' feedback mainly relate to experiences at destinations, overall service, transportation, communication, a comparison between expected and received service	44	4.00	5.00	4.6591	.47949
When using services with special benefits, customers never have complaints	44	2.00	5.00	2.6591	.86113
Clients are mostly sensitive to the quality of services with premium prices	44	3.00	5.00	4.1136	.53769
The frequency of purchase is the best measure of positive customers' experience	44	2.00	5.00	4.1591	.88772

Table 8. Market share and innovation

	N	Min	Max	Mean	Std. Deviation
Market share is a significant measure of business performance	44	4	5	4,9210	0,2011
Market share, in general, is increasing thanks to constant innovation	44	2.00	5.00	3.9773	.69846
Market share, in general, is increasing thanks to the recommendations of customers	44	3.00	5.00	4.2727	.49947
Our agency launch new tourist destination every year	44	1.00	4.00	2.6364	.78031
Our agency launch new tourist destination abroad every two years	44	1.00	5.00	2.7955	.82348
We prepare new and different offers abroad for each season	44	1.00	4.00	2.8182	.75553
We conduct online surveys to determine our competitive position	44	2.00	5.00	4,0213	0,9581
We conduct offline surveys to determine our competitive position	44	3.00	5.00	4.1436	0,8574

Managers and owners of travel agencies agree that market share is a significant measure of business performance, whose growth depends both on customer recommendations and innovations. They do not offer new products every year or two, but they monitor their competitive position. Respondents indicated (table 1) that their agencies are not among top 10 travel agencies in Bosnia and Herzegovina and that they are mostly known locally. This points to the fact that they are competing at the local level and still have no defined directions for business expansion. Standard deviation is minimal and does not affect the obtained results.

Results from table 8 match with previous findings that managers mostly agree that market share is useful intermediate measure, in effect, a leading indicator of future success, (Bendle and Baga, 2016) and that changes in consumer brand preferences are reflected in the brand performance and market shares (Sriram et al., 2006), while brand preference also includes innovations that enhance the brand's attractiveness to existing and prospective customers. The position of surveyed agencies may be endangered by other agencies, especially those among top 10 if they do not enhance investment in new offers and brand development. H0 is confirmed.

Table 9. Correlation between non-financial metrics

Market share/other metrics	N	Pearson Correlation	Sign.
Our competitiveness mostly relies on the speed of service delivery(market share/brand preference)	44	0.687	0.019
10% of our regular customers positively respond to special offers (market share/brand preference)	44	0.412	0.039
The agency has exclusive rights to sell some products (market share/brand preference)	44	0.409	0.041
Market share, in general, is increasing thanks to constant innovation (market share/innovation)	44	0.874	0.010
We use internet marketing to advertise our products (market share/brand preference)	44	0.814	0.011
Our agency launch new tourist destination every year (market share/innovation)	44	0.437	0.039
Customer experience/retention			
Customers' feedback mainly relate to experiences at destinations, overall service, transportation,communication, comparison between expected and received service/ Key factors for retaining customers are (destination, special offer, assortment, service package, speed of service, quality of service, availability of 24 day information online and offline)	44	0.875	0.017
We use customers' feedback to improve the quality of services/ To retain our customers is more important than to attract new ones	44	0.653	0.043
Customer experience/brand preferences			
10% of our regular customers positively respond to special offers/ The frequency of purchase is the best measure of positive customers' experience	44	0.357	0.049
We examine the factors why customers choose our agency (destination, special offers, product range,speed of service, quality of service, availability of information , 24 hrs. a day online and offline communication/ Customers' feedback mainly relate to experiences at destinations, overall service, transportation, communication, a comparison between expected and received service	44	0.791	0.027

The results show that there is a correlation between market share and other metrics, such as brand preference (Sriram et al., 2006) and innovation (Kuhn and Marisck, 2010). For increasing market share, travel agencies need to pay attention to the satisfaction of regular customers and innovation. There is a strong correlation between market share and innovation (87%) and market share and internet marketing (81%). Managers and owners should also consider that to retain a customer is as important as to attract a new one. The recommendations of regular consumers are often better promotion than other forms of communication in order to attract new customers. It is because „they form attitudes and make decisions on repeated purchases based either on their own experience or based on recommendations, before arriving at the destination,, (Choi et al., 2012).

When it comes to the correlation between experience and retention, customer's retention key factors are in a strong correlation with customer feedback. The coefficient of correlation is 87%, and it is also significant, since $p = 0,017 < 0,05$. There is a medium-strong correlation between the use of customer feedback to improve the quality of service and the importance of retaining customers in relation to attracting new ones. The coefficient of correlation is 65%, and it is also significant, since $p = 0,043 < 0,05$.

In terms of brand preference and customer experience there is a weak correlation between the two variables: „10% of our regular customers positively respond to special offers,, and „the frequency of purchase is the best measure of the positive customer's experience,,. The coefficient of correlation is 35% and is in linear relation because $p = 0.049 < 0.05$. There is a strong correlation between the variable that relates to factors that influence the choice of agency and customer's feedback. The coefficient of correlation is 79% and in a linear relation, and is statistically significant, since $p = 0,027 < 0,05$.

The analysis has shown that there is a correlation between key non-financial parameters, what confirms H1.

Conclusion

The descriptive analysis shows that using the non-financial indicators and measuring their impact on business performance is to some extent present in travel agencies in Bosnia and Herzegovina. Managers and owners of the agencies consider that the market share is a significant measure of business performance, dependent on the innovation and the recommendation of customers. Although, they do not currently invest enough in these two areas. Respondents do not have a customer retention policy and are more focused on attracting new ones. Such approach is reactive and measures the consequences. That is not a good base for managing customer relationships and developing loyalty. By strengthening customer relationships, travel agencies can keep safe their existing market share. Although travel agencies examine their competitive position, it is necessary to identify which factors lead to this position. Based on the research and the results obtained, it can be concluded that doing business in surveyed travel agencies is mostly based on using opportunities within the existing scope of operations guided by short-term goals. As for external perspective, more attention needs to be paid to customers. Travel agencies need to develop not only models of customer relationship management, but also to invest in

new deals and expand their business networks. In this way, they can gain an advantage over the competition and achieve a higher market share.

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Evaluation of public health risk factors in water supply systems in Maglaj Municipality

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Abstract

There are over 200 water supply facilities in Maglaj municipality, which are not under jurisdiction of the Public Utility Service. The study included 108 samples of drinking water from 100 sites in 21 local communities. A field survey of the water facilities was carried out with the help of a specially designed questionnaire containing 37 questions, based on which the risk assessment scale was defined. The analysis of drinking water samples included the chemical and microbiological parameters defined by the Regulations, using standard analytical methods. The aim of this study was to determine the risk of population exposure to health-defective drinking water and to assess the correlation of the risk factors with the appearance of heavy metals and microorganisms in untreated water.

