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Proceedings XI. International Conference on Logistics in Agriculture 2017

ANDREJ LIŠEČ

Abstract 11th International Conference of Logistics in Agriculture is a traditional conference in the field of logistics, which is very important in agriculture. The conference is organized by the Municipality of Sevnica, Grm Novo mesto – Centre of Biotechnics and Tourism, University of Maribor, Faculty of Logistics and Landscape Governance College. This year the topic of the conference is Short supply chain in Logistics in Agriculture. Our conference proceedings have several papers on different topics which are especially dealing with the distribution of locally produced food. This is one of the most important things for improving the tourism in the region. A part of this year's conference is also a Round table on Challenges of plastics in agriculture.

Keywords: • agriculture • logistics • locally produced food • waste • packaging •

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Development of bioplastics

IVANA MIHELČIĆ, ANDREJ LISEC & BLAŽ ŠAMEC

Abstract Plastics have been one of most valued materials for more than 100 years. The main reason for that is low cost. Plastics are mostly made from synthetic polymers, which are derived from petroleum and its components. These kinds of resources take millions of years to form and they are limited in quantity. Also, plastics which are made from fossil resources are non-biodegradable. Therefore, environmental awareness brings the new generation of materials – bioplastics. Bioplastics are made from renewable resources and it can be recycled. They are a good alternative for conventional plastics because of their characteristic.

Keywords: • bioplastics • environment • biodegradation • materials • plastic •

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1 Introduction

Plastic is all around us. It has been used in packaging, agriculture, textile industry, automotive industry etc. Plastic is one of the biggest environmental issues so scientists have always been looking for better, more natural alternative, and they found it – it is called bioplastics. It is renewable, biodegradable and sustainable, unlike the conventional plastics. It really is a good alternative, as it will be seen in this study, but the main problem is that population have to get used to it – we have to learn how to use it. We can throw it only under special industrial circumstances. Bioplastics are made from renewable resources, as it is evident from its name.

In this study will be explained what is bioplastics, when it was first made, their advantages and disadvantages, and will try to discuss the future of bioplastics.

2 The history of bioplastics

Beginnings of conventional (oil based) plastics go to 1862 when the plastics was first invented but it didn't take off until 1907 when the Bakelite phone was created, and that was the start of plastics revolution.

First ever made plastics were actually a bioplastics, and it was made from cellulose nitrate. After a year, in 1908 the cellophane was invented. Then comes 12 years of stagnation, and in 1920 PVC was invented and it becomes very important in medical field. In 1924 Henry Ford uses food to create bioplastics that he will later use for car construction. In all these years, Ford company has been the synonym for bioplastics because they try to use bioplastics whenever that is possible.

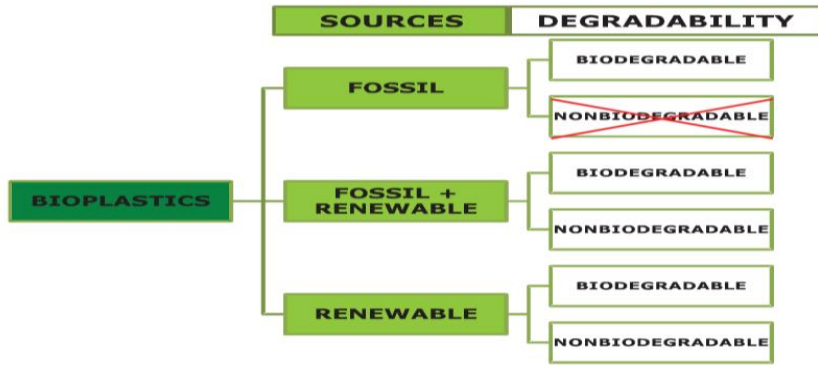
1938 and 1939 were very important regarding to development of plastics, because in the 1938 Teflon was discovered by Roy Plunkett, and in 1939 nylon was created and it was very important for use in clothing industry. In 1941 Henry Ford unveils first ever bioplastic car. Even though Henry Ford used precursor of bioplastics in automotive industry, the beginnings of bioplastics go to second half of the last century when after two oil crisis British company called Imperial Chemical Industries develops a PHBV bioplastics called Biopol, biodegradable, nontoxic plastic, produced naturally by bacteria.¹

3 Bioplastics

Bioplastics are a special kind of plastics which is bio based biodegradable or both. Terms like bio based and biodegradable are frequently misunderstood or misused. The term bio based means that the material or product is (partly) derived from biomass such as corn, sugarcane, or cellulose.²

On the other hand, the European Norm EN 13432 has defined the term biodegradable as the one where degradation mechanism is characterized by the breakdown of organic chemical by microorganisms in the presence of oxygen to carbon dioxide, water and

mineral salts of any other element present and new biomass or in the absence of oxygen to carbon dioxide, methane, mineral salts, and new biomass.³

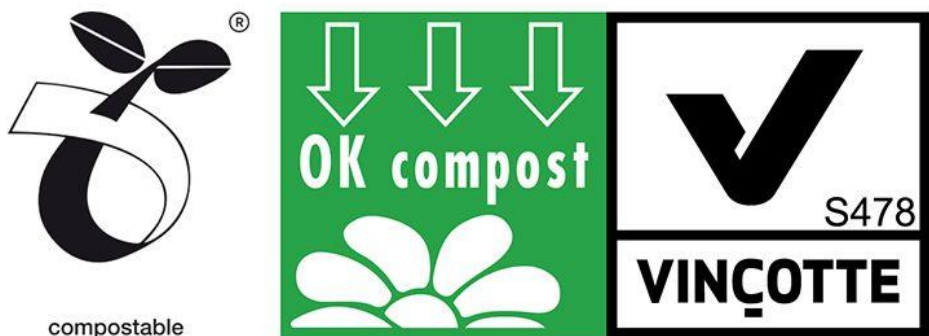


Source: https://www.fsb.unizg.hr/polimeri/zbornici/bioplastika_web/

Figure 1: Sources of bioplastics

Bioplastics made from renewable resources can be naturally recycled by biological processes, thus conserving limited natural resources, for example fossil fuels. Therefore, biodegradable products may or may not be manufactured from renewable sources. Also, biodegradable plastics have the same characteristics as conventional plastic bag – they are not disposable in natural environment, they don't decompose if they get wet, but only under the conditions of industrial composting.

The main difference between bioplastics and non-biodegradable plastics is obvious. There is no visible difference between these two, except in product markings. Every biodegradable product must have a special certification logo with certification number as it is seen at the Figure 2.

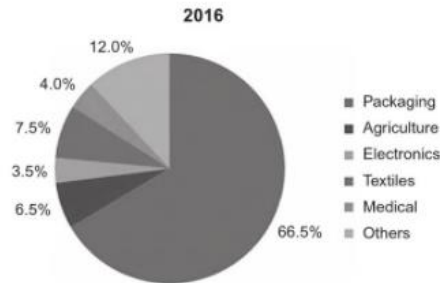


Source: <http://www.corbion.com/media/388704/compostability-724.jpg>

Figure 2: Certification label attesting plastics suitable for home composting awarded by Vinçotte

Today, bioplastics have become a necessity in many industrial applications such as food packaging, agriculture, electronics, textile industry and hygiene as seen in the Figure 3.⁴

A leading role in bioplastics use play manufacturers in the automotive industry such as BMW and Ford. In the future, it should be used also in biomedical, electrical and other consumer products.



Source: Aster, Syed A. (2016.) *Introduction to plastics engineering*. PDL Handbook Series, Oxford, UK

Figure 3: Bioplastics application in 2016.

3.1 Degradable, biodegradable and compostable- what is the difference?

Degradable means the ability to break up into smaller pieces. Degradable packaging products will not break down into their natural organic components, just smaller pieces of the original product.

Biodegradable: the prefix “bio” refers to the way in which a product will degrade, in this case, via a biological process, bacteria, fungi etc. The product will biodegrade into carbon dioxide, water and biomass from the action of naturally occurring microorganisms. Green waste is biodegradable.

Compostable: a product biodegrades within a time frame of 4 to 6 months. Green waste is compostable.

The difference between those terms can be seen in Figure 4.



Source: Šprajcar M., Horvat P., Kržan A. *Biopolymers and bioplastics*, National Institute of Chemistry, Ljubljana

Figure 4: The life-cycle of biodegradable plastics

The main difference between biodegradable and compostable is the amount of time it takes for a product to break down into its natural components via biological processes. Most existing international standards require biodegradation of 60% within 180 days. According to the American Society for Testing & Materials (ASTM), a plant plastic needs to meet three criteria in order to be classified compostable:

1. **Biodegrade:** break down into carbon dioxide, water and biomass at the same rate as cellulose (paper).
2. **Disintegrate:** the material is indistinguishable in the compost.
3. **Eco-toxicity:** the biodegradation does not produce any toxic material.⁵

PRODUCT	HOME COMPOSTING	COMMERCIAL COMPOSTING
Bagasse/ Sugar Fibre: Plates, Takeaway Containers, Bowls, Cups etc.	2-4 months	1-3 months
PLA: Cold Cups, Deli Containers and Straws	6-12 months	3-6 months
PLA: Tasting spoons and utensils	12-24 months	3-6 months

Source: <https://greenhome.co.za/composting/#definition>

Figure 5: Estimated composting times

As it is seen in the Figure 5, it takes more time to compost at home, then in special industrial circumstances. It is really important to be aware of how much time it takes to compost one little spoon that we use every day.

3.2 Commercial use of bioplastics

Bioplastics have become a big part of our lives, so it is not surprising that we have bioplastics all around us every day. Bioplastics have found their use in a variety of commercial applications.

This section focuses on different areas of commercial use of biodegradable plastics.

3.2.1 Bags

Biodegradable bags are made of polymers that decompose or degrade when exposed to special circumstances.

There are three types of biodegradable bags:

Type 1: The original biodegradable bags are made from resins containing starches, polyethylene and heavy metals such as cadmium, lead, and beryllium.

Type 2: This type has been invented using starches combined with biodegradable polymers such as PLA or BASF EcoFlex. These bags meet ASTM compostable standards, while others do not.

Type 3: Oxo-Biodegradable bags use Totally Degradable Plastics Additives to stimulate the breakdown of polymers and thus speed up the biodegradation process of conventional plastics.⁶

3.2.2 Packaging

Biodegradable plastics offer a large range of packaging applications. Some of the packaging options include nursery products, toys, textiles and compost bags. Other areas

include packaging for contact articles like disposable cutlery, drinking cups, salad cups, plates, straws, plates etc. Figure 6 shows a wide range of bioplastics packaging options.



Source: Aster, Syed A. (2016.) *Introduction to plastics engineering*. PDL Handbook Series, Oxford, UK

Figure 6: Range of packaging options made from bioplastics

3.2.3 Disposable housewares

In the previous section we have been discussing packaging of housewares, and in this section it will be discussed the bioplastic housewares that we put in that packaging such as kitchen tools and utensils, cups, bathroom accessories, toys, hooks, hangers etc. They

have been made from biodegradable plastics and are replacing the traditional plastics such as polystyrene and polyolefin.

Some examples of good practice are hangers from United Colors of Benetton which are 100% recyclable and biodegradable. Toyota Prius has vent louver vanes which are 37% renewable content derived from fermentation of corn sugar.⁷

4 Advantages and disadvantages of bioplastics

Everything has its own advantages and disadvantages, and so do the bioplastics too. In this chapter there will be mentioned some of them.

4.1 Advantages of bioplastics

The main advantage of bioplastics is that they are derived from renewable and sustainable resources, corn and soy, rather than oil. Also, bioplastics are biodegradable and compostable.

Second advantage is that they do not generate toxic and they will not leach chemicals into food. Also, bioplastics don't need fossil fuels, but oil based plastics do.

Another important advantage is that bioplastics degrade faster than oil based polymers. This is very significant advantage for disposable products such as grocery bags, plastic dishes etc. because it helps with some environmental problems we are currently dealing with.

Also, manufacturers accept bioplastics for numerous reasons, mainly because of the belief in climate changes, highly variable prices of petroleum and natural gas, the main feedstock for synthetic plastic production (fossil plastics).

Moreover, bioplastics offer a variety of zero waste end of life options. Bioplastics can be recycled with conventional plastics, they can be cleanly incinerated and industrially composted. This makes bioplastics a great material for food packaging as used packaging does not require cleaning since food and packaging can be composted or incinerated together. The additional benefit of composting is that biogas (a renewable energy source) can be collected from the composting system.⁸

4.2 Disadvantages of bioplastics

Bioplastics have many advantages and they are seen as solution to plastic litter, however, they have disadvantages too.

Firstly, as it is mentioned before – bioplastics are only disposable under the conditions of industrial composting where temperatures rise above 54 °C, and not in a landfill. Unfortunately, many bioplastics end up in a landfill, so it is important to take care of it. Secondly, food crisis. Growing demand for bioplastics creates competition for food sources, contributing to the global food crisis. This is a misleading argument commonly

used against bioplastics. The raw material for bioplastics is an industrial-grade corn which is not grown for human consumption. Recent technological developments in the bioplastics industry have shown that it is possible to make biodegradable “*plastics*” from hemp, seaweed and other plants. As the market grows, we hope to see a move away from using edible plants in the manufacture of biodegradable packaging materials.⁹

Furthermore, it makes people to litter more, because if something has a prefix bio-, people instantly think that something is environmentally friendly, so they throw it around because they think it will biodegrade. But it is not true. Bioplastics demand special circumstances to be disposable as it is mentioned before.

They are a very good alternative for a conventional plastics, but they have to be handled in proper way, and people have to be taught how to use it properly. What is more, bioplastics demand the special equipment for handling, which is expensive, so it is understandable that not everyone can afford that.

5 Conclusion

Bioplastics are a special kind of plastics which is biobased, biodegradable or both. Biobased means that the product is partly or completely derived from biomass, and the biodegradable means that degradation happens by the breakdown of organic chemical by microorganisms in presence of oxygen to carbon dioxide, water and mineral salts.

The history of bioplastics goes to 1862 when the plastic was first invented. In 1941 Henry Ford unveils first ever bioplastic car. But the real beginnings of bioplastics go to second half of last century when British company Imperial Chemical Industries develops bioplastics called biopol. It is interesting that first ever made plastic was actually a bioplastics, and it was made from cellulose nitrate.

The difference between bioplastics and conventional plastics is visible only on certification label which can be seen in the section 2.

The use of bioplastics is very important regarding to use of disposable housewares and also their packaging.

Bioplastic has advantages and disadvantages too, but it is important to mention that is very good alternative for conventional plastics, it just require a lot of education about handling and using products made of bioplastic.

Currently, the bioplastic production cost is one of the major factors that determine the effectiveness of their implementation. It is expected that bioplastics will become cheaper.

I believe that in the near future bioplastics will show its best potential and it will become available when their costs get lower.

Notes

¹ <https://bioplastics.weebly.com/history.html>

² [http://docs.european-](http://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_what_are_bioplastics.pdf)

[bioplastics.org/2016/publications/fs/EUBP_fs_what_are_bioplastics.pdf](http://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_what_are_bioplastics.pdf)

³ Aster, Syed A. (2016.) *Introduction to plastics engineering*. PDL Handbook Series, Oxford, UK

⁴ Pilla, S. *Handbook of Bioplastics and Biocomposites Engineering Applications* (2011.), Wiley-Scrivener Publishing, University of Wisconsin-Madison, USA

⁵ <https://greenhome.co.za/composting/#definition>

⁶ Aster, Syed A. (2016.) *Introduction to plastics engineering*. PDL Handbook Series, Oxford, UK

⁷ Aster, Syed A. (2016.) *Introduction to plastics engineering*. PDL Handbook Series, Oxford, UK

⁸ <https://greenhome.co.za/the-pros-and-cons-of-bioplastics/>

⁹ Ibid.

References

Aster, Syed A. (2016.) *Introduction to plastics engineering*. PDL Handbok Series, Oxford, UK

Emadian, Mehdi S., Onay, Turgut T. (2016.), Demirel B., *Biodegradation of bioplastics in natural environments*, Institute of Environmental sciences, Bogazici University, Istanbul, Turkey

Harding, K. G., Gounden, T., Pretorius, S. (2017.) *“Biodegradable” plastics. A myth of marketing?*, School of Chemical and Metallurgical Engineering, University of Witwatersrand, Johannesburg, South Africa

Pilla, S. (2016.) *Handbook of Bioplastics and Biocomposites Engineering Applications*, Wiley-Scrivener Publishing, University of Wisconsin-Madison, USA

Šprajcar M., Horvat P., Kržan A. *Biopolymers and bioplastics*, National Institute of Chemistry, Ljubljana

<https://bioplastics.weebly.com/history.html>

http://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_what_are_bioplastics.pdf

https://www.fsb.unizg.hr/polimeri/zbornici/bioplastika_web/

<https://greenhome.co.za/composting/#definition>

<https://greenhome.co.za/the-pros-and-cons-of-bioplastics/>

https://greenhome.co.za/composting/#compost_facility

<https://greenhome.co.za/the-pros-and-cons-of-bioplastics/>

http://www.plastice.org/fileadmin/files/Brochure_teachers.pdf

<https://bioplastics.weebly.com/advantages--disadvantages.html>

<http://www.sustainableplastics.net/about>

Quality Local Food as Tthe Foundation of Sustainable Tourism Development: Study Case of the Municipality of Sevnica

JASNA POTOČNIK TOPLER, HELENA HORVAT, ALEKSA PANIĆ & ANDREJ
LISEČ

Abstract Good quality food is significant for everyday life as well as for the tourism industry. This article reports on a research project that reviews some qualitative viewpoints on the topic of local food and its inclusion into the tourist offer in the Slovenian Municipality of Sevnica, where the tourism sector is on the rise after Melania Trump has become the first lady of the United States of America. The Municipality of Sevnica is a typical rural area with emphasised sustainable tourism development in the tourism strategy. In the light of sustainable destination development, it is thus of great importance that the local food represents an essential part of the further development of the sustainable tourism in this municipality by including local products such as the wine Blue Franconian (Blaufrankisch), local apples, etc. in the tourist offer under the protected brand First Lady.