Of 108 samples tested, 71.29 % were from local water supply, 20.37 % from public faucets and 8.33 % samples from well water. Out of the total number of samples (108), 96 of them (88.88 %) did not comply to the Regulations. Increased values of arsenic (As) are recorded in 18 (16.67 %) samples taken from 8 different local communities with average arsenic concentration of 95.16 µg/L, variation amplitude from 11.06 µg/l to 464.89 µg/l. In the total number of microbiologically defective samples, Escherichia coli were detected in 50 (45.37 %), and faecal bacteria Enterococci in 48 samples (44.44 %).

In 13 samples (12.04 %) among with microbiologically defectiveness the high values of arsenic were detected (As). About 13 985 (60.42 %) citizens of Maglaj are provided with health-defective water. Considering the existence of an adequate water supply system and its maintenance is one of the basic preconditions for improving the health of the population, such evaluations and their results should be the basis for the introduction of new management in the control and organization of water supply.

Key words: risk assessment, water supply, health-defective, public health, Maglaj municipality

Introduction

Water is one of the basic conditions for life on our planet. Its role in the exchange of matter in the human organism, in the maintenance of personal and general hygiene, in the production of foodstuffs and satisfying numerous needs in nature, agriculture

and industry is irreplaceable. However, water is also a medium for the transmission of not only serious infections, but also dangerous chemicals, carcinogens, radioactive and other substances. It is therefore understandable that many countries, including the international community, are seeking to protect waters, in particular drinking water, from any form of pollution (1). Healthy water is the foundation of disease prevention and control for a large number of infectious diseases. Water-borne diseases are one of the fundamental threats to public health around the world, despite significant advances in technological treatments of drinking water and wastewater (2).

Maglaj municipality

Maglaj is a municipality in Zenica-Doboj Canton. The city has some primary and two secondary schools. According to data from 2013., 24 980 people live in the area of this municipality. The population and economy of the municipality of Maglaj are supplied with water from the city water supply system (city and suburban settlements) and local water supply (rural settlements - local communities). Only 31.22 % of the total population and public enterprises (educational and health institutions, industry, craftsmen) in the area of Maglaj municipality is covered by water supply from the public city water supply. From the above it follows that 68.78 % of the total population of the municipality is in rural areas and all citizens are supplied with drinking water from local water facilities not under the jurisdiction of the municipality (3).

A significant number of households, predominantly rural, do not use drinking water from the city water supply network, instead, in areas where there was a well, the population independently carried out the construction of concrete and, in some cases, masonry reservoirs or water basins, water catchment from where water was diverted by water pipes to households, or by digging and drilling for wells, or using water from the stream, with insufficient construction of purification facilities.

The health safety of drinking water

Heavy metals are naturally occurring elements that have a high atomic weight and a density at least 5 times greater than that of water (4). Their multiple industrial, domestic, agricultural, medical and technological applications have led to their wide distribution in the environment; raising concerns over their potential effects on human health and the environment. Their toxicity depends on several factors including the dose, route of exposure, and chemical species, as well as the age, gender, genetics, and nutritional status of exposed individuals (5-8). Because of their high degree of toxicity, arsenic, cadmium, chromium, lead, and mercury rank among the priority metals that are of public health significance (9).

In biological systems, heavy metals have been reported to affect cellular organelles and components such as cell membrane, mitochondria, lysosome, endoplasmic reticulum, nuclei, and some enzymes involved in metabolism, detoxification, and damage repair (10). Metal ions have been found to interact with cell components such as DNA and nuclear proteins, causing DNA damage and conformational changes that may lead to cell cycle modulation, carcinogenesis or apoptosis (11, 12).

Arsenic (As)

Arsenic is a widespread element that is revealed in low concentrations in almost all environmental samples (13). Several arsenic-containing compounds are produced industrially, and have been used to manufacture products with agricultural applications such as insecticides, herbicides, fungicides, algicides, sheep dips, wood preservatives, and dyestuffs (14). Arsenic compounds have also been used in the medical field for at least a century in the treatment of syphilis, yaws, amoebic dysentery, and trypanosomiasis. Arsenic-based drugs are still used in treating certain tropical diseases such as African sleeping sickness and amoebic dysentery, and in veterinary medicine to treat parasitic diseases, including filariasis in dogs and black head in turkeys and chickens (15). Contamination with high levels of arsenic is of concern because arsenic can cause a number of human health effects (16). Arsenic exposure affects almost all organic systems, including cardiovascular, skin, nervous, hepatobiliary, renal, gastrointestinal and respiratory systems. The severity of adverse health effects is related to the chemical form of arsenic, and is also time and dose dependent (17, 18).

Microbiological contamination of drinking water

The most common and widespread health risk associated with drinking water is microbial contamination, the consequences of which mean that its control must always be of paramount importance (19). According to World Health Organization (WHO), each year 3.4 million people, mostly children, die from water-related diseases (20). There are over 500 potential pathogens in drinking water, identified by the Environmental Protection Agency (EPA) through its published list (CCL 3 Universe list) (21). Faecal contamination of water is globally recognized as one of the leading causes of waterborne diseases. The potential of drinking water to transport microbial pathogens to great numbers of people, causing subsequent illness, is well documented in countries at all levels of economic development. (22). Waterborne outbreaks of enteric disease occurs either when public drinking water supplies were not adequately treated after contamination with surface water or when surface waters contaminated with enteric pathogens have been used for recreational and or domestic purpose (23). Since most diarrhea-causing pathogens are faecal in origin, it is more practical to analyse water for indicator species that are also present in faecal matter (24, 25).

The aim of this paper is to determine the risk of exposure of the population, through laboratory analyzes and responses to survey questionnaires, consuming health-defective drinking water and to evaluate the relation of risk factors to the detection of increased values of heavy metals and microorganisms in raw water intended for drinking.

Materials and Methods

Sample collection

A total of 108 samples were collected from 100 sites in 21 local communities of Maglaj municipality. Sampling was done according to the standards BAS EN ISO 5667-3:2012 Water quality – Sampling – Preservation and handling of water samples

and BAS EN ISO 19458:2008 Water quality – Sampling for microbiological analysis. The analysis of drinking water samples included the chemical and microbiological parameters defined by the regulations, Rulebook on the health safety of drinking water (26), using international, ISO and standard analytical methods. All physicochemical quality parameters were analysed, as well as heavy metals defined by Regulation (26) using atomic absorption spectrophotometry (AAS). Microbiological parameters were analysed using the following standard methods: the colony count by inoculation at 22 °C (BAS EN ISO 6222:2003), the colony count by inoculation at 37 °C (BAS EN ISO 6222:2003), total coliform bacteria (BAS EN ISO 9308-1:2015), faecal coliform bacteria (*Escherichia coli*) (BAS EN ISO 9308-1:2015), Enterococci (*Streptococcus faecalis*) (BAS EN ISO 7899-2:2003), *Clostridium perfringens* (BAS EN 26461-2:2003).