Keywords: • local food • quality • health • sustainable tourism • destination

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Introduction

In last few years we have witnessed that the world trends in the tourism sector have changed. The focus is on sustainability, health, green tourism, adventure and active holidays. Consequently, with new types of tourism we also get new types of tourists. In this paper we will focus especially on one new type – the healthy tourist. In Slovenia, there are a lot of different activities appropriate for attracting this type of tourists. That is also one of the reasons why Slovenian Tourist Board has the new slogan: “Feel Green, Active and Healthy Slovenia”. It is important for Slovenia as well as for other destinations that new world trends are followed and created. Hočevar, Bartagelj, Podlogar and Oseli (2016: 14) are describing personalities of new target groups in Slovenian tourism. They are presenting three main personalities: explorer, partner and muse. In the new Strategy of sustainable growth of Slovenian tourism 2017-2021 (Strategija trajnostne rasti slovenskega turizma 2017-2021) Mihalič and Topalović (2017: 22) discuss new strategy and the main tourist products for different parts of Slovenia. Most important products are health, culinary, sports activities etc. It is essential that we understand what active tourism includes. Active tourism connects sports, culture and demand of adventures (AcTour:19). All those factors together create an original tourist product. Health and healthy life style have also gained importance. Zurak (2016: page 2) argues that active tourism is a combination of sport, recreation, cultural, artistic, entertaining and hiking activities. Zurak (2016: page 2) also cites Samper Martinez (2011) and explains that active tourism is a new philosophy of travelling, which combines adventure, eco-tourism and cultural aspects with discovering and experiences of a tourist tour. The most important thing about active tourism is that we actively participate in activities (Zurak, 2016: 2). When we discuss health and active tourism, food is a significant issue as well. We know the proverb saying that we are what we eat. So it is significant that we are aware of the quality of our food. Also food tourism is definitely one of the recent trends, and many authors discuss culinary tourism and its role. Kovač et al. (2017: 10) cite Hall and Mitchell (2005: 73) and Wolf (2006: 13) who claim the connection between food and tourism is one of the missing factors in the tourism industry. Shahaim Ab Karin, Chaa, Geng-Qing Chi and Othman (2013: 99) were testing a theoretical model determining the relationships among tourists' perceived food image, food satisfaction, culinary quality and behaviour intentions in their research. Their main conclusions are the following: tourists' perceived food image played a role in directly influencing food satisfaction and culinary quality, food image influenced tourists' behavioural intentions through culinary quality, tourist satisfaction with their food experience directly affecting perceived quality of their culinary experience and behavioural intentions; and tourists' behavioural intentions were directly affected by their evaluation of culinary quality. The most important finding for our research is that they discovered that food is an imperative contributor in the selection of a travel destination.

Methodology

In this article the case of the Municipality of Sevnica is discussed. The main research question is how the tourism stakeholders can connect active tourism and quality local food. The aim of the research is to find out what are good examples from practice. In the paper the following methods are employed: the method of literature review, the descriptive method and the comparative approach, as well as classification and prediction. In order to get a better insight in everyday practices, also a semi-structured interview was used.

Quality Food – An Essential Ingredient of Sustainable Tourism in Sevnica

Sengel et al. (2015: 430) explain (according to Grande 2001) that local culture and authenticity are new trends, and that gastronomy has started to be recognized as a symbolic value representing territories and culture in tourism. If we visit a restaurant that is not yet food tourism. Food tourism is much more than that - it means that the choice of a destination is based on special interests concerning culinary, gastronomy, or cuisine (Senegat et al., 2015: 430). Food is an important element of a tourist experience (Senegat et al., 2015: 431).

The Municipality of Sevnica is 12th biggest Slovenian municipality. It has approximately 17500 citizens. The Sevnica town is located on both banks of the Sava river valley (south-eastern Slovenia), the longest Slovenian river and has approximately 5.000 citizens. Traditional events keep the town alive all year long: annual salami and Blue Franconian festivals, the Sevnica Castle Festival, the student Vejšde party, Kitarijada and others. Through prudent use of European funds and state and municipal investments in road, communal and social infrastructure, the image of the area vastly improved in the past decade. (Zavod za kulturo, šport, turizem in mladinske dejavnosti Sevnica - KŠTMA, 2017).

The Sevnica town is a childhood hometown of the current First Lady of the United States of America Melania Trump. On the top of the hill overlooking Sevnica we can see the Sevnica Castle, the destination's main tourist attraction. Many cultural events and concerts take place here. In the castle park there are a lot of energy points. And as far as the local quality food is concerned, the First Lady brand has become very important. It combines the best local specialities – wine, the traditional Sevnica salami and a lot of other tourist products (Slovenska turistična organizacija, 2017), which are well known in this rural municipality that has found its way on the tourist map just recently.

The concept of rural tourism is very complex and dynamic, so the single definition is not possible, according to Rabotić (2012: 51), who cited Page and Conell (2009). However, it is important to observe the difference between the rural and urban area when developing plans for the rural area development. In scientific literature, “rural tourism” is often mixed with “village tourism”, “agricultural tourism”, “farm tourism”, “farm-based tourism”, etc.

Popesku (2008) points out the main difference between the rural tourism and the agricultural tourism. According to Popesku (2008), rural tourism is a wide area of the tourism segment and agricultural tourism is just a small part of the rural tourism. Popesku (2008) also enumerates four main segments of the rural tourism product as follows:

1. Agricultural tourism and rural experience.
2. Activities in nature and cultural tourism.
3. Eco-tourism.
4. Other combined forms of rural tourism.

Rural tourism has become very popular, especially in the rural areas of Central Europe, and it has huge influence in financial and economic benefits of small areas. According to Rabotić (2012: 60), the main market segments in rural tourism are daily visitors who are coming from the neighbourhood cities and towns, as well as weekend tourists and tourists with children. They decide to visit such areas in order to find some peace, to enjoy the nature, to enjoy healthy food, to show the animals to their kids. However, Rabotić uses the 2001 research (according to Hrabovski – Tomić 2008: 94-95), to explain that the main activities in rural areas are the following:

- Enjoying a rural scenery (75%)
- Gastronomy (70%)
- Visiting lakes and rivers (58%)
- Visiting cultural and historical sites and attractions (41%)
- Fishing – hunting – river cruise (32%)
- Cycling – horse riding – hiking – walking (24%)

Having that in mind, we can see that rural tourism is attracting people who like to enjoy the activities in nature, and communities who are able to recognize that could have enormous economic and social benefit. Of course, it is important to make a difference between what resources certain rural community has and what are the developing plan and desires. As we could see, there is a difference between typical rural tourism and the tourism in rural households, for example. Thus, without detailed planning and analysing the capacities and resources, but also the market demand, it would almost be impossible to manage tourists' visits.

In the beginning of every case study we have to establish the current situation, that is where we are and where we would like to be. We have to know what is our vision of a destination. Firstly, we check our strengths and weaknesses, what we can do and then look at the effect of setting. For our purposes we have studied the following documents: Regional developing program of Posavje region 2007-2013 (Regionalna razvojna agencija Posavje, 2007) and project work Quality local food for bigger tourism (Kovač at al., 2017).

An interview with Zdravko Remar from the Travel agency Doživljaj, Sevnica, which lasted approximately 15 min was carried out via telephone. Remar emphasised that in Sevnica there are a lot of opportunities for tourist products and activities. He pointed out that the main problem is how to attract tourists, firstly, by knowing who is our target group and then adjust the promotion and offer accordingly.

The Municipality of Sevnica has a lot of strengths for developing active rural tourism. The destination has a lot of tourist farms, e.g. Ekološka kmetija Zabukovec, Kmetija Gnidica (KŠTMB, 2017). There are also good foundations to further develop culinary tourism. The stories about Melania Trump are very interesting also for attracting culinary tourists and nature lovers. In that part of Slovenia there are a lot of beautiful and abundant natural resources. We could include them in the tourist offer responsibly and in this way help to preserve them.

After gathering all information we can conclude that developing active rural tourism is one of the best possibilities how to connect active tourism and local food. Good sign is also that that kind of tourism is pursuant to new Strategy of developing tourism in Slovenia. A good solution is also to connect with people who are in that kind of tourism in order to learn from them. Collaboration is one of the most important factors in developing of a destination.

Conclusion

Tourism stakeholders in the Municipality of Sevnica are aware of the fact that quality of local food is essential for the health of the local community and for the development of the tourism in the municipality and the region as well. A healthy environment is becoming a value and a privilege. The limitation of this research is that it did not include the tourists spending their time in Sevnica. Nevertheless, it is assumed that healthy food and a healthy environment in general are also very important values among tourists. It should be observed that sustainable tourism can only be achieved in a sustainable destination environment. To encourage the development of sustainable tourism further it is significant that, in the future, tourism plays an active role in supporting the local community to engage in the sustainable or at least more sustainable business practices also with producing and offering quality food to locals and tourists.

References

- Hočevar, N., Bartagelj, Z., Podlogar, P. U., and Oseli, P. (2016). *Persone ciljnih skupin slovenskega turizma*. Available at
- Minalič, T., Topalović, S. (2017). *Strategija trajnostne rasti slovenskega turizma 2017-2021: izvlečki za razpravo na usklajevalnih delavnicah*. Available at http://www.mgrt.gov.si/fileadmin/mgrt.gov.si/pageuploads/STRATEGIJA-_Usklajevalne_delavnice_izvlecek.pdf, 27.9.2017.

- AcTour. (b.d.). *Active tourism for sustainable development: Training curriculum*. Available at http://www.activetourism.org/documents/training_curriculum/Training_Curriculum.pdf, 27.9.2017.
- Zurak, J. (2016). *Aktivni turizam na hrvatskoj obali i otocima*. (Diplomsko delo, Sveučilište u Zadru). Available at <https://repositorij.unizd.hr/islandora/object/unizd%3A784>, 24.9.2017.
- Kovač, M., Horvat, H., Alif, M., Ilić, M., Obrez, J., Vrenko, F., Barbo, K. (2017). *Poročilo projekta Po kreativni poti do znanja: Kakovostna lokalna hrana za večji turizem 24-11-4*. Available at?
- Shahaim Ab Karin, Chaa, Geng-Qing Chi and Othman (2013: page 99)
- Zavod za kulturo, šport, turizem in mladinske dejavnosti Sevnica – KŠTMa. (2017). *O Sevnici*. Available at <https://www.visit-sevnica.com/si/o-sevnici.html>, 27.9.2017.
- KŠTMB. (2017). *Kulinarika/nastanitev: Izletniške turistične kmetije*. Available at <https://www.visit-sevnica.com/si/izletniske-turisticne-kmetije.html>, 27.9.2017.
- Černogoj, D. (2014). *O kmetiji: Ponudba za otroke*. Available at <http://www.tk-marjanca.net/o-kmetiji/>, 27.9.2017.
- Springer, K. (2017). *Ana Roš: The female chef putting Slovenia on the map*. Available at <http://edition.cnn.com/2017/06/22/europe/her-ana-ros-slovenia-worlds-best-female-chef-2/index.html>, 27.9.2017.
- Rabotić. B. (2012). *Selektivni oblici turizma*. Beograd: Visoka turistička škola strukovnih studija.
- Page, S.J., Connell, J. (2009). *Tourism – a Modern Synthesis*, 3rd edition. Andover: Cengage Learning.
- Popesku, J. (2008). *Menadžment turističke destinacije*. Beograd: Univerzitet Singidunum.
- Hrabovski-Tomić, E. (2009). *Selektivni oblici turizma*. Sremska Kamenica: Fakultet za uslužni biznis.
- Krsmanović, A. (2012, November 17). *Kosjerić: Aktivan odmor na selu*. Večernje novosti. Available at <http://www.novosti.rs/vesti/turizam.90.html:406076-Kosjeric-Aktivan-odmor-na-selu>, 27.9.2017.
- Sengel, T., Karagoz, A., Cetin, G., Istanbulu Dincer, F., Mugan Ertugral, S., Balik, M. (2015). *Tourists` Approach to Local Food*. (World Conference on Technology, Innovation and Entrepreneurship). Istanbul Universtiy: Elsevier Ltd. Available at <https://www.sciencedirect.com/science/article/pii/S1877042815039646>, 18.10.2017.

Return Indicators at Multinational Beer Manufacturers in Hungary

ISTVÁN PESTI

Abstract ROE, ROS and ROA indicator comparison between the brewing companies, which are belong to multinational corporate groups and has brewery on the territory of Hungary, with data from 2012-2015.

Keywords: • beer • return • Hungary • comparison • multinational •

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1 Introduction

This research had been made in order to support a PhD thesis on beer industry research. The aim of this study is to analyze the current status of the Hungarian beer manufacturer companies' financial indicators, based on global industrial data, trends and market players. The hypothesis behind of the study is, that the companies must develop their processes on innovative ways, because they are acting on a very price-sensitive market and this market is dependent on the global economic status, as the 2012-year global crisis' effect was visible on their financial results.

2 Brief description of the Hungarian beer industry

There are three main companies on the Hungarian beer manufacturing market with global group background – Borsodi, Dreher and Heineken-, the market share is almost equal on yearly basis, but insignificantly vary month to month, but basically can be identified as stable.

Their breweries are located in Hungary, but I would like to hereby list the Pécsi Brewery, who manufactures locally, but has definitely low market share. The rest of the market players are importer (as Carlsberg) or SME, like to so called craft beer makers, which are out of scope of this research. Similarly, to other food industry operation – As Chikán wrote (**Chikán 2008**), the entry borders are the investment cost of the industrial equipment, the knowledge of the technology, the saturation of the market, the market intelligence, the excise duty and the industrial regulation.

Based on the data of the Hungarian Agribusiness Institute (AKI), because of the global economic crisis in 2012, the market became smaller in the last few years (**AKI 2016**). For example, in 2007, the consumption was 7 million hectoliter beer in Hungary, in 2012 it had not reach 6 million neither, so it was approximately 15% decrease... It is worth to mention at the same time, that the sales volumes had been increased between the above-mentioned years, but the base quantity is not reach yet. Some of the market players considers the decreased part of the consumers' income as reason, what they aimed to spend on these products. The corporate analysis literature (**Katona 2007**) says that the analytics of the trendlines shall consider the inflation effect, because in the above-mentioned case, the decrease in the sales volume was not linear followed by the decrease in the revenue.

Based on the decision of the Hungarian Competition Authority (GVH), the products can be separated based on their cost of manufacturing, the lower cost level products from the high cost level. (**GVH 2016**) All of the three companies are making „economy” pricing beers, „standard” or so called „mainstream” beers and, of course, „premium” beers, reflecting to the consumer preferences from global consumption trends and habits. Differentiation of the products is related to the consumers' price-sensitivity, income and geographical status; therefore, the brand-loyalty shall be regarded in this industry (considering Hungary) as category-loyalty, because the consumers prefer a price-level, not a quality: missing a given product, they replace with a similar one, but on the (almost)

same price. Because of the wide range of beer (based) products, the replacing products are also coming from the same industry, the consumer preference cannot be changed from beer to wine, for example. Lager and Ale, Alcoholic and non-Alcoholic, natural or flavored are the potential alternatives. Consumers can meet locally produced beers and imported ones, therefore there are lot of products, which takes the brewers under pressure, not the consumer. Some suppliers are managed on group level, centrally, because of their strategic importance, less strategic partners are contracted and managed locally, not just their administration, but the negotiation, operation is with the local entity.

3 Research

3.1 Methodology, applied indicators

In accordance with the competition on the market and the expectations from the shareholders of the groups, the Hungarian affiliate companies are concentrating on their return, so the financial indicators are showing their positions very well. These indicators are results of mathematical analysis; therefore, the transparent methodology is granted. **(Dusek 2013)** As these are Hungarian companies, the submitted balance sheets, profit and loss statements and supplements are in the same format, structure and separation. Based on the 1st supplement of the C. Law on Accounting of 2000, these companies are using „A” type balance sheet at reporting. There are lot of above referred indicators, but one type of them are the „return on” indicators, so having the current data (from the last 4 years, the global economic crisis and the coming ones, until the last available, 2015-year data) I made the ROA, ROE and ROS indicators, because they might contribute to the better understanding of the companies’ efficiency and process development.

3.1.1 ROA, Return on Assets

Income divided with total asset value, so this indicator can show the profitability of the company and the efficiency of resource usage, so this is an efficiency indicator. **(Abraham, Harris, Auerbach 2017)** At calculation, the value shall be the divider, the 100 times multiplied financial results, before taxation.

3.1.2 ROE, Return on Equity

This indicator shall be understood as capital return indicator, which expresses the results of the usage of the shareholders’ assets. Shall be calculated as the 100 times multiplied income shall be divided with the own capital. **(Sur, Mitra, Maji 2014)**

3.1.3 ROS, Return on Sales

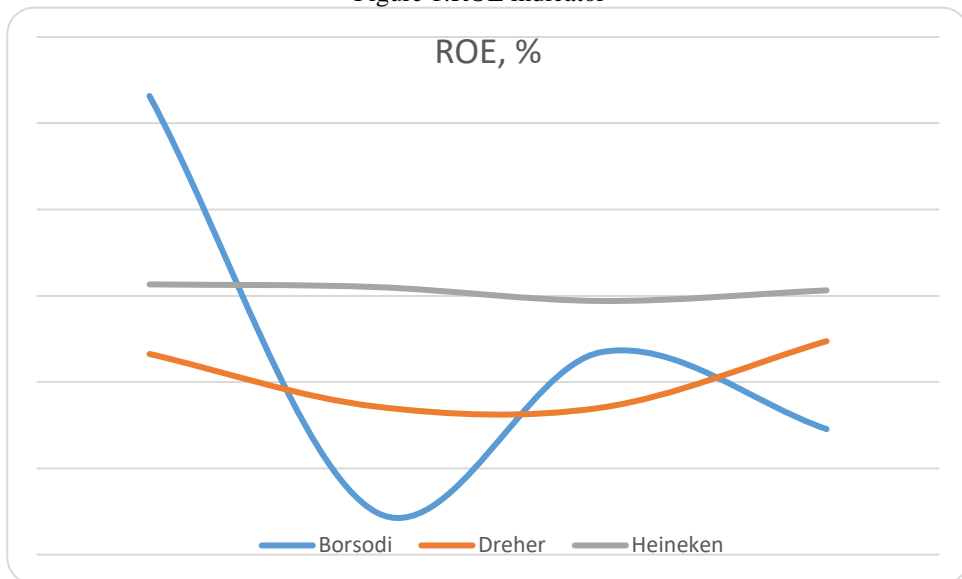
The indicator’s aim is to show the profitability of the sales, so shows how much percentage of the income becomes profit. It shows the markup, so the 1 EUR (in this case Hungarian Forint) based income. **(Prester, Podrug, Filipovic 2016)**

3.2 Analysis of „return on” indicators

The database, where the used information was sourced belongs to the Company Information and Electronic Intermediate Service in the Business Process of Hungary, because all companies, which operate on the territory of Hungary are obliged to submit their annual profit and loss reports. The market players are noted on the charts in alphabetic order, with their shortened names. The Heineken’s business year turns similarly to the calendar year, but the Borsodi’s and Dreher’s turns as 31, March. At the analysis of the balance sheets and p and l reports I had not differentiated these years, because of the continuous operation of the companies, in accordance with the accounting principles. The time scope of the research is from 2012 to 2015 (incl.), because not all of the data available yet for 2016.

1. ROE indicator

Figure 1:ROE indicator



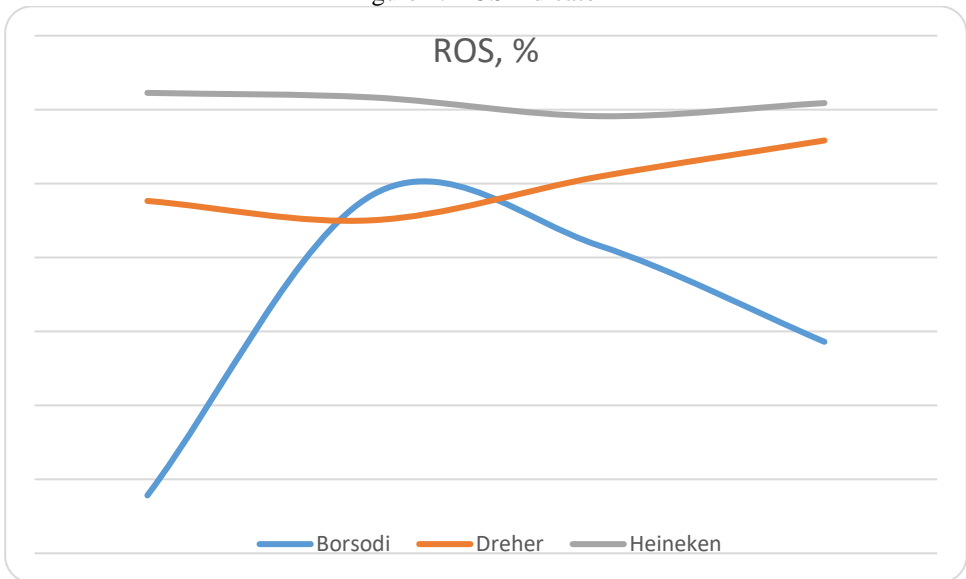
Source: own creation

As it is visible on the Figure 1, the Heineken performed on a balanced way; had not created significant profit, but loss neither. During the analyzed period, Dreher had shown decreasing tendency in the first 3 years, but at 2015 it had been stopped and reduced the unprofitability in order to make steps for the profitability. There is a significant decrease at Borsodi, the more than 100% profitability had fallen to more than 100% loss, but we cannot disregard the effects of the global economic crisis. After 2013 the trend had changed and directed to the neutral status, but unfortunately in 2014 it lost its power and started to decrease again. The ROE indicator is related to the logistic processes with the financial background of the supply chain processes (including the investments too). The

investment performance is partially the performance of the logistic processes, because for example a new built warehouse shall be utilized on 100%, as a newly planned building.

2. ROS

Figure 2: ROS indicator

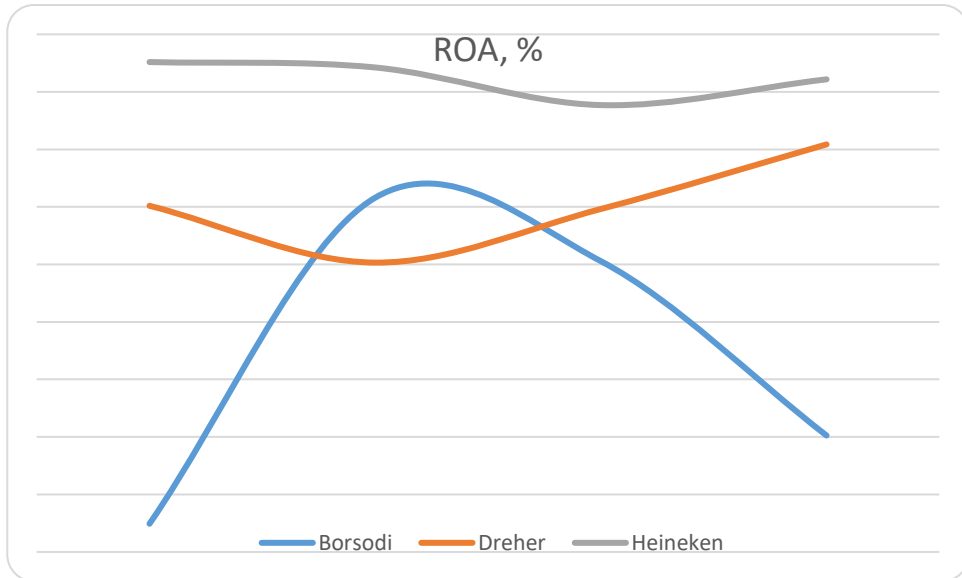


Source: own creation

The values of the ROS indicator had been visualized on the Figure 2. The Heineken's indicator is stable, there is no significant change to the balanced status, so there is no sign of negative effect from the economy, but there is no positive neither... At Borsodi, the value of the indicator was reduced from 25% to 5% in the first years, but the process had been stopped and the ratio of the loss had been started to grow. The ration of the Dreher's loss had been increased in the first years, but there is a fall from 2013, so there is the inverse of the processes at Borsodi. The profit from the sales activity (in these years, the loss) plays important role in the financing of the continuous productivity, the logistic costs (beside of all of the other operational costs) had exceeded the income, so their level was higher than the level of the sales incomes.

3. ROA

Figure 3: ROA indicator



Source: own creation

The upper chart (Figure 3) shows the values of the ROA indicator, based on this, the Heineken's indicator's value had a decreasing trend in the first 3 years (so the costs had exceeded the profit), but it had changed direction in 2014 and started to grow.

Borsodi's indicator was not able to be higher than 0, so based on the negative result, the -38% value could „decrease” to -10%, but it had fallen again. Dreher's negative financial result is visible on the value of the indicator, there was a -15% value in 2013 after the -10%, but the results seem getting better. The connection to logistics is the value of the assets, most of the processes requests investment, so the change in the assets might influence the operation too.

Summary

The industrial beer manufacturing is represented by these three companies in Hungary, the analysis was the creation and comparison of their return related indicators, in the light of the available data. The hypothesis had been accepted, what means, that it can be stated that their financial performance was deeply influenced by the global economic crisis, but they had created different, corporate specific techniques and strategies in order to reflect to the changing financial environment, to predict the difficulties and to secure the stabile operation.

My professional opinion is, that the supply chain processes – because of their capital and time need- are playing significant role among the business processes, so the process innovation might be an alternative solution to create financially lucrative processes. In this case, the innovation would be the transition, development of a current process (from the invention itself). The topic needs further studies and scientific researches, especially a supply chain based one, where the SCM process could be compared to the overall performance of the company, highlighting deeper correlation between the items of the balance sheets.

References

- Abraham, R., Harris, J., Auerbach, J. (2017): Earnings Yield as a Predictor of Return on Assets, Return on Equity, Economic Value Added and the Equity Multiplier. *Modern Economy*, 8, 10-24.
- Agrárgazdasági Kutató Intézet (AKI): *A magyarországi élelmiszeripar helyzete és jövőképe*, 2016, p228
- Chikán, A. (2008): *Vállalatgazdaságtan*, Aula kiadó, Budapest
- Dusek, T. (2013): *Tér és közgazdaságtan*, L'Harmattan, Budapest
- Gazdasági Verseny Hivatal (GVH):
http://www.gvh.hu/data/cms1031838/Vj049_2011_v.pdf
- Katona, K. (2007): *A vállalatgazdaságtan alapjai*, Szent István Társulat, Budapest
- Prester, J., Podrug, N., Filipovic, D. (2016): Material saving strategies, Technologies and effects on return on sales *International, Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering* 10. issue
- Sur, D., Mitra, S., Maji, S.K. (2014): Disintegrating Return on Equity Using DuPont Model: A Case Study of Tata Steel Ltd., *Journal of management research in emerging economies*, 2. issue Downloaded: 05/09/2017

Logistični sistem ravnanja z odpadki v Sloveniji

ZORAN OMERZU & ANDREJ LISEC

Abstract V skladu s slovensko okoljsko zakonodajo, operativnim programom ravnanja s komunalnimi odpadki Ministrstva za okolje in prostor in ob upoštevanju evropskih smernic je potrebno največji poudarek dati preprečevanju nastajanja odpadkov, ponovni uporabi ter recikliranju in zmanjšanju količin odloženih odpadkov na odlagališčih [1].

V Sloveniji je potrebno v skladu s trenutno zakonodajo organizirati ločeno zbiranje odpadkov na izvoru in obdelavo ostanka odpadkov pred odlaganjem, s tem pa odložiti čim manjšo količino odpadkov.

Keywords: • logistika • odpadki • reciklaža • sistem ravnanja • zbiranje •

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Uvod

Pri izvajanju storitve ravnanja z odpadki je zelo pomembna okoljska zakonodaja, ki predpisuje ravnanje s praktično vsemi vrstami odpadkov (našteti je nekaj glavnih):

- Zakon o varstvu okolja (Uradni list RS, št. 102/15);
- Uredba o odpadkih (Uradni list RS, št. 69/15);
- Uredba o sežiganju odpadkov (Uradni list RS, št. 41/09);
- Uredba o odlagališčih odpadkov (Uradni list RS, št. 54/15);
- Uredba o predelavi biološko razgradljivih odpadkov in uporabi komposta ali digestata (Uradni list RS, št. 56/15);
- Uredba o ravnanju z embalažo in odpadno embalažo (Uradni list RS, št. 2/16);
- Uredba o metodologiji za oblikovanje cen storitev obveznih občinskih gospodarskih javnih služb varstva okolja (Uradni list RS, št. 109/102);
- Program ravnanja z odpadki in Program preprečevanja odpadkov sta instrumenta vlade za izpolnitev preprečevanja nastajanja odpadkov, zagotavljanje predpisanega ravnanja z odpadki in dosego ciljev ravnanja z odpadki za obdobje do leta 2020 oz. do leta 2030
- imamo še veliko uredb o: odpadni električni in elektronski opremi, gradbenih odpadkih, azbestu, organskih kuhinjskih odpadkih, izrabljenih vozilih, izrabljenih avtomobilskih gumah ...;
- v vsaki občini je v veljavi še lokalni akt, ki ga predstavlja odlok o ravnanju s komunalnimi odpadki posamezne občine.
-

1 Odpadna plastična folija s podeželja

V skladu z Uredbo o odpadkih (Uradni list RS, št. 69/2015) je odpadke prepovedano puščati v naravnem okolju, jih odmetavati ali z njimi nenadzorovano ravnati (17. člen). Odpadna plastična folija s kmetijstva sodi med odpadke iz kmetijske dejavnosti, poimenovana je s številko odpadka: 02 01 04 - odpadna plastika, razen embalaže - tako so dožni zanjo poskrbeti kmetje oz. uporabniki sami. Oddati jo morajo registriranemu zbiralcu (z veljavnim okoljevarstvenim dovoljenjem, skrajšano OVD) tovrstnih odpadkov.

Zanimivo je, da se področju ravnanja z odpadno plastično folijo s podeželja, v Sloveniji ne posveča dovolj pozornosti. Tovrstna odpadna folija se ne šteje k embalaži, niti ne sodi med komunalne odpadke, za zbiranje katerih so zavezana komunalna podjetja. Odpadne plastične folije v kmetijstvu so v osnovi tri:

- folija, ki se uporablja na obdelovalni površini, črne barve (navadno umazana - SRF);
- folija silažnih bal, zelene barve (reciklaža);
- folija, ki se uporablja na konstrukcijah rastlinjakov, prozorna (reciklaža).

1.1 Ravnanje z odpadki v Sloveniji

Za pravilno ravnanje z odpadno plastično folijo s podeželja je bistveno poznavanje slovenske okoljske zakonodaje. Leto 2016 je bilo v Sloveniji, glede odlaganja odpadkov prelomno. Od 1. 1. 2016 naprej se lahko v Sloveniji na odlagališčih odloži le obdelane mešane komunalne odpadke, tako imenovano stabilizirano težko frakcijo mešanih komunalnih odpadkov. Pri nastajanju odpadkov in ravnanju z njimi se kot prednostni vrstni red upošteva naslednja hierarhija ravnanja:

- preprečevanje odpadkov;
- priprava za ponovno uporabo;
- recikliranje;
- drugi postopki predelave (npr. energetska predelava) in
- odstranjevanje.

Odpadke moramo pred odlaganjem ustrezno mehansko-biološko obdelati, v skladu z veljavno Uredbo o odlagališčih odpadkov. Odpadki morajo za odlaganje na odlagališču izpolnjevati naslednje pogoje [2]:

- kurilna vrednost pod 6.000 kJ/kg suhe snovi;
- vsebnost celotnega organskega ogljika (TOC) mora biti pod 18 odstotkov mase suhih obdelanih komunalnih odpadkov;
- sposobnost sprejemanja kisika, izražena v AT₄, mora biti pod 10 mg O₂/g suhe snovi biološko razgradljivih odpadkov.

1.2 Ravnanje z odpadno plastično folijo s podeželja

Oddaja odpadne plastične folije s podeželja na državni ravni ni posebej urejena, kot je to primer za večino ostalih vrst odpadkov. Imamo embalažne družbe (DROE), ki so ustanovljene z namenom prevzemanja npr. posameznih vrst embalaže, izrabljenih gum, odpadne električne in elektronske opreme, odpadnih nagrobnih sveč,... nimamo pa uredbe, ki bi predpisovala nadaljnje ravnanje z odpadno plastično folijo s podeželja, kar je nuja, posebej zaradi težav, s katerimi se srečujejo uporabniki tovrstnih folij.

Ni sledljivosti o nastali letni količini odpadne plastične folije s podeželja, zato lahko večje količine končajo tudi na črnih odlagališčih širom Slovenije, kar negativno vpliva na varovanje okolja.

Za odpadno plastično folijo, ki se uporablja na obdelovalnih površinah, črne barve (navadno umazana), je primerna za predelavo v alternativna goriva, predelati jo je potrebno v nadomestno/alternativno gorivo (SRF/RDF).

Ločimo dve različni vrsti, glede kvalitete, trdih goriv iz nenevarnih odpadkov, ki predstavljata energijsko bogate frakcije nenevarnih odpadkov:

- RDF (refused delivered fuel), ki je primarno namenjeno direktnemu sežigu in
- SRF (solid recovered fuel), namenjeno sosežigu v kurilnih napravah in cementnih pečeh.

Pri odpadnih silažnih folijah, ki so navadno zelene barve, je zgodba precej drugačna, enako velja tudi za prozorno folijo, ki se uporablja na konstrukcija rastlinjakov.

Odpadna silažna folija, ki je primerna za reciklažo, mora biti čista (brez primesi trave in zemlje) in brez mreže, ki jo je potrebno predhodno odstraniti (gre v predelavo za SRF/RDF – nadomestno gorivo).

Odpadna prozorna folija rastlinjakov mora biti čista (brez primesi zemljine ali rastlin), kot takšna je primerna za reciklažo oz. ponovno uporabo.