The risk assessment through the questionnaire

Together with a visit to the location of water supply facilities, a survey of users of these systems was conducted. For each water facility, a questionnaire with 37 questions was registered, based on which the risk assessment was carried out. From the survey questionnaire, 7 parameters were selected for which the relations of potential impacts on the health-defectiveness of water samples was assessed.

Statistical analysis

The data obtained following the analysis of samples were statistically analyzed by appropriate and verified methods, using a computer program *Microsoft Excel 2010* and *BioStat Pro version 5.8.3*® software.

Results

A total of 108 samples of drinking water in the area of the 21 local communities of Maglaj municipality were analysed. These are not under the jurisdiction of the Public Utility Service. Within the entire sample structure of 108 samples, 77 (71.30 %) of samples were taken from local waterworks, 22 (20.37 %) from public taps, and 9 (8.33 %) of samples were water from wells (Figure 1.).

Figure 1. The structure of the tested group of samples in relation to the type of water supply system

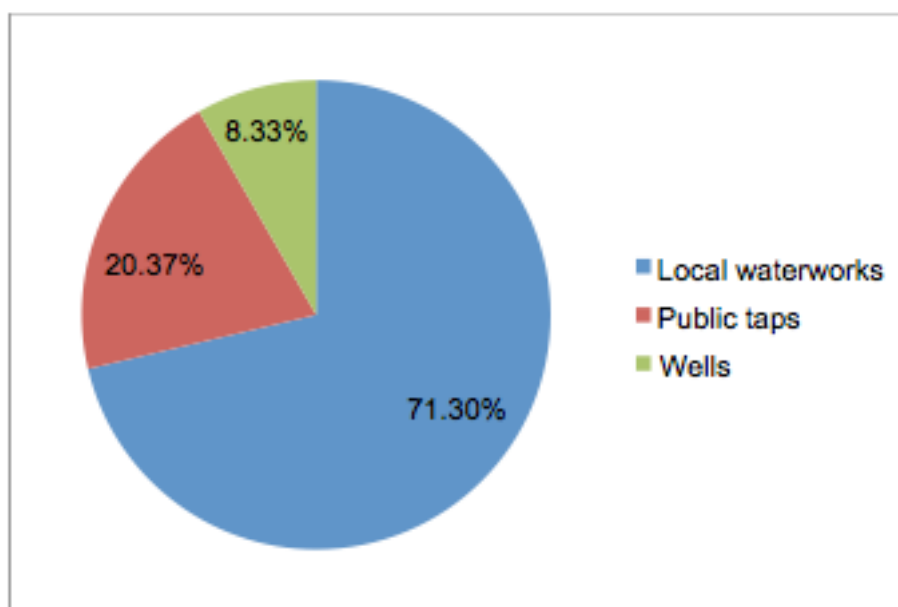
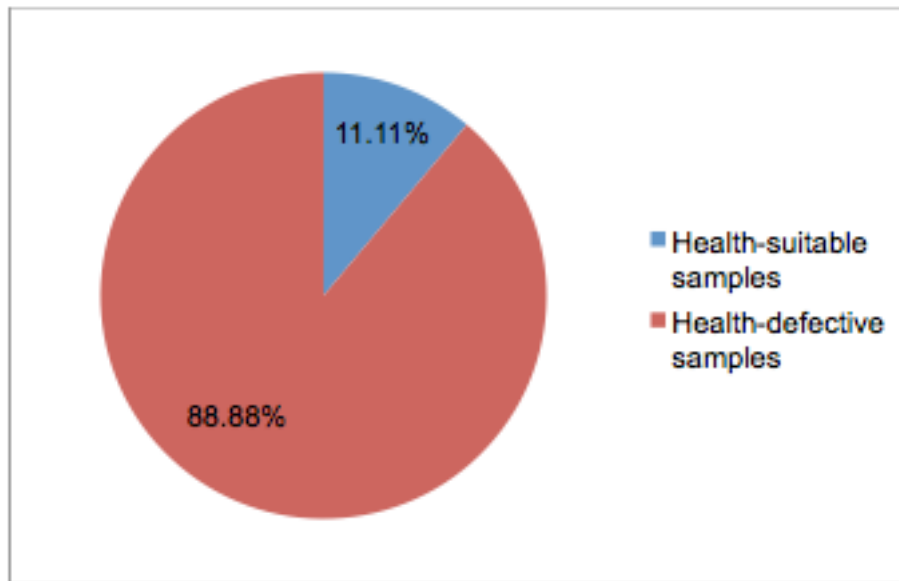
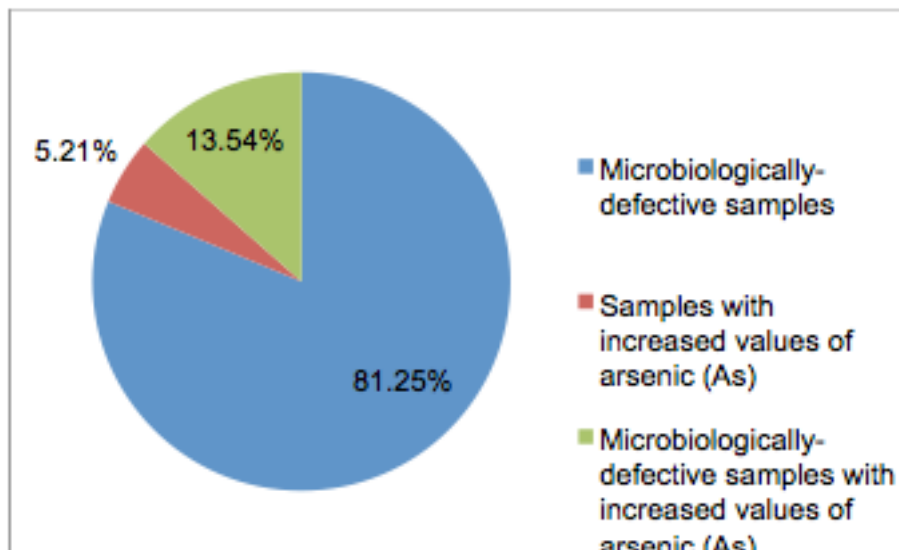


Figure 2. Examination of the health suitability of the test samples



The total number of health-defective samples is 96 (88.88 %) (Figure 2.). In the group of health-defective samples, 78 (81.25 %) samples were microbiologically incorrect, 5 (5.21 %) samples contained increased concentrations of arsenic, and 13 (13.54 %) samples with recorded microbiological contaminations. The content amount of As exceeded the allowed limit. (Figure 3.).