Za obe vrsti folije je potrebno zagotoviti baliranje in ob zadostni količini (vsaj za eno tovorno vozilo – vlačilec) se na trgu sekundarnih surovin najde prevzemnik/kupec.

Pomembno je, da uporabnik ob oddaji odpadne folije, s strani registriranega prevzemnika dobi potrdilo o oddaji – to je evidenčni list – predpisan s strani države.

Največ težav povzroča umazana odpadna folija (črne barve), ki je že v fazi odstranjevanja, s strani kmetovalcev, umaknjena z obdelovanih površin na neprimeren način. Navadno je preveč onesnažena z zemljino. Tako je primerna predvsem za energetske izrabo, kot energent, ob predhodnem postopku mehanske predelave v nadomestno gorivo SRF oz. RDF.

1.3 Količina odpadne plastične folije s podeželja

Odpadna plastična folija s kmetijstva sodi, v skladu z okoljsko zakonodajo, k odpadkom s številko odpadka: 02 01 04 - odpadna plastika, razen embalaže.

Natančnega podatka o količini odpadne plastične folije s podeželja v Sloveniji ni. V tabeli 1 je podana količina več različnih odpadnih plastičnih materialov, ki se pojavljajo v kmetijstvu, oddanih v predelavo, od leta 2006 do leta 2014.

Tabela 1: Sestava in letne količine nastajanja za predelavo sprejemljivih odpadkov iz opravljanja dejavnosti kmetijstva [3]

VRSTA ODPADKA (t/leto)	2006	2007	2008	2009	2010	2011	2012	2013	2014
Plastika in kompoziti – embalaža (15 01 02 in 15 01 05)									
Plastika iz postopkov oblikovanja ter fizikalne in mehanske površinske obdelave plastike (12 01 05)									
Plastika iz kmetijstva, vrtnarstva ribogojstva, gozdarstva, lova, ribištva (02 01 04)	31.053	36.408	125.851	84.127	43.829	44.385	44.783	28.738	136.010
Plastika iz proizvodnje, priprave, dobave in uporabe plastike (07 02 13)									
Mešana embalaža (15 01 06)									

Podatki, ki so jih pridobili na Statističnem uradu Republike Slovenije so seštevek plastičnih materialov, nastalih v kmetijstvu. Že znotraj številke odpadka 02 01 04 so vključeni odpadni plastični materiali, poleg nastalih v kmetijstvu, ki nastanejo v ribogojstvu, gozdarstvu, lovu in ribištvu.

Sklep

Za ureditev področja odpadne plastične folije iz kmetijstva je nujna ureditev številke odpadka, ki bi veljala le za odpadno plastično folijo te vrste. Le na ta način se bo lahko to področje uredilo. Potrebno je imeti točne podatke o količini tovrstnih materialov, ki pridejo na trg, kasneje pa zagotoviti transparentnost nadaljnjega ravnanja s folijo iz kmetijstva – ko preide v odpadek.

Edina prava pot, ki zagotavlja transparentnost in predelavo večine odpadne plastične folije iz kmetijstva je ustanovitev družbe, po zgledu/modelu družb za ravnanje z odpadno embalažo (DROE). Pogoji za vzpostavitev novega sistema je torej:

- nova uredba, ki bo urejalo to področje (ureditev sistema);
- nova številka odpadka (odpadna plastična folija iz kmetijstva);
- ustanovitev družbe za ravnanje z odpadno plastično folijo iz kmetijstva.

Literatura

- [1] Zakon o varstvu okolja (Uradni list RS, št. 39/06 – uradno prečiščeno besedilo, 49/06 – ZMetD, 66/06 – odl. US, 33/07 – ZPNačrt, 57/08 – ZFO-1A, 70/08, 108/09, 108/09 – ZPNačrt-A, 48/12, 57/12, 92/13, 56/15, 102/15 in 30/16).
- [2] Uredba o odlagališčih odpadkov (Uradni list RS, št. 10/14 in 54/15).
- [3] [http://www.mop.gov.si/index.php?id=1333&tx_ttnews\[tt_news\]=6951&tx_ttnews\[backPid\]=12029&L=0&no_cache=1](http://www.mop.gov.si/index.php?id=1333&tx_ttnews[tt_news]=6951&tx_ttnews[backPid]=12029&L=0&no_cache=1), str. 126

The Possible Use of Electric Vehicles in Local Food Distribution

MIHAEL MEDVED & ANDREJ LISEC

Abstract Perishable food movement is one of the most demanding processes in local food chain, specially because time and temperature sensitivity of the transported goods. Popularity of fresh local food is growing so better and new logistics processes will be in order to move this amount of fresh product annually. Optimal logistics process is not only time and financially efficient, but also enviromental friendly, and that is the main reason why the possible contribution of local food chains to the reduction of energy consumption has been hotly debated in recent years. Enviromental impact during transportation of fresh food can be lowered by using alternative energy sources like electric power or solar energy. This study is about possibility of replacing fossil fuels with electrical energy as a source of power in local distribution of strawberries. Study analyses producers of strawberries in Posavje region, provides optimal location with connections to 6 biggest cities in Slovenia and analyses a possibility of using electric vehicles in distribution process. The article also assesses cost, environmental and time efficiency, by comparing conventional and electric vehicles.

Keywords: • local food • electric vehicles • energy performance • distribution • logistics •

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1 Introduction

Local food is becoming more and more popular due to government initiatives such as "Traditional Slovenian Breakfast", "School milk scheme", "School fruit scheme", "Shake the hand that feeds you", "Buy local!" and many others. Consumers choose food from local producers over the one from industrialized food system, because they believe it tastes better and has more nutrients. Although, these are subjective perceptions of quality and should not be overinterpreted as objective attributes of local food. Nonetheless, local food is the fastest growing segment of agriculture due to strong consumers demands for local produced food (Bailey-Davis, 2013).

It is hard to determine what makes a food "local", and there is no single definition of local within the movement. Some will define local foods based on a number of miles, or a county, or a watershed (or a "foodshed"), but local food resists being defined strictly in terms of a number of miles the food has traveled (Werner, 2013). Nonetheless, range up to 60 kilometers between the grower and consumer has been determined by agronomic experts, as acceptable for defining local food. The supply system, which is carried out in these criteria, is also called "short chains system", which means that the food was produced, processed and distributed on local markets. The Agriculture Act (Official Gazette of the Republic of Slovenia, No. 45/2008) defines the local market as the whole territory of the Republic of Slovenia. The latter definition of local food is the reason why we chose to determine connections to six biggest cities in Slovenia. In chapter 3 we are going to define locations, where our goods are potentially transported, provide the length of chosen routes and compare time efficiency between electric and conventional vehicle.

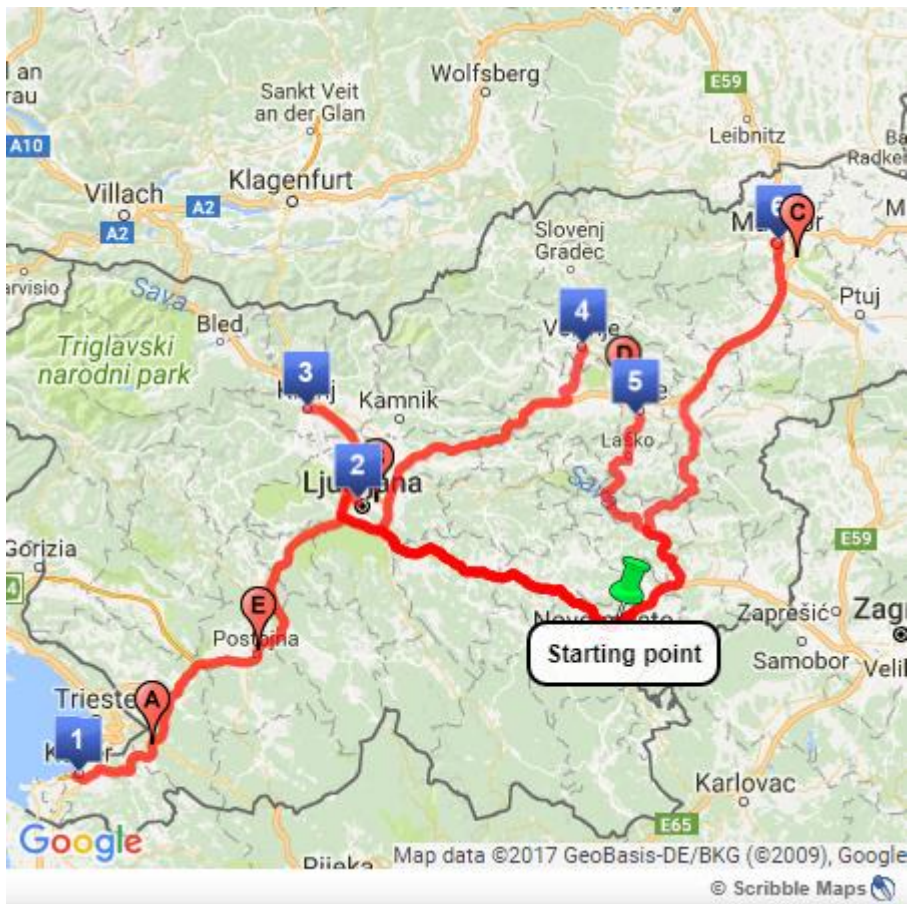
Local food movement is all about the desire to eat in a way that does not have negative impacts on the environment. Reducing energy use in the food system, increasing crop diversity or biodiversity, and improving land use patterns are the main environmental issues addressed by local food system advocates. Emissions from fossil fuels are commonly addressed as the main reason for climate warming and environmental pollution, especially carbon dioxide (Lindgren, 2007). Emissions generated through transportation of local food can be significantly lowered by using alternative energy sources like electricity. In chapter 4, we are going to determine the environmental impact of electric and conventional cars regarding to our planned routes.

In Chapter 5 we will examine the cost-effectiveness of an electric car according to the given routes. We will do a cost analysis for three years and compare the actual costs between the Nissan e-NV200 electric delivery vehicle and the conventional Nissan NV200.

2 Methods

For the comparison of time, environmental and cost efficiency we selected strawberry growers from the Dolenjska region in Slovenia. Depending on the locations of the producers, we selected the nearest rapid charge station and defined it as the starting point

for distribution. With the help of google maps, we determined the shortest route to the six largest cities in Slovenia (Figure 1). We chose the largest cities because local food is defined in the whole area of Slovenia. Strawberries are defined as perishable goods, that's why we selected only rapid charge stations, the loss of time on other charging stations can significantly affect the quality of the transported goods. The main town markets are marked with numbers, letters represent rapid charging stations which are intended for use on certain routes.



Source: scribblemaps (b.d.)

Figure 1: Connections to six biggest cities in Slovenia with rapid charging stations

We will calculate environmental performance in terms of mileage and energy consumption. According to the data from the online brochure, the electric vehicle does not produce greenhouse gases while driving. Therefore, we will compare the emissions that are released in the production of electrical energy. We will calculate the

environmental impact of the conventional vehicle according to the data from the web. The power consumption of the car was calculated according to the online application "Green race", which calculates the average electricity consumption according to the selected route. The application detects the inclination and the regenerative braking of the car. According to the Jozef Stefan Institute, the average emission factor for CO₂ emissions in the period 2002-2015 is 0,50 kgCO₂ / kWhe, and for TGP emissions also 0,50 kg CO₂eqv / kWhe.

3 Time efficiency of electric vehicles

We are going to measure the time efficiency of electric vehicles according to losses during charging. According to technical specifications in Nissan e-NV200 combi brochure it takes 30 minutes to charge the battery up to 80%, when using rapid charge. Fast charging takes about 4 hours to fully charge your Nissan e-NV200, and standard charging takes 10 hours. We assume that the vehicle left the starting point a hundred percent full. The given distances in the table also include the return of the vehicle to the starting point.

Route	Electric vehicle		Conventional vehicle	
	Distance (km)	Time(h)	Distance (km)	Time(h)
Novo mesto/Celje	160,4	03:03	151,4	2:49
Novo mesto/Ljubljana	146,1	02:14	141,4	1:36
Novo mesto/Kranj	207	02:44	207	2:14
Novo mesto/Maribor	250	04:17	250	3:55
Novo mesto/Koper	346	05:25	346	3:44
Novo mesto/Velenje	190	04:00	190	3:42
SUM	1299,5	21:43	1285,8	18:00

Table 1: Time efficiency comparison

The biggest loss of time is noticeable at the longest route, from Novo mesto to Koper. The reason for this is the need for multiple recharging. The driving time does not differ, but since the whole route to Koper is on the highway, electricity consumption is significantly higher. High consumption can also be attributed to driving without regenerative braking. The total time difference after the completed course is 3 hours and 43 minutes compared to the conventional vehicle. During this time, all the necessary filling of electric vehicles is taken into account as well as the time required to access the filling station. The fueling time can be defined for 6 minutes, depending on the kilometers traveled we can say that it will be necessary to fill the fuel tank two times. The final loss of time is 3 hours and 31 minutes.

We will also compare cost-effectiveness according to the first three years of use. We assume that the delivery vehicle carries out certain routes three times a month. The prices of tires and insurance are the same for both models compared, so we will compare the cost of a car, registration and consumption. The car class we focus on is a delivery

vehicle, precisely the Nissan e-NV200. We compare EV configurations to a regular petrol delivery car. Vehicle configurations are obtained from web brochure for both compared vehicles.

4 Environmental impact comparison

Nissan NV200 releases 131 grams of CO₂ emissions per kilometer per vehicle, according to the online brochure. The calculated values are based on the sum of kilometers for each route and represent the product of kilometers and grams of CO₂ emissions per kilometer. It is known that the Nissan e-NV200 electric vehicle does not generate CO₂ emissions during operation. However, it is necessary to take into account the CO₂ emissions that occur in the production of electricity. According to data from the Green Race application, we calculated the amount of CO₂ emissions produced during the operation of an electric car. For each route, the energy used (kWh) was multiplied by the average value of CO₂ emissions generated for the production of electrical energy in Slovenia between 2002-2015.

Route	Electric vehicle		Conventional vehicle
	Average energy use (kWh/100km)	CO ₂ Emissions (kg)	CO ₂ Emissions(kg)
Novo mesto/Celje	13,93	11,17	20,85
Novo mesto/Ljubljana	21,4	15,63	18,99
Novo mesto/Kranj	24,29	25,14	26,91
Novo mesto/Maribor	15,6	19,50	32,5
Novo mesto/Koper	24,83	42,96	45
Novo mesto/Velenje	13,42	12,75	24,7
SUM		127,15	168,94

Table 2: Environmental impact comparison

As shown in the table, the emissions of CO₂ depend on the consumption of an electric car. If we compare the average with respect to all the routes, we find that while driving with an electric car, 24.73% less emissions are generated. Differences are greater when driving on regional roads, routes from Novo mesto to Maribor, Velenje and Celje have an average deviation of produced CO₂ emissions of 55.6% in favor of an electric car.

5 Cost efficiency comparison

There are over 250 charging stations in Slovenia where users can recharge their cars; many of these are installed in cities, in front of various companies and also in front of many shopping centers. 26 high-speed filling stations (up to 50 kW) are strategically positioned along the motorway cross. They were installed by SODO (system operator of the electricity distribution network) and managed by Petrol (the most powerful charging points are located at their motorway service stations). Recently SODO and Petrol issued a price list for rapid charging, whereby users charge electricity according

to the charging time, but not according to the electricity used. According to the new pricelist, the price of the charging minute is 35 cents at the fast filling stations. If a user signs a contract with Petrol, he pays 16 cents for charging per minute, and must pay 14.9 euros per month for subscription (Požnenel, 2016).

The table shows the costs of an electric and conventional vehicle for a period of one month (we assume that all the routes were covered three times in a month). Based on the time required for charging and the prices on fast filling stations, we calculated the costs for each route. To this price, we also added the charging cost when the car is connected to the domestic power grid. Home charging will be evaluated according to the price of one of the electricity providers in Slovenia. For the purpose of the study, we estimate that the electric vehicle is filled with 30 kWh. According to the price of electricity, it was calculated that the cost of domestic charging is 1,74 €.

	Electric vehicle	Conventional vehicle
Route	Total price of a route (€)	Total price of a route(€)
Novo mesto/Celje	5,23	28,70
Novo mesto/Ljubljana	11,35	26,14
Novo mesto/Kranj	16,93	37,03
Novo mesto/Maribor	15,49	44,72
Novo mesto/Koper	50,95	61,90
Novo mesto/Velenje	8,83	33,99
SUM	123,69	232,48

Table 3: Consumption price comparison

To compare the cost of consumption, we selected the Nissan NV200 ACENTA FURGON, which has a combined consumption of 4.9 liters per 100 kilometers. The price of diesel fuel according to the Ministry of Economic Development and Technology is € 1,217 per liter (on October 26, 2017). Data on the consumption of electric vehicles were calculated according to the application "Green race". The required charging time was calculated according to the specifications of the Nissan e-NV200, which means that we need 30 minutes to charge up to 80% of the battery. According to this information, our car requires 0.375 minutes to charge 1% of the battery, which amounts to 0.06 € on a quick charging station. Energy that remained in the car at the end of the route was subtracted from the final value, so we got the actual cost of driving. As we see in the table, driving with an electric car is more economical, despite the use of quick filling stations while driving. Savings at the monthly level amount to 108,79 €.