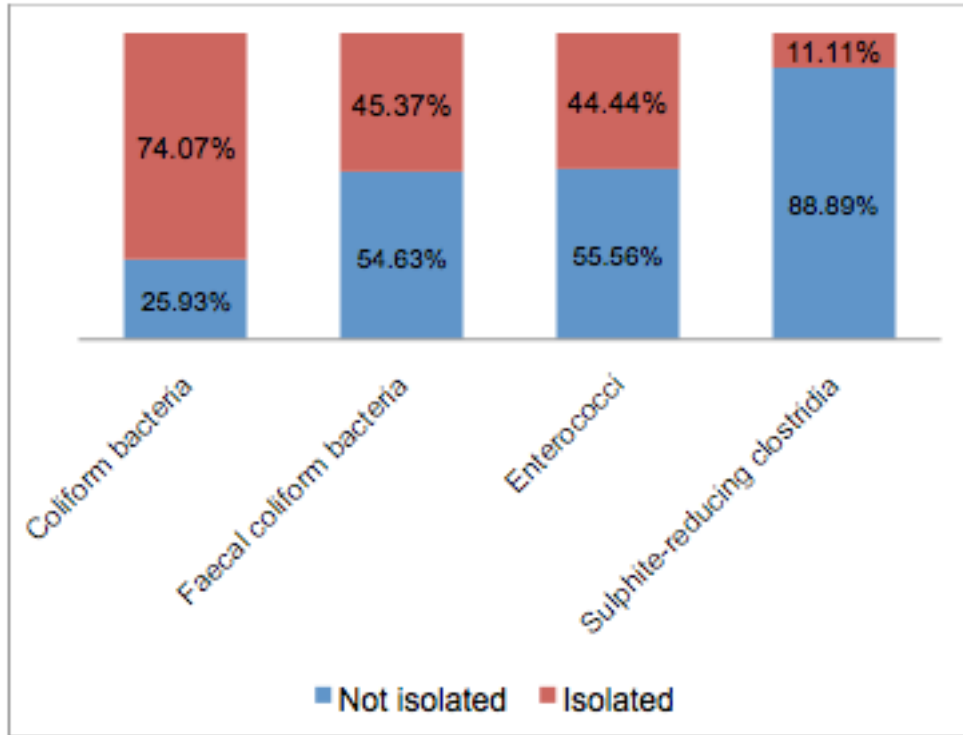
Figure 3. The review of health-defective samples



In the total number of samples tested, 91 (84.26 %) was microbiologically defective. In the total number of samples tested, 91 (84.26 %) were microbiologically defective. The colony count of bacteria growing at 22 °C were in 27.77 % of the samples higher than the permitted value while the colony count of bacteria growing at 37 °C was increased in 50.93 % of samples. Bacteria whose presence in drinking water is not allowed were also isolated in the tested samples (Figure 4.). Coliform bacteria were isolated in 74.07 % of the tasted samples, faecal coliform bacteria in 45.37 %,

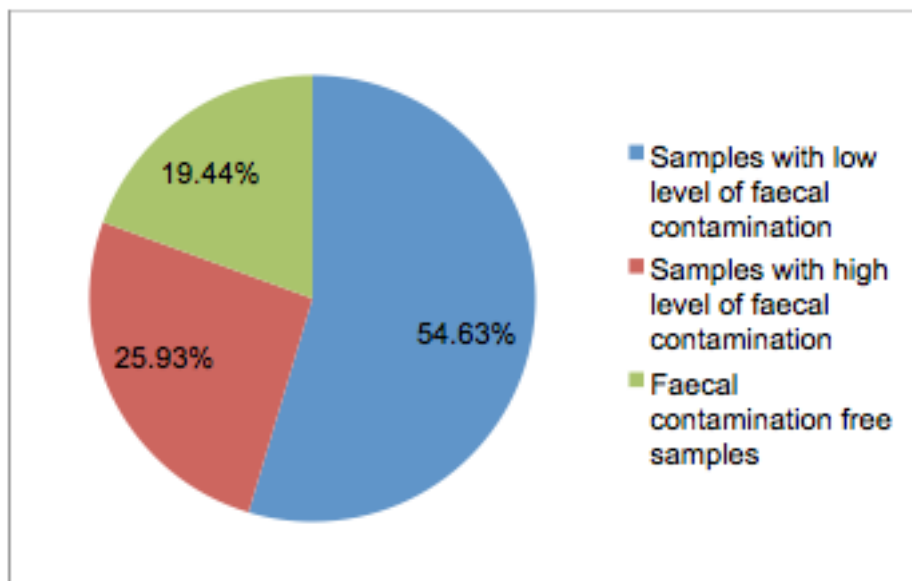
enterococci in 44.44 %, and sulfite-reducing clostridia in 11.11 % of the tested samples.

Figure 4. The presence of dangerous contaminants in the tested drinking water samples



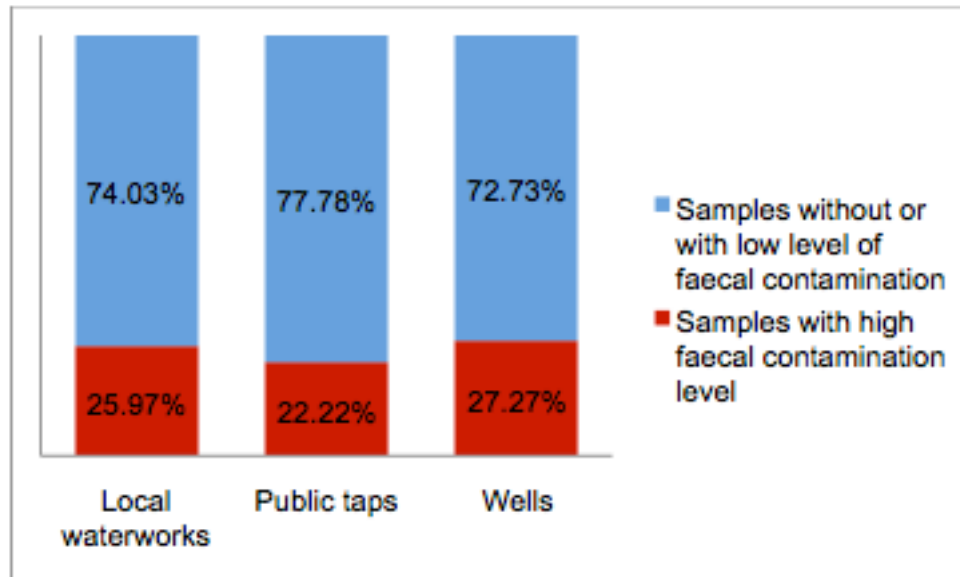
On the basis of isolated groups of bacteria, a high level of faecal contamination was found in 28 (25.93 %) of the tested samples, 59 (54.63 %) samples had low level of faecal contamination, while 21 (19.44 %) samples was without faecal contamination (Figure 5.).