In the Table 4, we calculated the cost of each vehicle. We did not take into account the costs that are the same for both vehicles being compared.

Period	1 year		2 years		3 years	
	Electric	Conventional	Electric	Conventional	Electric	Conventional
Buying price(€)	21.937	14.560	21.937	14.560	21.937	14.560
Road use compensation(€)	0	96	0	192	0	288
Consumption expenses(€)	1,484.28	2,789.76	2,968.56	5,579.52	4,452.84	8,369.28
Servicing the vehicle(€)	65	600	195	1500	260	2100
	22.586	18.046	25.101	21.832	26.650	25.317

Table 4: Total Cost comparison

The price for the purchase of the electric Nissan e-NV200 is € 21,937, states Završnik from the e-mobility Society of Slovenia. The Eco Fund's subsidy of 4500 € has already been deducted from the price. The Eco Fund's subsidy of 4500 € has already been deducted from the price. As well as a tax that legal entities do not pay when buying a car. The price for a conventional vehicle is recorded in the car's online brochure. The price of the vehicle service was determined according to Završnik, which states that the electric vehicle is serviced every 30,000 kilometers traveled and the diesel vehicle every 20000 kilometers. It also lists the prices of the services that were taken into account in the calculations. With regard to the kilometers traveled in three years amounting to 140000, we determined that the electric vehicle needs to be serviced four times. The service of a conventional vehicle is required seven times in this time. Prices are listed in the table. As we can see, the investment is almost returned due to savings in vehicle consumption and lower servicing costs.

6 Conclusion

In calculating the time efficiency we found that the loss is 3 hours and 31 minutes relative to the conventional vehicle. On the way from Novo mesto to Celje, we can notice that there is practically no time loss, the reason for this is the vehicle reach, which is large enough to cover both directions. Even in the calculation of costs and environmental performance, we found that the shortest route is the most appropriate. But the small length of the path is not the reason for such a result. The main reason is the use of the motorway, all the routes that included the highway were poorly assessed compared to a conventional vehicle. We estimated that an investment in an electric car would be repaid in three years, but when driving at smaller distances and at a lower speed, we would reach this limit much earlier. We can estimate that conventional vehicles are more suitable for driving on the highway. The electric vehicle we tested is more suitable for urban delivery or delivery across the region. When comparing environmental performance, the results are similar, if the paths were predominantly along the highway, the difference in the CO₂ emissions would be significantly reduced.

References

- Bailey-Davis, L. (2013). Learning and engagement in the local food movement, A Dissertation in Adult Education, The Pennsylvania State University
- Institut "Jožef Stefan". (b.d.). CO2 / TGP emissions per unit of electricity [WWW] <URL: <http://www.rcp.ijs.si/ceu/sl/izpusti-co2tgp-na-enoto-elektricne-energije> > [Accessed 26 October 2017.]
- Lindgren, K. (2007) *An Assessment of the Case for Local Food Systems*
- Požnenel, B. (2017). Will the second wave of electric cars be more successful?. [WWW] <URL: <https://www.amzs.si/motorevija/mobilnost/tehnika/2016-11-02-elektrika-2-0>> [Accessed 26 October 2017.]
- Werner, B. A. (2016). *Local food and economic development*, A dissertation in economics and geosciences, M.A. University of Missouri-Kansas City
- Zakon o letni dajatvi za uporabo vozil v cestnem prometu(26. 10. 2015). URL=[<http://www.pisrs.si/Pis.web/pregledPredpisa?sop=2008-01-2414#>
- Završnik, I. (2017). How much does an electric delivery car cost us for a month?. [WWW] <URL:<http://www.dems.si/dems/koliko-nas-stane-elektricno-dostavno-vozilo-na-mesec>> [Accessed 26 October 2017.]
- Zakon o kmetijstvu (Ur. l. RS, št. 45/2008) [WWW] <URL: <http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO4716>> [Accessed 26 October 2017.]

Ohranimo vodo čim dlje tam, kjer nastaja

TONE HROVAT & DAMJANA COLARIČ

Abstract Perishable food movement is one of the most demanding processes in local food chain, specially because time and temperature sensitivity of the transported goods. Popularity of fresh local food is growing so better and new logistics processes will be in order to move this amount of fresh product annually. Optimal logistics process is not only time and financially efficient, but also environmental friendly, and that is the main reason why the possible contribution of local food chains to the reduction of energy consumption has been hotly debated in recent years. Environmental impact during transportation of fresh food can be lowered by using alternative energy sources like electric power or solar energy. This study is about possibility of replacing fossil fuels with electrical energy as a source of power in local distribution of strawberries. Study analyses producers of strawberries in Posavje region, provides optimal location with connections to 6 biggest cities in Slovenia and analyses a possibility of using electric vehicles in distribution process. The article also assesses cost, environmental and time efficiency, by comparing conventional and electric vehicles.

Keywords: • poplave • zadrževalniki poplavnih voda • Krka • voda • klimatske razmere •

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1 Posledice toplotnih sprememb se kažejo tudi v neenakomerni porazdelitvi padavin

Zaradi raznolikosti slovenskega reliefa in umestitve v evropskem prostoru (panonski, alpski, dinarski in primorski svet) ima Slovenija dokaj neenakomerno porazdelitev padavin čez celo leto. Tako imamo v panonskem svetu padavin včasih le nekaj nad 500 mm, v osrednjem in dinarskem okolju dokaj normalno porazdelitev – okoli 1.000 mm, v severnoprimeškem in alpskem svetu pa količina padavin doseže celo trikratnik povprečja Slovenije. Ob toplotnih spremembah pa zadnja leta lahko ugotavljamo precej ekstremne pojave tako pri temperaturah, še posebej pa pri količini padavin ob posameznih neurjih. V zadnjih 10 letih so bili ekstremi večkrat doseženi, primerljivo z ekstremi 50 let. Nema lokrat neurja povzročijo padavine, ki imajo 80 mm ali celo prek 100 mm padavin v enem nalivu ali dnevu. Močna padavinska obdobja (nekaj dni) velikokrat povzročijo nenadne poplave, ki jih ljudje ne pomnijo. Še posebej jih je presenetila zelo hitra povodenj, ob kateri niso imeli možnosti reševanja premoženja. Na drugi strani pa tudi suše, ki so v preteklosti že bile, povzročajo nizek pretok rek in nizko podtalnico. Ravno pri podtalnici se dogajajo novi ekstremi. Vzrok je mogoče iskati v, sicer ugodni povprečni količini padavin, vendar neenakomerni, saj prevelika količina padavinske vode preprosto odteče naprej in nima časa napolniti podtalnice, s tem pa tudi izvirov in normalnega pretoka rek in potokov.

Ne glede na omenjene toplotne spremembe so klimatske razmere v Sloveniji ugodne, zato je Slovenija kot dežela zelena s široko paletto biotske raznovrstnosti. Izredno pomembno je bogastvo pitne vode, ki jo ima Slovenija ta trenutek še v izobilju, tako po kvaliteti kakor po količini. Tu se kaže tudi dobra ozaveščenost prebivalstva in oblasti, ki v dobri meri pripomorejo k izboljševanju okoljskih problemov kot posledica gospodarstva. Še posebej smo imeli srečo s politiko o enakomerni poseljenosti Slovenije, saj je koncentracija prebivalstva v mestih zavrta. Tudi komunalni problemi so tako bistveno manjši. Včasih upravičeno kritiziramo preveliko razdrobljenost lokalne samouprave (zaradi stroškov), je pa prav ta pomembno prispevala k dobrim pogojem življenja v decentralizirani Sloveniji in s tem tudi okolju. Kvaliteta okolja pa je bila nema lokrat posledica »zaostalosti industrializacije«. Ker smo podpovprečno gnojili in uporabljali fitofarmacevtska sredstva v preteklosti, smo sedaj na boljšem kot napredna Zahodna Evropa.

1. Slovenija je dežela z bogastvom voda, tako po čistosti kakor tudi po količini, kar bi bilo nujno vzdrževati in ohranjati. To je še posebej pomembno v času toplotnih sprememb.
2. Slovenska krajina je sicer zelena in lepa. Imamo sorazmerno ugodno in bogato preskrbljenost z vodo, povprečno ugodno količino padavin, vendar ob klimatskih spremembah manj primerno porazdeljeno. Izziv je vso vodo uporabiti tako, da viški ne odtečejo in jo smotno porabiti za polnitev podtalnice, pridobivanje energije, kmetijstvo (namakanje) in turizem.
3. Izzivi so še posebej v obdobjih, ko zaradi toplotnih sprememb prihaja do neenakomernosti padavin. Po podatkih Hozjanove (2015, str. 88) so v obdobju 2000–2014 med naravnimi nesrečami največ škode v Sloveniji

povzročile poplave v skupni vrednosti 1.326.234.000 evrov, takoj za tem pa sledi suša z ocenjeno škodo 477.852.585 evrov.

4. Še posebej pri poplavah se razmišlja o vložkih za urejanje vodotokov, da bi voda čim prej odtekla, ko prihaja do nalivov – prekomernih količin padavin, s čimer bi preprečevali poplave v spodnjih delih vodotokov. Vendar ta voda postaja v tem primeru nekoristna, v vodotokih nižje od Slovenije pa ravno tako nevarna za poplave. Ne izkoristimo jo za proizvodnjo elektrike, niti za namakanje v sušnih delih. Poleg tega zmanjka v sušnih obdobjih vode za vzdrževanje podtalnice, ki je koristna in potrebna tudi za porabo ljudi, rastlin in živali.
5. »Posamični poseg ali posamična spremenjena raba na videz ne vplivata na hidrološki krog (kroženje vode na Zemlji/celini/pokrajini). Ko pa se število takih posegov poveča, se njihov vpliv ne le sešteva, temveč množi. Posledica zmnožka posegov je povečanje ekstremnih pojavov: gladine rečnih voda so ob istih vremenskih situacijah višje, poplave se pojavijo tam, kjer jih včasih ni bilo, gladine rek so v obdobjih brez padavin še manjše kot prej, obdobja z nizkimi vodami daljša, korita celo suha, erozijsko delovanje vode večje, samočistilne sposobnosti vode manjše, mnoge živalske in rastlinske vrste ogrožene, vodni habitati uničeni (Globevnik, 2007).« Problematika neenakomerne porazdelitve padavin je še večja, ker je tretjina Slovenije kraških podtalj, velik del pa peščenih tal.



Slika 1: Temenica poplavlja (Pate)



Slika 2: Temenica kot jezero (Pate)



Slika 3: Krka preseže opozorilni pretok (Petkovšek, 2015)

2 Izziv – naredimo zadrževalnike–manjše akumulacije vode v zgornjih delih vodotokov (tam, kjer voda nastaja)

1. »Sonaravni ukrepi za zadrževanje vode so namenjeni sonaravni obnovi in vzdrževanju ekosistemov, povezanih z vodo. So zelena infrastruktura, ki omogoča vzdrževanje in obnovo pokrajine, tal in vodonosnikov z namenom izboljšanja njihovih naravnih lastnosti in okoljskih storitev ter boljše prilagoditve klimatskim spremembam z zmanjšano ranljivostjo zaradi poplav in suš (Istenič, 2014).«

Primeri sonaravnih sistemov za lokalno zadrževanje vode so:

- revitalizacija vodotokov,
- obnova poplavnih ravnin in mokrišč,
- zadrževalniki za poplavne vode,
- polnjenje podtalnice,
- zadrževanje padavinskega odtoka,
- izboljšanje učinkovitosti namakalnih sistemov,
- pogoždovanje,
- zeleni pokrovi in urbane zasaditve,
- spremenjena kmetijska praksa,
- blažilni pasovi,
- zelene strehe itd. Največjo vrednost imajo večnamenski sistemi, ki sočasno zagotavljajo:
 - Zadrževanje vode in povečanje razpoložljivosti vode v sušnih obdobjih.
 - Zmanjševanje onesnaževanja.
 - Izboljšanje pokrajine (estetika) in biodiverzitete.
 - Možnosti za rekreacijo. (Istenič, 2014)
 -

Po mnenju Globevnikove (2007) se je boljše naravi prilagoditi, kot pa jo pretirano obvladovati, saj so poplave, suše, erozija, plazovi del naravnih procesov. Poudarja pomen vode za ekosisteme, saj nudi življenjski prostor, je transportno sredstvo, hladilo, topilo, hranilo in razredčilo, zaradi česar jo je smiselno zadržati v pokrajini čim dlje, kar lahko dosežemo:

- s povečanjem vodo zadrževalnih sposobnosti celotnega prostora,
- z izboljšanjem zadrževalnih in bioloških lastnosti vodnega okolja,
- s povečanjem racionalne rabe voda in preprečevanjem onesnaževanja ter
- s prilagajanjem naravnim pojavom.

2. V kolikor bi vodo lahko zadržali na območju padavin, od koder bi enakomerno odtekala po manjših vodotokih (potokih) v reke, bi s tem pridobili:

- a) enakomeren vodostaj podtalnice, porazdeljen skozi celo leto;
- b) enakomeren dotok vode v večjih vodotokih, ki se jih uporablja za proizvodnjo energije iz hidroelektrarn;
- c) voda bi se predhodno (preden priteče v velike vodotoke) lahko uporabila za male hidroelektrarne;
- d) s porazdelitvijo malih vodnih zajetij bi nastali pogoji za širše namakalne možnosti tudi na območjih, ki jih veliki sistemi namakanja ne morejo doseči;
- e) male akumulacije, ki bi zajemale površine od 1 ha do nekaj 10 ha in imele kapacitete od 30.000 m³ vode do nekaj 100.000 m³ oz. nekaj milijonov m³ vode, bi omogočale dodatno vrednost prostora -

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raznoverstnost rastlinskega in živalskega sveta, pa tudi proizvodni potencial za ribogojstvo in še posebej turizem;

- f) enakomerna porazdelitev vode čez celo leto bi omogočala tudi bolj stabilno klimatsko okolje za življenje ljudi. Voda je tudi dober amortizer za temperaturna nihanja (ekstremne nizke ali visoke temperature).

3 Primer reke Krke

Sam primer reke Krke morda ni najboljši, nam je pa najbližji in tudi zelo zanimiv. S poplavami so ljudje živeli stoletja, vendar se zadnja leta tudi tu čutijo večji ekstremi.

1. Porečje reke Krke

- a) letni pretok vode iz Krke v Savo je 2.315.000.000 m³;
- b) ekstrem maksimalnega pretoka reke Krke v spodnjem toku s poplavami je 356 m³/sek;
- c) ekstrem minimalnega pretoka reke Krke v spodnjem toku, ko so suše in pomanjkanje vode za živalstvo in rastlinstvo, pa je 3 m³/sek;
- d) optimalni povprečni pretok vode je 54,7 m³/sek.



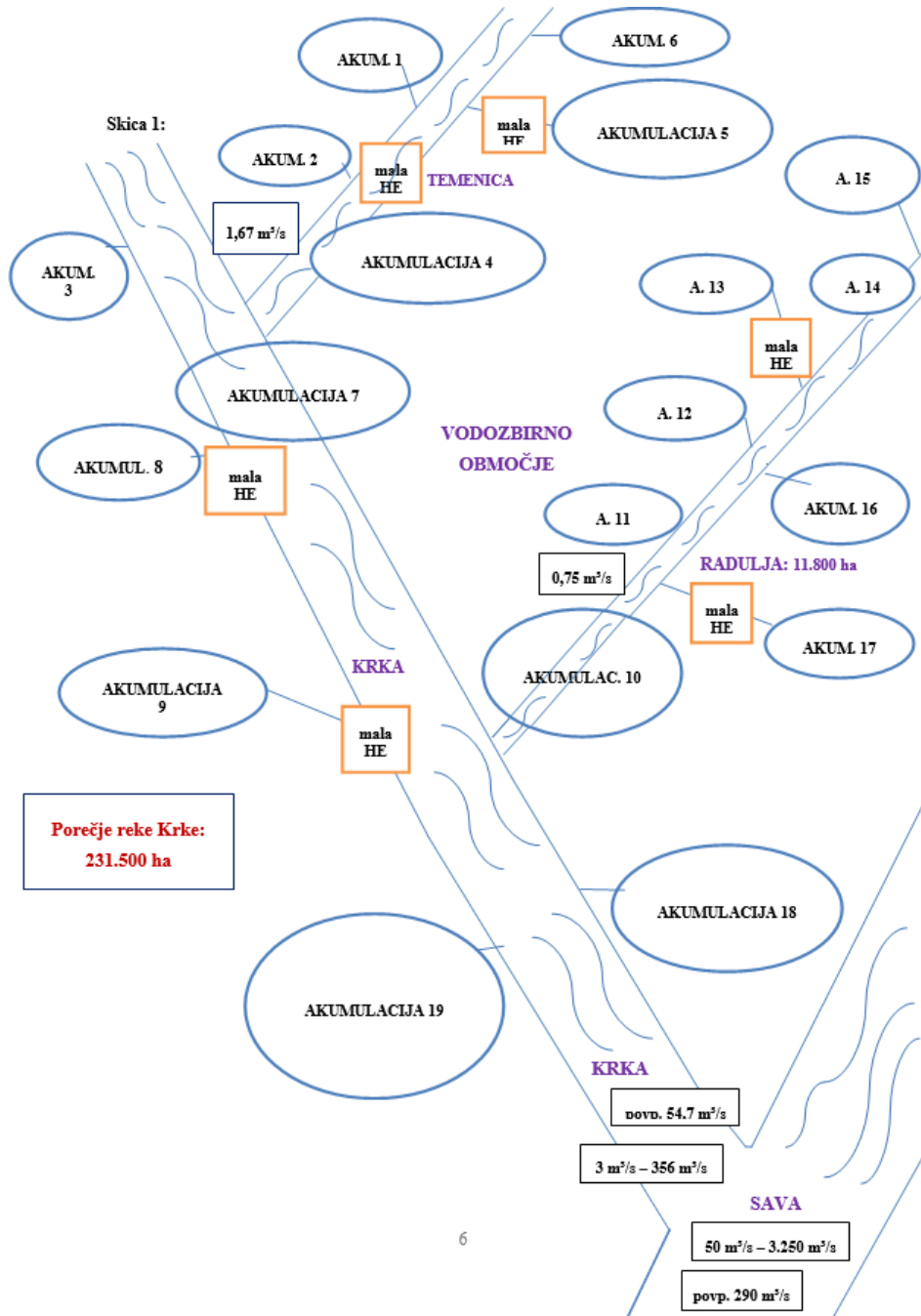
Slika 4: Sotočje Krke in Save (Kralj, 2014)

2. Vodozbirno območje reke Krke ima povprečno 1000 mm padavin letno. V močnejših nalivih pade prib. 100 mm padavin, kar se zgodi 3-5x letno. Te padavine povzročijo poplave na vodozbirnem območju (v porečju reke Krke z 231.500 ha površin pade 231.500.000 m³ vode). Če bi to vodo zadržali, bi lahko napolnili 231 zajetij (jezer) po 1.000.000 m³ vode. Polovica te vode bi zadostovala za namakanje 34.650 ha površin. Če bi uporabili le 5 % vode, bi lahko namakali realnih 3.465 ha površin.
3. ***Potok Radulja – levi pritok Krke***
Na 11.800 ha površine bi zajeli prib. 12.000.000 m³ vode ali 12 akumulacij (po 20 ha površine globine 5 m) z 1.000.000 m³ vode. 5 % izkoristek zajete vode bi zadostoval za prib. 1.800 ha (150 ha x 12) površine. Okvirna skupna vrednost akumulacij bi znašala 6.000.000 evrov (12 x 500.000 evrov), kar bi zneslo 3.500 €/ha.