Figure 5. Faecal contamination of samples



The high level of faecal contamination was present in 20 (25.97 %) samples from local water supply, 2 (22.22 %) samples of well water, and 6 (27.27 %) samples from public faucets (Figure 6.).

Figure 6. The faecal contamination of samples in relation to the type of water supply system



The microbiologically defective samples were not recorded in only 2 (10 %) out of 21 local communities included in the research (Figure 7.). In 10 (50 %) local communities, all tested samples were microbiologically defective, while in 5 (25 %) local communities the representation of microbiologically defective samples is higher than 50% and in 3 (15 %) less than 50 %. The high level of faecal contamination was determined in the area of 11 (55 %) surveyed municipalities in Maglaj municipality (Figure 8.).

Higher than permitted content of the arsenic was measured in 18 (16.67 %) samples from 8 (40 %) different local communities included in this research. The average concentration of arsenic in the tested samples in Maglaj municipality was 17.97 µg/L. In samples with high content, the average arsenic concentration was 95.16 µg/L, with amplitude of variation from 11.06 µg/L to 464.89 µg/L.

In 13 (12.04 %) tested samples, i.e. in 13.54 % of health-defective samples, along with microbiological contaminations, higher than permitted values of arsenic were measured. These samples were grouped into 7 (35 %) local communities included in this study.

The highest number of water samples, 58 (53.70 %), were taken from 20-50 years old water facilities, 23 (21.30 %) from facilities under 20 years old, 17 (15.74 %) from facilities between 50-100 years old and 10 (9.26 %) from buildings older than 100 years (Figure 9.).

Figure 7. The representation of microbiological defective samples in individual local communities of Maglaj municipality

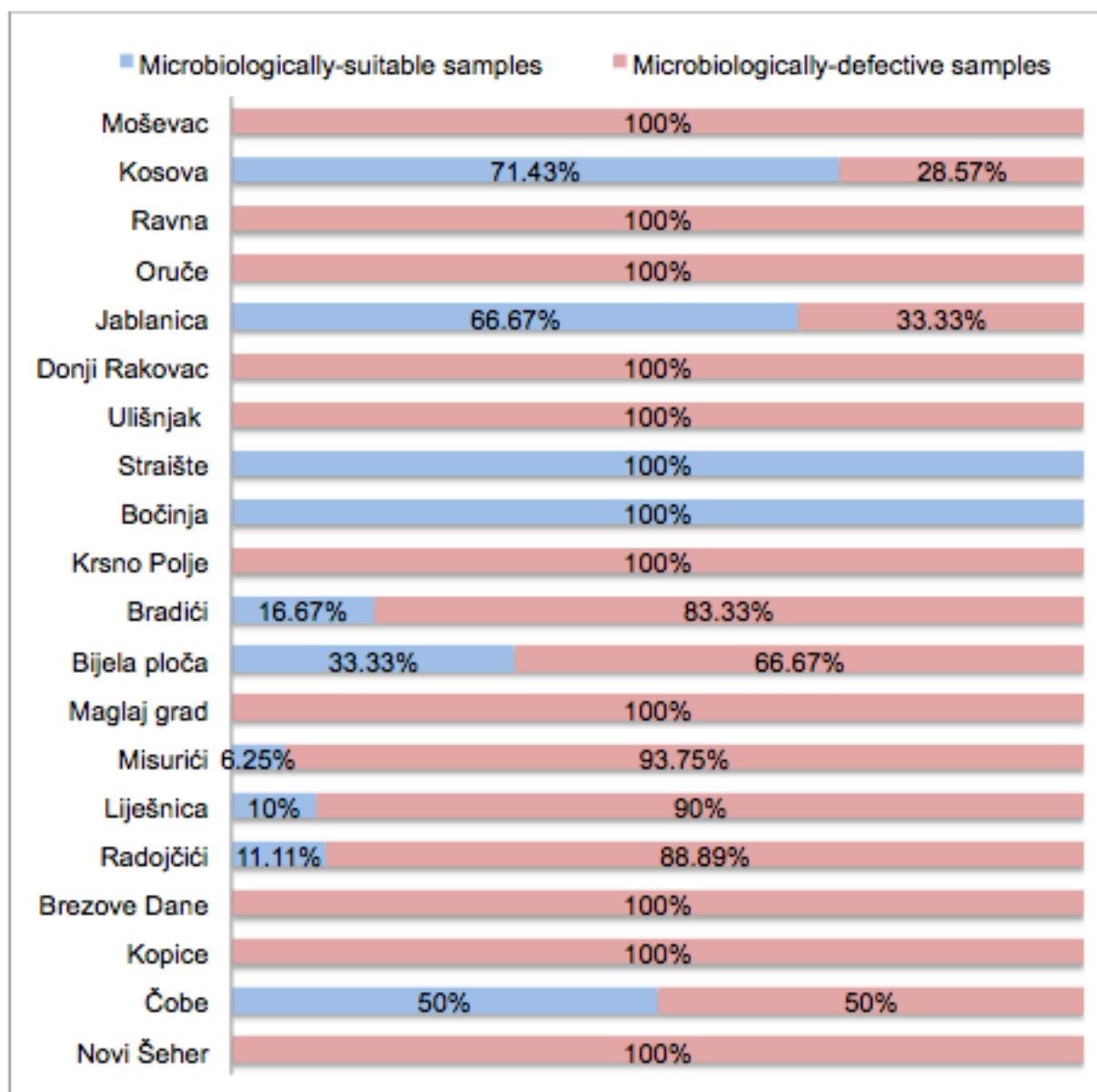


Figure 8. Representation of faecal-contaminated samples in individual local communities in Maglaj municipality