4 Zaključek

Za ohranitev krajine je voda eden najmočnejših virov, ki omogoča življenje tako rastlinam in živalim kot tudi ljudem. Ob toplotnih spremembah je nujno odločiti v smer večje amortizacije – porazdelitve voda, kjer bi se ekstremi (višek voda) zadrževali na območju, kjer nastajajo. Ta voda bi v času pomanjkanja padavin napajala podtalnico in s tem izvire ter pretoke potokov do večjih rek. Vodo na samem območju nastajanja bi lahko zbirali v manjših vodnih akumulacijah (30.000 m³ do 1.000.000 m³), mokriščih in podtalnici. Ta voda bi služila poleg napajanju podtalnice in amortiziranju pretoka vodotokov, tudi kmetijstvu za namakanje, manjšim hidroelektrarnam, ribogojstvu in turizmu, konec koncev pa ob stabilnem vodostaju in dotoku v večje reke tudi energetskim bilancam večjih hidroelektrarn. Skratka, voda bi, preden odteče, dajala dodatno vrednost, namesto da bi povzročala škodo s poplavami. Naša krajina bi tudi v spremenjenih klimatskih razmerah ostala zelena in omogočala kvaliteto življenja za rastline, živali in človeka.

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References

- Statistični urad Republike Slovenije. Statistični letopis 2001. Letnik XL, 40. izdaja, Ljubljana, 2001, str. 47-52.
- Istenič, D. Sonaravni sistemi za lokalno zadrževanje vode. Nacionalno posvetovanje o prilagajanju podnebnim spremembam in suši. *Agencija RS za okolje*. 6. februarja 2014 v Ljubljani.
- Globevnik, L. Vodna bilanca in zadrževanje voda (osnove za razpravo). *GLOBE in Svet za varstvo okolja pri DZRS*. 20. marca 2007.
- Hozjan K. Vpliv podnebnih sprememb na naravne nesreče na območju Slovenije. *Revija za geografijo - Journal for Geography*. 10-1, str. 69-90, 2015 <http://www.ff.um.si/zalozba-in-knjigarna/ponudba/zbirke-in-revije/revija-za-geografijo/clanki/stevilka-10-1-2015/RG1910-105Hozjan-Vplivpodnebnihspremembnanaravnesrece.pdf>, 21. februarja 2017.
- Pate, L. Reka Temenica. *Ribiška družina Novo mesto*. <http://www.rdnovomesto.si/ribolov/revirji/reka-temenica/>, 21. februarja 2017.
- Petkovšek, A. Reka Krka preseгла opozorilni pretok. 2015 <http://www.zurnal24.si/reka-krka-presegla-opozorilni-pretok-clanek-258038>, 21. februarja 2017.
- Kralj, L. Od izvira Krke do izliva in ob Savi nazaj. 2014 <http://kolesarnajbo.blogspot.si/2014/07/od-izvira-krke-do-izliva-in-ob-savi.html>, 21. februarja 2017.
- Ministrstvo RS za okolje in prostor. Zadnji podatki samodejnih hidroloških postaj. http://www.arso.gov.si/vode/podatki/stanje_voda_samodejne.html, 23. februarja 2017.

Optimization of Delivery Route Planning Based on Characteristics of Individual Buyers

STANISLAV LEVIČAR

Abstract With the rise of ‘on demand economy’ where buyers prefer having goods delivered to them instead of going to stores to buy them, parcel and small package delivery industry experiences renewed growth that has good future prospects. Consequentially, the research work in the area of optimization of transportation routes as well as surrounding logistics processes has intensified in several ways. Since even smaller companies are trying to replicate the optimization techniques that were developed, tested, enacted and verified at their larger competitors, several tools were developed that should be accessible to smaller and medium sized companies. The main factor that have the greatest impact on the level of optimization of the business processes is the ability to predict the demand, including its location, content of the order, price, and other characteristics. Consequently, the accuracy of this data is tightly correlated with the efficiency of the route optimization algorithms and other process optimization methods. Therefore, we will try to define the scope of this problem from the point of view of smaller companies which lack the necessary knowledge and experience to develop their own methodology and statistical models for the process optimization purposes.

Keywords: • demand prediction • delivery route planning • customer identification • optimization •

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1 Introduction

The growth of the on-demand economy is profoundly altering the economic marketplace by introducing the digital layer to the traditional services. Various online platforms that started as redefined versions of existing service providers, transcended the conventional business models of those services and (Thakuria et al., 2017) tried to convert themselves into platforms of the all-encompassing ecosystems of those services. Providers of those services and platforms have discovered that the main strength of those new business models comes from the data mining and optimization of the decision making processes that are derived from the evaluation of the data.

The potential of the process optimization that stems from data analytics usually more than compensates for the possible suboptimal cost structure that emanates from the organizational and technical deficiencies. Those are especially evident at SME which lack the capacity, the know-how and the critical mass of resources, users, and employees to be able to establish the business process at its most efficient configuration and size (which would reach intended economies of scale). It is therefore crucial for providers to refine the management of their limited resources based on extensive data analytics which can offer them greater comparative leverage.

2 Characteristics of the on-demand economy

Although the information technology is not the ultimate prerequisite for the on-demand economy, it is nevertheless often related to the technology companies that try to fulfill customer demand by real-time fulfillment of goods and services. Their business model often relies on streamlined, intuitive digital mesh layered on top of existing infrastructure networks (Jaconi, 2014). The steady reduction of the costs of the users interaction due to the greater availability and the speed of the various communication channels, has enabled service providers to develop user interfaces (i.e. mobile or web applications, etc.) that are easy to use and demand minimal input effort by the customer, since they additionally rely on the location information and other data that can be complementarily provided by devices automatically.

The pre-agreed terms of use and the method of payment are also contributing to lowering of the barriers, thus encouraging more frequent use of such services, which can be ordered at the nearly the same time the need emerged. All these factors diminish cognitive load that is required from the customers, since they do not need to make plans of how will they get the wanted services, and can respond to their needs more instantaneously and even impulsively.

The customers of such services have shown to be quite willing to provide their personal information in exchange for convenience of such services, and in general do not object effectively against such data gathering. Certain part of the data they share with the service providers is inherently indispensable for them to be able to fulfill the order, but often they try to gather additional information that is not directly linked to the order, yet it can be

nevertheless useful for better demand predictions. Those can help improve with the planning and organizing of the business operations – and only indirectly bring the benefits to the final user of those services.

3 Statistics based decision-making process

Computerized databases that automatically record vast amount of data (i.e. business transactions, weather data, software usage, friendships, traffic ...) have spurred growth in the field of data analysis, since it is possible to make better decisions based on the information about the patterns that can be extracted from those databases. But the immense volume of data makes it prohibitive to analyse it and test it against the hypotheses that would be formulated in advance in all conceivable combinations. The field of study within statistics that addresses this issue with development of computer algorithms that search for patterns and transform data in usable information is called machine learning. The algorithms of machine learning use advanced statistical methods for analyzing datasets, not only by identifying patterns, but also by solving a problem (Lantz, 2015, pp. 3).

The field of machine learning consists of several approaches and methods, such as regression algorithms, instance-based algorithms, regularization algorithms, decision tree algorithms, Bayesian algorithms, clustering algorithms, association rule learning algorithms, deep learning algorithms, artificial neural network algorithms, ensemble algorithms, dimensionality reduction algorithms, etc. (Brownlee, 2013). Some of the algorithms imitate natural processes, ie. the artificial neural network algorithm is based on biological neural network. Its ability to identify patterns is superior in comparison to non-machine learning algorithms, but the complexity of the rules that it develops “automatically” by learning from examples is often greater than what humans are able to understand. While this is generally not a problem for most of the fields where such methods can be applied, there are use cases where the inability to give details of the process and the reasoning that was developed by the algorithm in sufficiently exhaustive manner might prevent the ability of humans to test it and gauge its dependability.

If such algorithms are used for diagnosing bone fractures we might supervise its conclusions for some time after the training period, and since it mainly assists the physicians while they make final decision, possible irregularities and anomalies that we cannot test for in advance might not be critical. On the other side current legislation regarding self-driving car technologies decidedly dictates that the responsibility and testability of the main elements of such a car have to be determined, which might prove difficult when the method of pattern recognition is unfolded by the machine learning algorithm itself.

Nevertheless, the powerfulness of those algorithms helps increase the value added in and productivity of wide variety of companies in all sectors of the economy. One such example is the tractor attachment that is fixed to a tractor and which uses computer vision to identify unwanted plants (which are then provided herbicide) and ill plants (of lettuce)

that are provided the necessary treatment. The quantity of herbicide needed is therefore brought down by approximately 90 % in comparison to a conventional treatment of such fields, leading to environmentally friendlier farming and production of healthier food (Simonite, 2017). Another example is “predictive policing”, where police is attempting to reveal patterns of crime with the goal to avert the crime before it might happen or to stop it faster if it has already taken place (i.e. in the case of serial housebreaks). The police units patrols are therefore diverted to the areas with the highest likelihood of the crime happening. There certainly are some challenges with regard to prejudice that might be ingrained in such automatic profiling of certain areas based on historical crime data, but in other respects the project ended up to be useful (Rudin et al., 2017).

Machine learning has been efficiently used also for tasks such as automatic processing of insurance claims, deciding which candidates to hire for the job, diagnosing illnesses, quality control of manufactured products, fraud detection, automatic translation, etc.

But due to the fast progress of this field, more tools will be ready that could be used by wider audience that would not need to have in-depth know-how to develop their own machine learning algorithms. Companies, government and other entities will be able to make use of this new technology in many ways that will compound in increased productivity and economic growth.

The greatest part of the investment in advancing the machine learning algorithms is being assumed by private sector, where companies that possess vast amount of data are attempting to obtain the information which could help them improve and optimize their business processes. The same methods could be beneficially applied also to the efforts of smaller and medium sized companies. Those too have to employ limited resources at their disposal in ways that would maximize their intended results.

4 Limitations of small and medium sized enterprises

Since the machine learning methods are relatively new branch of statistics, it is understandable that the SME have not yet embraced this methods and incorporated them into their decision making processes. The first reason for this is the lack of the knowledge of the abilities of those methods and how to actually implement them. Even though the predictive statistical methods function quite universally, this awareness is not yet as widespread, especially in comparison to other IT based solutions (Ramanna et al., 2013). And even if the awareness would be present, there are not sufficient numbers of experts in this field available that could actually be employed by those companies. The solution would therefore be to encourage companies to invest in this know-how by educating some of their employees or by subcontracting those tasks to the third party providers.

The second problem that prevents SME to adopt those statistical methods is the lack of input data to those algorithms. Either they do not have the access to the required data or this data might not be readily available and prepared for further processing. The

preparation of the data is actually as important as the processing itself. The data should be complete, standardized, labeled and tested.

5 Delivery route planning by SME

The companies that entered on-demand economy in the recent years are mostly SME whose main competitive advantage is not founded on the scale of business operations but rather on innovative business models that try to disrupt the traditional market structures. They are usually limited in the capital resources that would enable them to quickly spread their services to a wider area and acquire the needed critical volume of business to be profitable. Therefore they usually try to compensate for that with innovative use of technology and different optimization approaches.

5.1 Customer properties identification

One of the most important information that is necessary for efficient management of the limited resources (i.e. dispatching vehicles) is the prediction of the demand that can be expected to emerge. To plan efficiently it is crucial to know where, when and what order can be expected. Depending on the type of the on-demand service there are the characteristics of the customer that might have the biggest impact on the kind of the order. Those information can be gathered through time by logging past transactions as well as any other data that the on-demand service provider has access to – such as the weather, time of the year, various events in the local environment, who delivered the order in the past, etc. Such example would be to have the following data gather about each individual buyer and its order:

- age,
- gender,
- location,
- education,
- occupation,
- marital status,
- type of the order,
- amount,
- time of the order,
- delivery time,
- review,
- delivery person,
- outside temperature,
- weather.

The challenge that arises is that it is often hard to predefine the relationships among the data the provider gathered. Therefore machine learning algorithms can help to figure out the possible relations, even when incomplete data is provided.

5.2 Prediction with K-Nearest Neighbour method

To validate the statement that the proliferation of machine learning methods will also enable SME without the extensive statistical knowledge to use those methods to increase their demand forecasting, we will go through one example of using such algorithm.

For the purposes of our example the data has to be collected and saved in the form of CSV spreadsheet (although other formats or input sources can be applied for real-time processing). We will use the K-Nearest Neighbour method, which is implemented in Sklearn library of Python programming language. Then we run the following commands to start the programming environment:

```
import numpy as np
import pandas as pd
import mglearn
from IPython.display import display
```

Then we load the data from our CSV file:

```
df = pd.read_csv('individual_buyers.csv', sep=';')
```

We will split and save those data to four variables. `X_train` and `y_train` will be used for training purposes, while `X_test` and `y_test` will be used to measure the accuracy of the model. `X` corresponds to the input variables, and `y` corresponds to our target – that is the information about the time of the expected order. Our goal is to prepare a model, that will enable us to estimate (according to the attributes of the buyer) at what time can we expect the order from this type of customer.

```
from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test =
train_test_split(df.loc[:, df.columns != 'Score'],
df['Score'], random_state=0)
```

Now we are ready to import the machine learning algorithm and “train” it:

```
from sklearn.neighbors import KNeighborsClassifier
knn = KNeighborsClassifier(n_neighbors=1)
knn.fit(X_train, y_train)
```

Based on the algorithm we are already able to predict when the person with the chosen characteristics will most probably order a service:

- age: 45,
- gender: male (0),

- location: Ljubljana Vič (2),
- education: secondary school (2),
- occupation: administration (4),
- marital status: unmarried (5),
- type of the order: 4,
- amount: 12 €,
- time of the order: ?,
- delivery time: 30 min,
- review: 4,
- delivery person: 7,
- outside temperature: 20,
- weather: sunny (1),

```
X_new = np.array([[45, 0, 2, 2, 4, 5, 4, 12, 30, 4, 7, 20, 1]])
prediction = knn.predict(X_new)
print(prediction)
```

The result is 16, which means that the algorithm predicts that it is most probable that this customer will order the service at 16:00.

6 Conclusion

The described example could be then reapplied to other buyers in the database, so that the service provider would form a more complete picture of the time when they can expect their existing as well as new customers (that can also be predicted based on the historical data) will most likely put an order. There is also a possibility to include many other sources of data, that might also impact the prediction. But the main point of the example is that the on-demand service providers that are often operating in an environment that has many variables that are not always easily related to one another can make use of various machine learning algorithms that can greatly improve the efficiency of their business operations by knowing in advance where and when they have to deploy their available resources. For conceptually clear cases SMEs can benefit greatly by using the existing machine learning programming libraries without the need to be able to develop their own, custom made ones.

References

- Brownlee, J. (2013). A Tour of Machine Learning Algorithms. *Machine Learning Mastery*. (Date of publication: 25. 11. 2013.) [WWW] <URL: <https://machinelearningmastery.com/a-tour-of-machine-learning-algorithms/>> [Accessed 2 September 2017].
- Jaconi, M. (2014). The 'On-Demand Economy' Is Revolutionizing Consumer Behavior — Here's How. *Business Insider*. [WWW] <URL: <http://www.businessinsider.com/the-on-demand-economy-2014-7>> [Accessed 18 October 2017.]
- Lantz, B. (2015). *Machine Learning with R*. Birmingham: Packt Publishing.

- Ramana, S., Jain, L. C., Howlett, R. J. (2013). *Emerging Paradigms in Machine Learning*. Springer-Verlag Berlin Heidelberg
- Rudin, C., Sloan, M. (2017). Predictive policing: using machine learning to detect patterns of crime. *Wired*. [WWW] <URL: <https://www.wired.com/insights/2013/08/predictive-policing-using-machine-learning-to-detect-patterns-of-crime/>> [Accessed 5 September 2017].
- Simonite, T. (2017). Why John Deere just spent \$305 million on a lettuce-farming robot. *Wired*. [WWW] <URL: <https://www.wired.com/story/why-john-deere-just-spent-dollar305-million-on-a-lettuce-farming-robot/>> [Accessed 30 August 2017].
- Thakuriyah, P., Tilahun, N., Zellner, M. (2017). *Seeing Cities Through Big Data. Research, Methods and Applications in Urban Informatics*. Cham, Switzerland: Springer-Berlin: Verlag Berlin Heidelberg.

Challenges and Opportunities of Processed Food Industry in India and Complexities in Food Value Chain Logistics

RAJAT K. BAISYA & BOJAN ROSI

Abstract Although in terms of basic agricultural production, India has the distinction of being world no one in many categories including milk production, but in terms of processing of basic agricultural commodities it is not that high and value addition is one of the lowest. The principal reason being domestic market has not grown that much and main consumption happens as fresh. However, this sector holds a big promise to emerge as a global competitor in many processed food products provided some of the pertinent issues are sorted out. This paper attempts to highlight the challenges and opportunities the food processing industry faces in India and also the complexities that exist in terms of movement of agricultural products as well as processed food products through the entire food value chain responsible for escalated logistics cost.

Keywords: • Value chain management • key challenges and opportunities • processed food industry • productivity • logistics infrastructure • Cost of input • competitive advantage • global trade in food • distribution complexity • logistics cost •

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Introduction

India is agriculture dependent economy. Over 18% of India's 2.3 Trillion USD GDP is constituted by agriculture. In many agricultural products including fruits, vegetables, milk and cattle India has the distinction of world No 1 producer but when it comes to processing only insignificant part of the huge availability gets converted into finished products by processing. A large part of the basic produce like fruits and vegetables get wasted due to lack of adequate storage facilities and cold chain infrastructure. While the infrastructure is improving but lot still needs to be done. Value addition in the Indian processed food industry is still said to be low at only 9 %. The fact that India is producing basic agricultural crop in large quantity but everything is not processed. A large part is consumed fresh and a small part of the total produce is processed for domestic and export market and the rest is wasted. The wastage of fruits and vegetables alone is so enormous that some estimate puts the value as USD 3.8 billion USD annually. There are many challenges and constraints for the development of the processed food industry in India although it holds big promise but it also has big challenges and constraints which need to be addressed. These challenges will include making uniform quality agricultural produce at desired price available for processing throughout the year, access to market which is controlled by the large players including multinationals. India's share of global trade during 1980s and 90's was only 1.1 percent which gradually increased up to 1.4 % by 2007 during the subsequent period and currently it stands at about 1.8 % of the global trade. While percentage share of global trade is increasing but the potential is much higher.

Processed food industry contributes about 10 % of the total manufactured products in India. However, about 40% of the processors will fall under the category of Small Scale Industry (SSI), and another 40% will be under un-organized sector leaving 20% in the organized sector. But this 20% organized sector contributes about 80 % of the total market of processed food industry. The industry is highly fragmented and limited number of players have economy of scale. Even in organized sector there are large numbers of processors. For example, there exists 150K rice mills, 6K fruit & vegetable processing units, 600 marine fish processing units, 520 flour mills, 280 milk dairies and so on but most of them lack in scale. The domestic market size is big but consumption of processed food is not that high. Large part is consumed as fresh. On domestic consumption alone the processing of foods will not be able to achieve the expected level of growth.

A large part of the household income goes to buy food articles. In poor family over 80% of the household income is spent on food items. In middle income group it is almost 60% of the gross household income spent on food of daily use. Consumption expenditure on food therefore, is the highest. However, most of this expenditure is on basic food items of daily ration and not on processed food. Only a small part of the expenditure goes into snack items and convenience foods. Hardly anything in processed fruits and vegetables. Both cereal grains and staples covering rice, wheat and maize as well as fruits and vegetables are consumed always invariably as fresh. Poor families cannot even afford to

buy fruits and their daily ration including wheat, rice, oil, salt and lentils as well as fresh vegetables take away large part of their daily income.

The Figure 1 below captures the gross consumption expenditure on food products in India and that represents largely the daily consumption of primary food items.

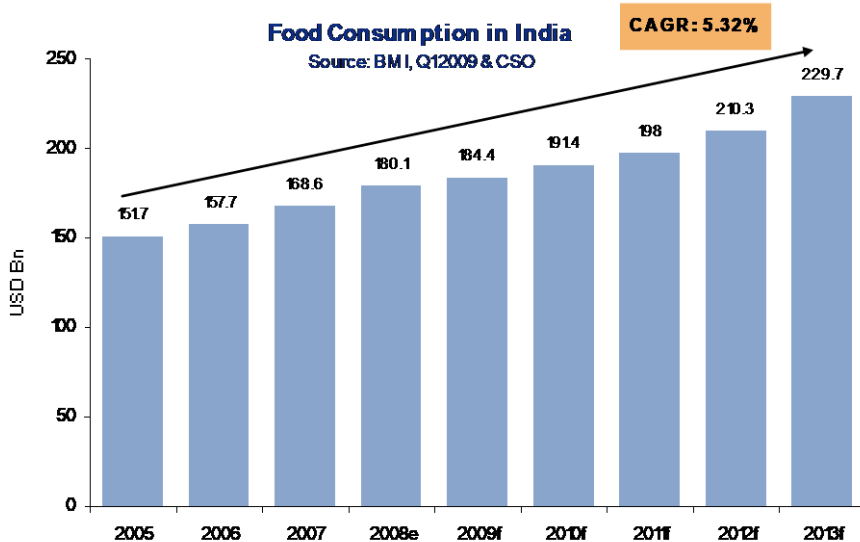


Figure 1: Food consumption in India

Current Scenario:

India have the distinction of being one of the top ranking in world production of food items including wheat, rice, poultry, cattle, milk, fruit and vegetable, fish etc. India produce annually 2.2 million tons of fruits and vegetables, 130 million tons of milk, 7 million tons of fish but in terms of consumption India is one of the lowest. The reason being large wastages, pilferages, inadequate logistics infrastructure, inefficient public distribution system and food distribution complexity. The Table 1 below gives India’s rank for production of many agricultural commodities.

Table 1: India –Front Ranking Producer of Perishable Commodities

Agricultural Commodities	World Ranking %
Mango	50
Banana	23
Cashew Nut	36
Onion	11
Cauliflower	28
Green Peas	28
Fruits	15
Milk	25
Buffalo population	53
Goat	17
Vegetables	11

India also has about 8000 KM of coast line and that offers considerable opportunities for the growth of international trade in marine fish processing. As can be apparent from the above Table 1 India is large producer but per capita consumption is very low mainly due to poor and complex distribution including re-distribution infrastructure. Compare the figures as given in Table 2 below which will indicate level of processing of agricultural produce in India and comparative figures of those in other countries. In case of fruits and vegetables India's rank in global production is around 12 % but in spite of that India's processing level is only about 3.5 % of the total produce as compared to 30% in a country like Thailand and 80% in USA as can be seen from Table 3 below.

Table 2: Level of Processing of perishables in India :

Agricultural Produce	Organised Sector (%)	Unorganised Sector(%)	Total (%)
Fruits & Vegetables	2.75	0.8	3.55
Milk & Milk Products	13	22	35
Buffalo Meat	21	-	21
Poultry	6	-	6
Marine Products	8	15	23

Table 3 : Level of Processing of Fruits & Vegetables –a comparison with other countries

Country	Level of Processing(%)
USA	80
France	70
Malaysia	80
Thailand	30
India	3.5

Challenges of Processed Food Industry:

In earlier section we have seen that inspite of high production of agricultural products processing level is still very low and that can be improved significantly. One reason is that we don't have huge domestic demand and although the food business category is growing at an average rate of 10 to 12 percent which is a healthy growth rate by any standard in global trade but that growth is being serviced by the existing capacity of the organised players. What we need to have is an easy access to the international market and that can be exploited by foreign companies investing in India for setting up processing plants and exporting to the rest of the world. This is a significant possibility and lot of incentives and supports are available to address the constraints and challenges to make the product globally competitive. Let us now examine few challenges in terms of processing food products for global markets.

Although India stands on top in terms of production of many agricultural products but farm level productivity is still not high and that needs to be addressed for India to become more competitive. For example, farm level productivity of pineapple in Brazil : 40.1 Tons/hectre, Thailand: 24.5 Tons/hectre, Phillipines: 37.9/ hectre and India: 16 Tons/hectre (Source: National Horticultural Board) although India produces very premium quality of pineapple but at a relatively higher cost. The low farm level productivity is due to low farm holding, low soil fertility and traditional cultivation methods.

In spite of the fact that we have large production of agricultural products and very low labor cost and low farm labor wages in comparison to the global standards, our processed food is not globally competitive. The reason being high raw material cost resulting from low farm productivity, inefficient supply chain management due to relatively poor transportation infrastructure and involvement of multiple agencies and middlemen in the entire value chain resulting into higher logistics cost. At macro level, logistics cost in India is about 15% of GDP, while it is 8% in USA and 12% in Slovenia. Other reasons of higher cost is lack of economy of scale, low level of automation and low manufacturing productivity which again is the result of not having the market access to the global market and that is possible if processed foods emanating from India is globally cost competitive. It is therefore, a vicious cycle which needs to be broken.

In terms of value addition India again is at one of the lowest when compared with others. The primary reasons again lot of value gets lost in inefficiencies, middleman interventions

etc. who are only adding to the cost and but nothing to the value. Because net realizable value will depend on the perceived value of the products that are on offering which again will also be the function of competitive offering in an era of globalization. The Table 4 below will provide the value addition in processed food industry in various countries (source: Ministry of Food Processing, Government of India).

Table 4: Value Addition in Processed Food Industry

Country	Value Added (%)
India	9
China	23
Philippines	45
United Kingdom	188

India produces 11% of world's vegetables and 15% of the world's fruit. They are large producer, but lowest consumer and processing is at still nascent stage. India is also a low cost producer of agricultural crops. India's prices is also lowest as a percentage of the prevailing world's price at farm level- vegetable 53%, fruits-63% and cost of labor (54%). In spite of these cost advantage India's share of global trade in vegetable is 2% and fruits only 0.5%. Taking care of some of the key issues and challenges facing this industry it may be possible to increase global trade significantly.

The following Figure 2 will give the cost build-up of farm level price till the agricultural produce reaches the end consumer or even to factories for production. One can find that at farm level the price is very low when compared to that with other countries. But when the same product reaches the ultimate consumers the price is almost 3.5 to 4 times the farm gate price indicative of the fact that the middlemen and inefficiency of the supply chain is responsible for the price escalation. Whereas farmer gets inadequate reward for his hard work but consumer pays a high price and middlemen enjoys in between. The only way to improve the cost competitiveness is to reduce logistics cost and eliminate middlemen involvement in the value chain and that can happen if the logistics infrastructure is improved significantly including transport infrastructure, installation of cold chain and automation related to material handling and subsequent processing. While policy makers and planners have already been dealing with these issues and improvement is happening but that need to be accelerated. This accelerated pace of development can happen if there is foreign investment coming into the country. Government has provided lot of incentives for this and under 'Make in India' initiative the investment in this sector is granted through automatic route.

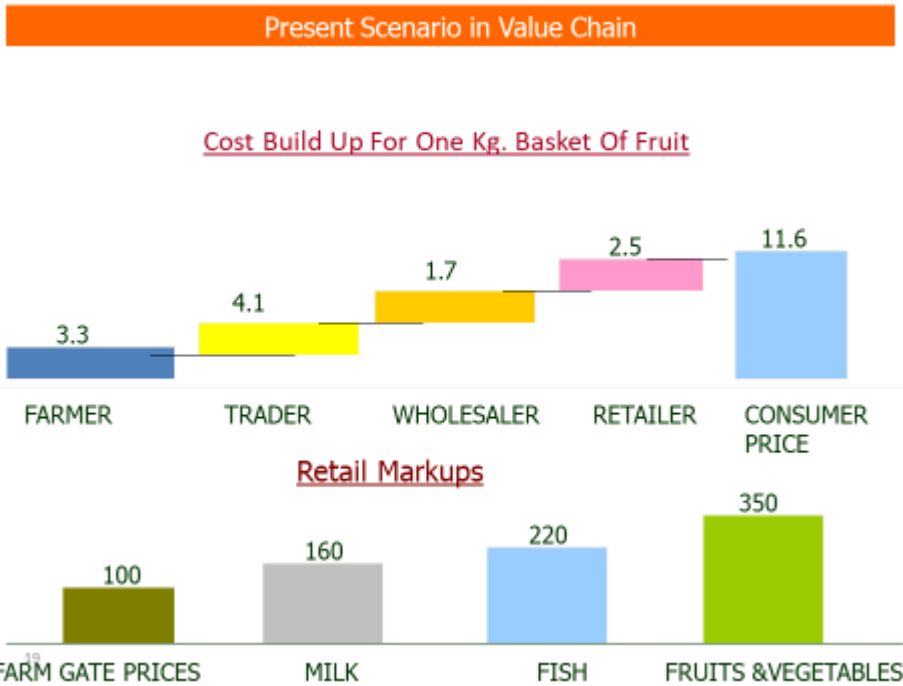


Figure 2: Cost build-Up for One Kg from farm gate to consumer

Agricultural Value Chain:

Agricultural value chain concept means all actors along the chain producing and delivering goods to consumers through a sequence of activities. However, these chain cannot function in isolation as one vertical chain. They need to be supported by other inputs such as finance, extension service as well as activities required to bring a product or service through the different phases of production including procurement of raw material and other functions. UNIDO's definition of value chain are the actors connected along a chain producing, transforming and bringing goods and services to end consumers through a sequenced set of activities. Several funding organizations and donors have documents designed to evaluate chains in order to decide on the most appropriate intervention to either update existing chains or even promote new ones. Two things are essential for successful value chain development and they are- creating right environment in agriculture like peace and public order, macro-economic stability, inflation under control, exchange rate is based on market fundamentals as well as investment in rural public goods such as infrastructure including rural roads , warehousing and appropriate storage facilities like cold chain infrastructure and extension services.

India as a Country- highly Complex and diverse:

India is a huge country having land mass of 3287240 Sq Km (largest is Rajasthan having land mass of 342239 Sq km and smallest is Goa having land mass of 3702 Sq km) and 29 states. While Rajasthan is largest in size but population is largest in Uttar Pradesh (200 million). Population of Indian is 1.35 billion (2.4% of world's land area but 17.5% of world's population) and over 50 % of the population is having age less than 25 years (a high spending segment in many markets) and about 31% of the population having age less than 14yrs and about 25% of the total population falls in the age group of 20 and 35 yrs. India is thus an young country contrary to developed countries like Europe which has an aging population. The market is so diverse in the sense that demographic and psychographic profile of the consumers in various regions vary widely. Country is so huge that in one part there could be flood when the other part is facing serious drought conditions. In addition, it also offers socio-cultural complexity.72% of the population lives in rural areas in 638000 villages. Rural market is therefore, very large and still untapped. MNCs and large FMCG companies deriving 20-40% revenue from rural market. Life expectancy is 69yrs, literacy rate is 64%, We are a trillion Dollar economy and GDP growth rate is 6.5 %. In India we have 100 million internet users. You cannot therefore, ignore India if you want to do business on a global scale.

Entry of Organized Retailers and E-Retailers:

Leading global retailers like Wal-Mart and Tesco have already entered the Indian market through joint ventures or on their own. Besides, there are host of domestic retailers such as Big-Bazaar, Reliance and Aditya Birla Group competing with global retailers. Of late, online retailers like Amazon.com have also entered the fray competing with local on-line retailers like Flipkart.com, Snapdeal.com and many others. These companies have been investing heavily in their business hoping to make good sense of their investment in the long run. In wholesale trade in Cash & Carry mode we have global players like Bookers and Metro (Macro) competing with our distributors and wholesalers.

Distribution Challenge for the Base of the Pyramid Population:

According to National Sample Survey Organization's (NSSO) definition persons spending less than USD 75per month on consumables falls under bottom of the pyramid population and according to that definition about 114 million households or 76% of the rural population actually coming under BOP. Delivering goods and services to this section of population is really a challenge for the marketers in India. There are three major factors that explain the complexity of distribution for Base of the Pyramid. In the rural market which constitute the BOP segment, only way to reach is through the redistribution route involving wholesalers who have small rural re-distributors to cover rural retail outlets. Very slow moving vehicle including bullock cart , cycle rickshaw, auto rickshaw, or even boat running through water ways (as in Kerala) are used to manage the logistics issue. The involvement of multiple channel intermediaries make the distribution of foods extremely complex. Coupled with this India has relatively poor infrastructure although

that is improving very fast now. The distribution complexity and challenge also result into high logistics cost. India has about 13 million retailers to service and through direct coverage even best companies with intensive dealer distribution network cannot cover more than 2 to 3 million retailers, the remaining 10 million retailers are to be covered through redistribution routes and that itself is a huge complex and challenging task for the manufacturers marketers.