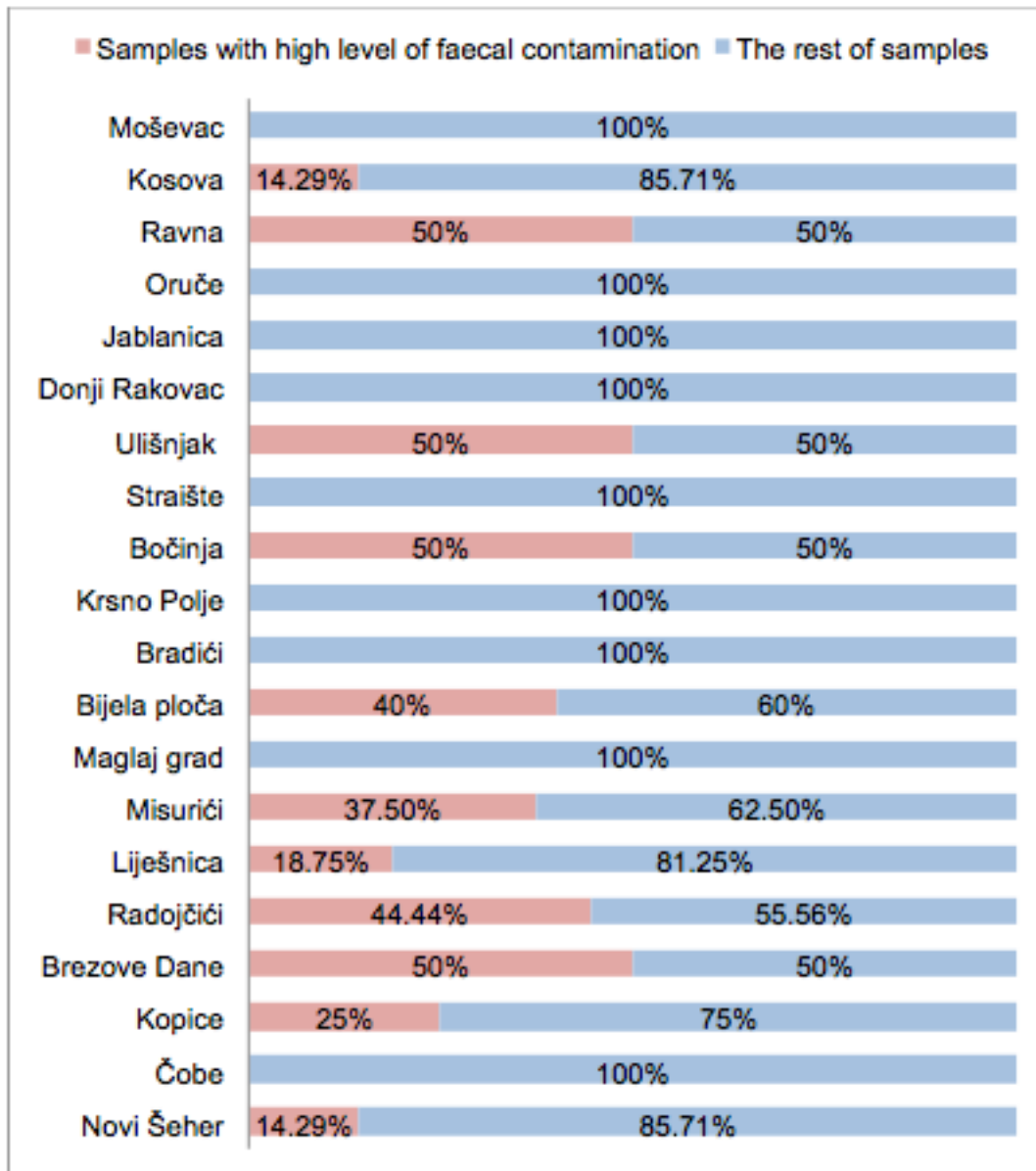
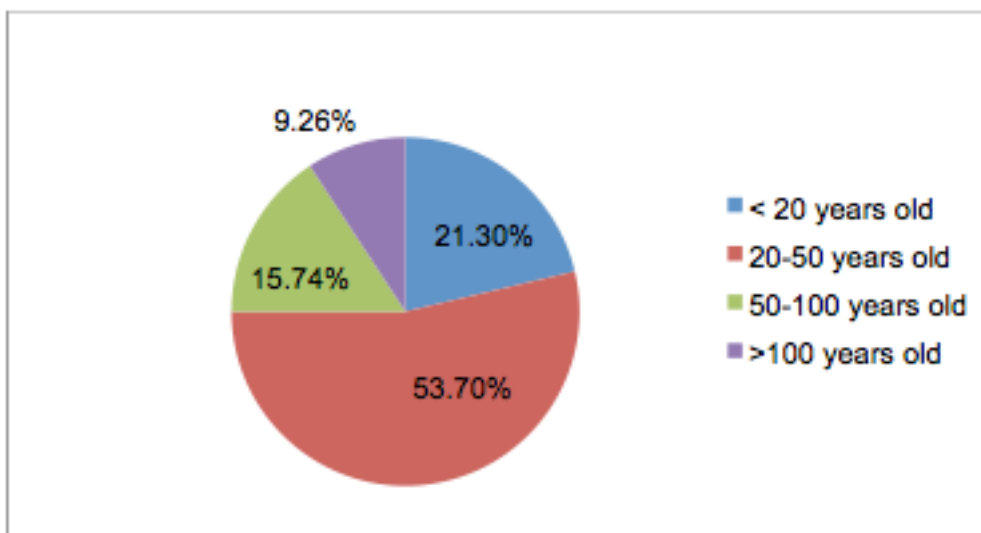
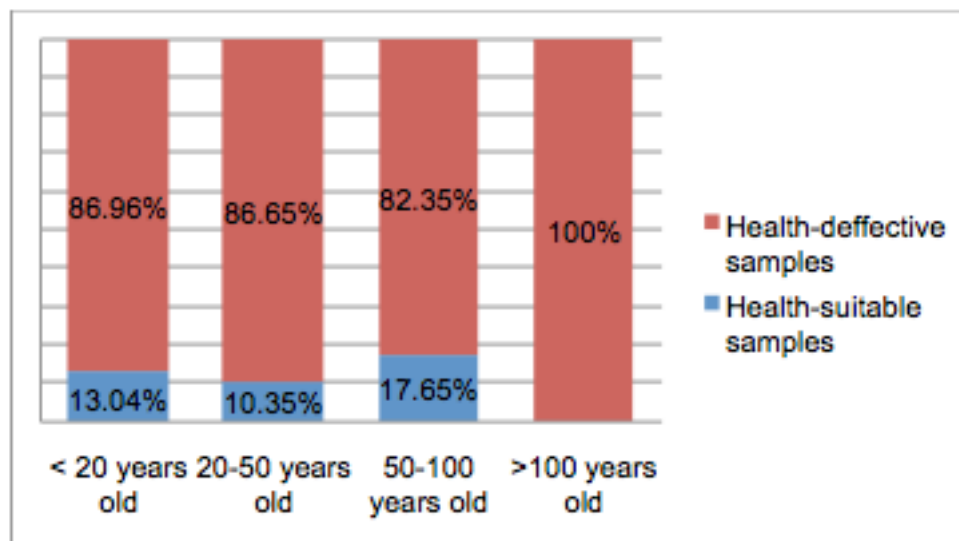


Figure 9. The age structure of acilities in the sample



Of the total number of samples taken from facilities under the age of 20, 89.96 % were health-defective, 86.65 % in objects between 20 and 50 years old, in the facilities aged between 50 and 100 years the proportion of health-defective samples was 82.35%, and all samples taken from facilities older than 100 years were health-defective (Figure 10.). Of the 18 samples with high concentration of arsenic, 14 (77.78 %) samples were taken in facilities between 20 and 50 years old and 4 (22.22 %) samples from facilities under 20 years of age.

Figure 10. The health safety of the samples in the relation to the age of the water supply facilities



The results of this survey in water supply facilities showed that 99 (91.67 %) of the surveyed facilities did not perform regular water disinfection, 101 (93.52 %) did not have a water permit, and none of the tested facilities was located under a water protection zone (Figure 11.).

The grouping of the results of high measured arsenic values was performed in relation to industrial plants, altitude and dominant wind rose (Figure 12). The samples with increased arsenic (As) concentration were taken on average altitude of 334 m. Most of these samples, 12 (66,67 %), were taken on altitude range from 200 m to 400 m. Two (11,11 %) of samples with increased value of arsenic (As) were taken from water supply facilities placed on altitude below 200 m, and 4 (22,22 %) on altitude above 400 m.

Discussion

Generally, the current state of water supply of Maglaj municipality is not satisfactory. This paper presents the results of measured values of arsenic and microbiological pollution indicators that may point to the negative anthropogenic impact of many industrial plants in this region and the possible consequences of catastrophic floods in 2014. The arsenic (As) occurs naturally in organic and inorganic form. Organic forms are considered to be relatively non-toxic, other than those synthetically created and developed for pesticide components. The accumulation and, therefore, the

toxicity of this element is higher on acidic soils, especially if the pH of the soil is less than 5.

Figure 11. The results of survey questions

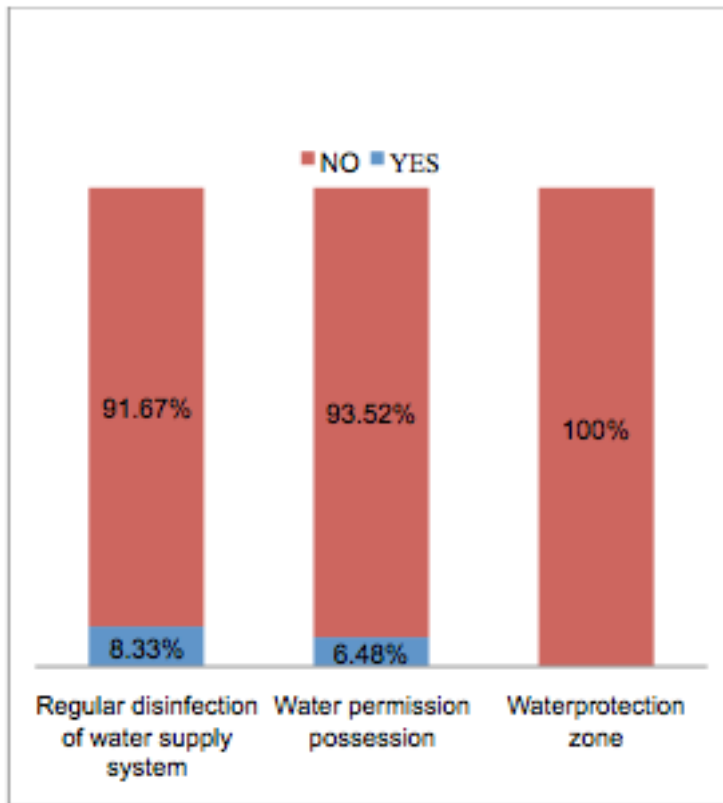
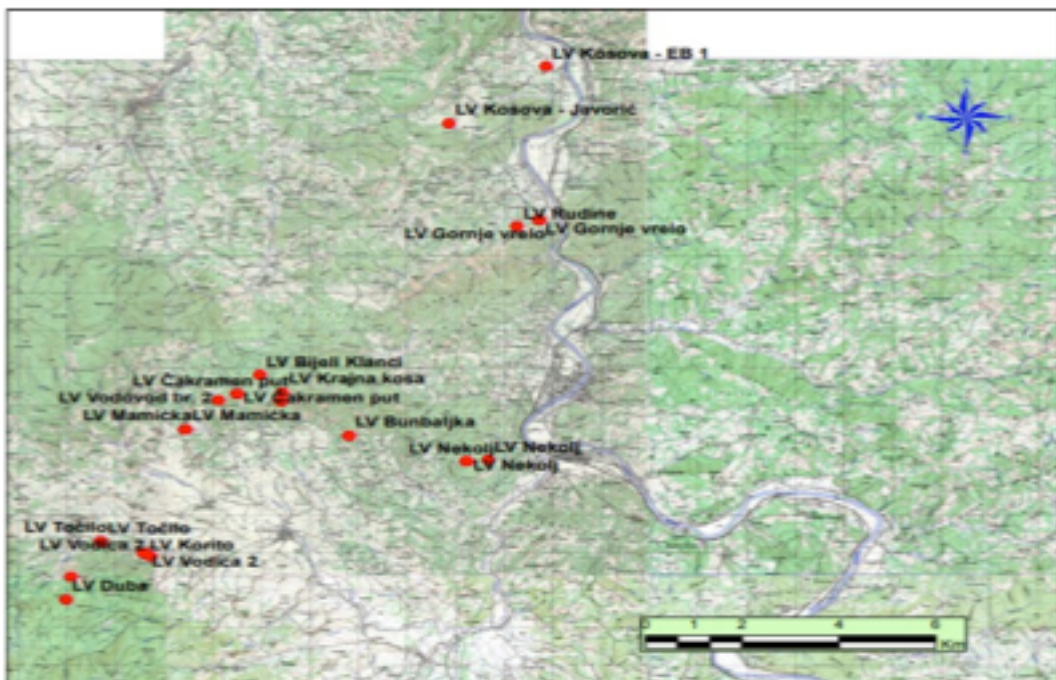


Figure 12. The source map with indicated high arsenic values



The investigation of the flooded agricultural soil in the Maglaj municipality, revealed increased content of nickel and for individual samples increased values of chromium, mercury and arsenic. In a post-flood period in 2014, 9 soil samples from the floating agricultural land intended for cultivation of agricultural crops were taken for the purpose of determining the origin of contaminants - heavy metals. It has been established that the origin of contaminants, other than litogenic, can be anthropogenic, about this more detailed research needs to be carried out (27). Increased arsenic values in water in the Maglaj municipality were detected in 18 (16.7 %) of 108 samples analysed.

A preliminary analysis of drinking water from the public water supply system of several towns and villages in the region of eastern Croatia has shown that a population of 200 000 people is exposed to water with arsenic at a concentration between 10 and 610 ppb (ie. from 10 µg/l to 610 µg/l) (28, 29). About 13 985 (60.42 %) of citizens in Maglaj are supplied with health-defective water, of which 3300 citizens with water with increased arsenic content in the area of 8 (40 %) local communities (Figure 12), where in the samples with elevated arsenic content the average As concentration measures 95.16 µg/L, with an amplitude of variation from 11.06 µg/L to 464.89 µg/L.

Further studies have shown a strong correlation between arsenic concentration in human hair and arsenic concentration in drinking water in the eastern Croatia (30). The high concentrations of arsenic in drinking water were registered in some parts of Vojvodina (region of Backa, Middle and Northern Banat and flat parts of Srem) (31). In the existing literature, there was a little data about the concentrations of arsenic in water sources in the former Yugoslavia. Ilic *at al.* (32) conducted a research that pointed to problems with arsenic in untreated drinking water from deep springs (depth of 60-200 m), which provide water for more than 60% of the population in the area in Vojvodina. These waters had high concentrations of arsenic (0.72 mg/l - the central part of the Backa region and Temerin 0.450 mg/l - a city near Novi Sad, the southern part of Vojvodina), while the treated drinking water had an arsenic concentration at the recommended limits. This study included row, untreated waters that were not under the control of the competent communal institutions, so as such they reach the final consumers. The daily intake of arsenic into the territory of Serbia through nutrition increased after the 1999 bombardment period, compared to previous values of 60.9 ± 22.3 µg/day (2000) and 42.7 ± 14.7 µg/day (2001). These values are significantly higher than the recommended ones by EPA (Environmental Protection Agency) and WHO (World Health Organization) (33).

Some thermal springs in New Zealand and Russia contain extremely high amounts of arsenic, which is associated with the mineral structure of deep earthen layers (34).

The statistics indicate that 80 % of Bangladesh and estimating around 40 million people are at risk of developing the disease as a consequence of arsenic pollution due to contamination of groundwater by arsenic at their sources (35).

A large number of diarrheal diseases are the result of inadequate drinking water, inadequate sanitation and poor hygiene. The coliform and pathogenic bacteria must not be present in 100 ml of the sample directly intended for drinking as well as in treated water within the distribution system (36, 37) which corresponds to the norms defined in the applicable legislation in the territory of BiH. The water supply systems

can be contaminated with faecal contaminants by outflows on sewage systems, the passage of human or animal secretions through drainage openings, which may be potential sources of contamination in defective water supply systems. Din *et al.* (38) were conducted a survey in Quetta City, Pakistan, in the period from June to September in 2013, when out of 125 drinking water samples taken in homes, hotels and hospitals, only 15 of them (12 %) did not respond positively to bacterial contaminants and satisfied WHO standards defined for drinking water, while 110 (88 %) samples contained a high content of pathogenic bacteria exceeding the standard permitted limits recommended by different regulatory bodies (33). In the analysed samples of this study, bacteria whose presence in drinking water is not allowed were isolated and a high degree of faecal contamination was found in 28 (25.93 %) of the tested samples, a low level of faecal contamination in 59 (54,63 %), while 21 (19.44 %) samples were without faecal contamination (Figure 5.). 2375 citizens of the municipality were supplied by the water with high faecal contamination.

Maglaj is an industrial centre dominated by the Natron-Hayat pulp and paper factory. It produces various types of paper and paper packaging, and whose production meets market needs within and beyond borders of Bosnia and Herzegovina. Natron-Hayat is one of the largest manufacturers of natron paper and packaging in the Balkans and Europe. Natron's integrated productive process includes: breeding of coniferous wood, production of electricity, industrial water and steam, production of sulphate cellulose, natron paper and modern packing materials. Even though these industrial production facilities provide employment for a large number of workers in this municipality, they can potentially be sources of environmental contamination.

Most of the analyses of water samples were carried out on samples of raw (untreated) water, and the results of these analyses show the actual status of water quality at the source itself. However, the quality of the water from the microbiological aspect can be considerably more favourable after the application of the appropriate disinfection method. The obtained results of chemical analyses indicate the need to establish continuous monitoring of water objects over long periods of time and during all four seasons. If it is desirable to identify whether there are inadequate values in the water of geological origin or the results of secondary pollution of the source, it is necessary to carry out tests such as soil testing after treatment with artificial fertilizers, continuous monitoring of groundwater and surface waters on parameters defined by the legislation.

Conclusions

During this survey, 108 water samples from 21 local communities in Maglaj municipality were examined. The samples were taken from local waterworks, public faucets and wells that are not under the jurisdiction of the Public Utility Service according to the defined maximum allowed concentration (MAC) by the Regulation on the health safety of drinking water. By analysing the selected parameters which were marked as the ones with the highest importance for the assessment of the potential risks to the health of the population supplied with this drinking water, it was found that 96 (88.88 %) of the analysed water samples were health-defective, of which 78 (81.25 %) were microbiologically contaminated samples, 5 (5.21 %) contained a high arsenic concentrations and 13 (13.54 %) in which, in addition to microbial contamination, high contents of arsenic were recorded. Coliform bacteria were isolated in 74.07 % of analysed samples, faecal coliform bacteria in 45.37 %,

enterococci in 44.44 %, and sulfite-reducing clostridia in 11.11 % of the tested samples. The high level of faecal contamination was determined in the area of 11 (55 %) of the surveyed local communities of Maglaj municipality. The content of arsenic, higher than the permissible, was measured in 18 (16.67 %) samples from 8 (40 %) different local communities that were included in this testing. These samples were taken from the area of 7 (35 %) local communities which were included in the testing. Of 18 samples in which the increased concentration of arsenic (As) was measured, 14 (77.78 %) were taken in the facilities from 20 to 50 years old and 4 (22.22 %) from facilities under 20 years of age. The results of the survey in water supply facilities show that 99 (91.67 %) of the surveyed facilities did not perform regular water disinfection, 101 (93.52 %) did not have a water permit, and none of the tested objects was located under a water protection zone.

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