Conclusion:

India has a distinction as a large producer of agricultural products of wide variety. However, processing and value addition is still very low when compared with other countries in the world. Also the consumption level is very low and wastage is of very order largely because of inadequate infrastructure. If the demand of the processed food can be generated by accessing international market, the demand pull itself will help reduce wastage but that can happen if the end products meet demands of the global market by being cost competitive. Although at farm level costs of agricultural produce are low and labor wages are also low when compared with global standard but due to multiple handling, middlemen intervention and poor infrastructure the consumer prices is very high. It is like farmers getting low return but consumers paying high price. This paradox has to be reversed. It is also necessary to reduce complexity of distribution infrastructure and logistics to bring down the cost of the product by efficient distribution infrastructure which will also reduce working capital locked up unnecessarily as trade inventory. Because of the complexity, logistics cost is very high which offers a lot of opportunities to bring about cost economy to further improve competitiveness.

To make all these possible, India needs the inflow of foreign direct investment of both capital and technology taking advantage of 'Make in India' initiative which allows automatic approval of even 100 % foreign investment in processed food category. India offers lot of opportunities to capture by the global community being in the threshold of emerging as global economic power by 2030 as per all prediction although to reach that goal lot needs to happen.

References

- Baisya, R.K, Changing Face of Processed Food Industry in India(2008) Ane Books Inc
- Baisya, R.K, Models of Industry Agriculture Linkages for Improving Food Value Chain(2010), Processed Food Industry, Volume 13, No 6, pp 10-13
- Baisya, R.K, Criticality of Supply Chain Efficiency in Food Processing Industry(2012), Processed Food Industry, Volume 15, No 9, pp 11-13
- Baisya, R.K, Distribution Complexity in Indian Processed Food Industry, (2015), Indian Food Packer, Volume 62, No 2,
- Baisya, R.K., Competitiveness of Indian Processed Food Industry (2005) paper presented at National Conference on Prospect of Indian Processed Food Industry Emerging as Global Player held during March 12-13 at New Delhi.
- Christen R and Anderson, J Segmentation od Smallholder households , (2013) , CGAP

Lowder, Carisma and Skoet ,Who Invests in Agriculture and how much(2012), FAO-ESA
Schaffnit and Chatterjee, Risk Management in Agriculture, (2010) Sept DB Research
Schaffnit and Chatterjee, Foreign Investment in Farmland (2009) Sept, DB Research
10 Bhalla Vikram, Bhattacharya , Arindam, Singhi , Abheek and Verma Sharad (2007); Creating
Distribution Advantage in India, Boston Consulting Group Publications.
Shukla, Sachin and Bairiganjan, Sreyamsa (2011); The Base of Pyramid Distribution Challenge;
IFMR Research, Centre For Development Finance
Hammond,Allen L. Kramer, William J, Katz , Robert S.Tran, Julia T and Walker,
Courtland(2008). The Next 4 Billion- Market Size and Business strategy at the Base of the Pyramid,
Washington D.C: World Resource Institute and International Finance Corporation.
Huhmann,S.(2004);Tapping India's Rural Market, Journal of Student Research, p 92-99.

Lokalne surovine, pridelki in izdelki: spodbujevalec gostov zadopustovanje v turističnih objektih na podeželju

LEA-MARIJA COLARIČ-JAKŠE

Abstract Lokalne surovine, pridelki in izdelki oziroma lokalna hrana je pomemben del našega vsakdanjega življenja, kar povezujemo s kakovostjo in zdravim načinom življenja, prav tako pa tudi turistični produkt, saj je kulinarika lahko pomemben del turistične ponudbe v segmentu kulinaričnega turizma in spodbujevalec gostov za dopustovanje v turističnih objektih. Uporaba lokalnih surovin, pridelkov in izdelkov prispeva pri ohranjanju zdravega in kakovostnega življenjskega prostora, pri čemer se ogljični odtis zmanjša. Pri tem je pomembna kratka pot »od njive do mize« in »od vil do vilic« ter krajši čas skladiščenja ali celo brez skladiščenja, kjer se ohranijo kakovostne sestavine surovin in pridelkov, lepši videz ter polnost okusa. Pri raziskovanju smo uporabili sedem stopenjski model reševanja problemov, ki odgovarja na vprašanje ali so lokalne surovine, pridelki in izdelki spodbujevalec gostov za dopustovanje v turističnih objektih.

Keywords: • lokalne surovine • lokalni pridelki • lokalni izdelki • turistični objekti • turizem •

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1 Uvod

Ljudje v toku življenja oblikujemo različne življenjske sloge in načine življenja, ki jih prilagajamo situacijam, saj se naše potrebe in želje spreminjajo, na življenjski slog pa močno vpliva ozaveščenost in znanje. Življenjski slog je dinamičen proces, ki ga človek spreminja in prilagaja v toku življenja, posameznikov življenjski slog pa vpliva na kakovost življenja in zdravje. Med pomembnejše življenjske sloge ljudi sodi slog prehranjevanja in bivanja, prehrana in bivanje pa sta bistvenega pomena za ohranjanje in krepitev zdravja. S surovinami, pridelki in izdelki zadovoljujemo osnovne življenjske potrebe in oblikujemo svoj življenjski slog. Surovine, pridelke in izdelke lahko kupimo ali pa jih sami pridelamo in izdelamo ter z njimi zadovoljujemo gospodinjstva in lokalno prebivalstvo. Takšne surovine, pridelki in izdelki so ljudem dostopnejši in po takšnih povprašujejo tudi gostje, ki vstopajo v turistične prostore. Na ta način dvigujemo raven samooskrbe s kakovostnimi in zdravimi surovinami, pridelki in izdelki, hkrati pa izboljšujemo prehransko varnost prebivalstva in gostov, ki vstopajo v turistični prostor. To pa je velik potencial tudi za kmete, ki na kmetijah pridelujejo in predelujejo surovine, pridelke in izdelke, kar jim omogoča zaslužek.

1.1 Raziskovalni problem

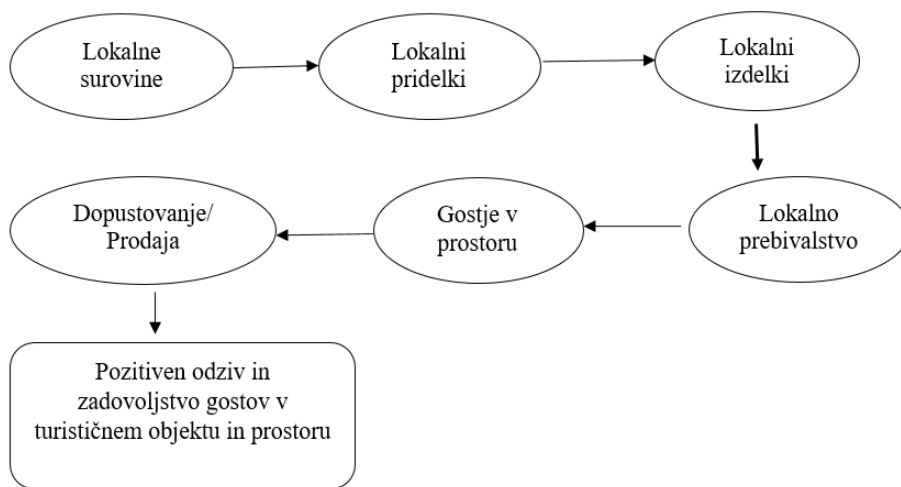
V današnjem hitrem toku in tempu življenja, ko pri marsikomu ni ločnice med službenim in privatnim življenjem, ko se delovni čas daljša in ko prihajamo v domove in med družino v poznih poldanskih urah, in ko še doma rešujemo službene zadeve preko vsem dostopnih e-medijev, niti ni časa za kakovostno sobivanje z družino, za ustrezno in kakovostno prehranjevanje in zdrav način življenja. Vse, kar storimo, delamo na hitro, da zadovoljujemo osnovne življenjske potrebe tako sebe kot najbližjih. Želimo se usmerjati v vsebine, ki poudarjajo kakovostno prehranjevanje in zdrav način življenja ter bivanja, na kar nas opozarjajo mediji in promocijske aktivnosti. Vsega se zavedamo, le zaradi hitrega tempa življenja in neodložljivih delovnih obveznosti ne moremo spremeniti svojega življenjskega sloga.

Ko pa načrtujemo počitnice oziroma dopustovanje, želimo izbrati nekaj najboljšega, tako zase kot za družino. Želimo bivati v naravnem okolju, kjer bomo skozi vse produkte doživeli avtentičnost turističnega prostora. Želimo konzumirati zdravo lokalno prehrano, da bomo doživeli kulinariko turističnega prostora, navade in običaje. Želimo spoznati vse, kar nam turistični prostor nudi. Želimo se udeleževati različnih aktivnosti in spoznati utrip prostora. Tedaj želimo le najboljše in za takšne storitve smo pripravljeni plačati višjo ceno. Kot ponudniki najrazličnejših proizvodov ali ustvarjalci destinacijskega menedžmenta moramo slediti smernicam želja in pričakovanj lokalnega prebivalstva in gostov, njihovim nakupnim navadam in tako oblikovati integralno turistično ponudbo, v skladu s kakovostjo, lokalnostjo, avtentičnostjo, domačnostjo in poudarkom na zelenih in zdravih vsebinah, saj sta zdravje in dobro počutje pomembna dejavnika pri nakupnih odločitvah turistov.

1.2 Namen in cilj

Namen prispevka je predstaviti in poudariti pomen lokalnih surovin, pridelkov in izdelkov, ki so lahko ključni spodbujevalci gostov, da obišejo določene turistične prostore in bivajo v turističnih objektih, hkrati pa predstavljajo ekonomsko dodano vrednost prostora. Sodobni gostje so ozaveščeni, visoko izobraženi, raziskovalni, usmerjeni v zeleno, poudarjajo kakovost in so pripravljene za surovine, pridelke in izdelke plačati višjo ceno, prav tako pa krepijo svojo veljavo in preoblikujejo načine potovanja in doživljanja prostorov. Gostje prihajajo iz različnih prostorov, saj zračni promet oziroma letalske povezave postajajo čedalje pomembnejše in iskano prevozno sredstvo.

Cilj raziskave je animirati in motivirati goste, da za dopust izberejo turistične prostore, kjer bodo imeli možnost okusiti in konzumirati lokalne surovine in pridelke ter bivati v prostoru, kjer so tudi izdelki in gradbeni material uporabljeni iz lokalnih surovin.



Slika 1: Makro shema poteka procesa

2 Teoretična izhodišča – opis obstoječega stanja

Turistična panoga je ena izmed najhitreje rastočih in strateških gospodarskih panog, ki dosega rekordno rast z vzponom novih prostorov. Evropa še vedno ohranja svoj prednostni položaj kot najbolj obiskan turistični prostor na svetu. Vlada Republike Slovenije je 5. 10. 2017 sprejela Strategijo trajnostne rasti slovenskega turizma 2017 – 2021, ki je usmerjena v vizijo, da postane Slovenija globalna zelena butična destinacija za zahtevnega obiskovalca, ki išče raznolika in aktivna doživetja, mir in osebne koristi in ki temelji na:

- dosedanjih spoznanjih in razvojnih posebnostih slovenskega turizma,

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- razvijanju konkurenčnih prednosti in spodbujanju sistemskih rešitev,
- učinkovitemu povezovanju nacionalnih, lokalno-regionalnih in podjetniških interesov na področju razvoja turizma,
- spodbujanju globalnih, nacionalnih in lokalnih turističnih produktov,
- razumevanju in uveljavljanju sodobnih metod in tehnik upravljanja s področja strateškega načrtovanja in
- usmerjanja podjetniških konkurenčnih mrež.

Strategija je usmerjena v scenarij pospešenega razvoja turizma za doseganje razvojnih ciljev turizma do leta 2021, in sicer:

- dvig prilivov iz naslova potovanj 3,7 do 4 milijarde evrov,
- 5–5,5 milijonov turističnih obiskov,
- 16–18 milijonov nočitev,
- povprečno dolžino bivanja 3,1–3,4 dni,
- 18.000 do 22.000 novih turističnih sob, od tega v hotelskem sektorju 8.500 prenovljenih in 6.500 novih,
- povečanje zaposlovanja za polni delovni čas v turističnem sektorju z 8.000 na 12.000 zaposlenih.

Strategija opredeljuje 6 ključnih razvojnih politik:

- nova organiziranost: makro destinacije in turistični produkti,
- institucionalni in pravni okvir,
- namestitve, turistična infrastruktura in naložbe,
- kadri v turizmu,
- prostor, naravni in kulturni viri,
- mala in srednje velika podjetja (Strategiji trajnostne rasti slovenskega turizma 2017 – 2021, Republika Slovenija, Ministrstvo za gospodarski razvoj in tehnologijo, 2017).

Slovenija se v Strategiji trajnostne rasti slovenskega turizma 2017 – 2021 predstavlja kot zelen, trajosten in odgovoren prostor, katerega razvoj je močno zakoreninjen med turističnimi deležniki v javnem in zasebnem sektorju, ki podpirajo ohranjanje in varovanje naravne in kulturne dediščine, potencialov ter odgovorno in trajnostno turistično valorizacijo z visoko kakovostjo doživetij za goste. V Strategiji je poudarjen nadaljnji razvoj Zelene sheme slovenskega turizma in znamke Zelena Slovenija, ki predvideva aktivno upravljanje Zelene sheme slovenskega turizma, zeleni monitoring novih kategorij ponudnikov Zelene sheme slovenskega turizma, pospeševanje oblikovanja zelenih produktov in njihovo komercializacija ter izdelavo analize vplivov podnebnih sprememb na razvoj slovenske turistične ponudbe.

Na področju gastronomije, ki je motiv prihoda gostov skozi vse leto, je vizija Slovenije do leta 2021, da postane prepoznavna destinacija z visokokakovostno, inovativno, avtentično ponudbo hrane in vina, ki jo ustvarjajo številni manjši butični ponudniki

kakovostne hrane z veliko bero najprestižnejših nagrad in tradicionalne gostilne, ki s svojo kuhinjo temeljijo na lokalnem in srčnosti. Poudarek je dan pripravi in uveljavitvi meril za zdravo ponudbo v gostinstvu ter povečanje njene prepoznavnosti. Za lažjo izbiro zdrave ponudbe v gostinstvu in turizmu je treba oblikovati merila za jedi oziroma obroke in povečati prepoznavnost zdrave ponudbe. Merila se nanašajo na energijsko gostoto hrane, vključenost zelenjave in sadja ter posameznih hranil, kot so količina soli, kakovost in količina maščob ter sladkorjev v obroku. Gostinske ponudnike bo treba spodbuditi, da ponudbo obogatijo z zdravju koristnimi obroki in povečati prepoznavnost takšne ponudbe.

Vizija produkta turizma na podeželju do leta 2021 se povezuje z drugimi produkti (Zdravje in Dobro počutje, Počitnice v gorah, Touring, Kulinarika), zaradi česar je pridobil na pomembni kritični masi, kar je omogočilo vlaganja v inovacije, razvoj, prenove in gradnjo novih ponudb. Produkt je pomemben pospeševalec kmetijske proizvodnje, visokokakovostne avtentične kulinarike, avtentične nastanitvene ponudbe in številnih doživetij v stiku z naravo, kulturo in ljudmi (Strategija trajnostne rasti slovenskega turizma 2017 – 2021, Republika Slovenija, Ministrstvo za gospodarski razvoj in tehnologijo, 2017).

V Strategiji je pod Prostor, naravni in kulturni viri naveden izziv, da Slovenija premalo izkorišča zeleni (trajnostni) konkurenčni gospodarski potencial turizma iz naslova prostora, zelenega in ohranjenega naravnega in avtentičnega kulturnega okolja ter kulturno ustvarjalnost, pri tem pa:

- Prepoznano zeleno (trajnostna) politiko razvoja turizma je treba bolje izkoristiti za povečanje konkurenčnosti slovenskega turizma.
- Razkorak med zeleno obljubo (promocijo turizma) in zeleno kakovostjo turističnih produktov je treba zmanjšati in povečati zeleno zadovoljstvo obiskovalcev.
- Z razvojem turizma hitreje povečevati turistični bruto domači proizvod in blaginjo ter participacijo in zadovoljstvo prebivalcev.

2.1 Turistični objekti za dopustovanje na podeželju

Turistične kmetije

Ponudba turističnih kmetij v Slovenji je zelo pestra. Opredeljene so naslednje vrste turističnih kmetij:

- kmetije z nastanitvijo,
- izletniške kmetije,
- vinotoči,
- zidanice,
- osmice,
- planšarije (Ministrstvo za kmetijstvo in okolje, 2014).

Kmetije z nastanitvijo

Kmetija z nastanitvijo gostom nudi bivanje na kmetiji s ponudbo hrane. Gosti lahko izbirajo med nočitvijo z zajtrkom, polpenzionom ali polnim penzionom. Svoje storitve lahko ponuja tudi v obliki najema apartmaja. Za bivanje kmetija ponuja gostom sobe, stanovanja, apartmaje ali prostor za kampiranje, kjer gosti lahko postavijo avtodom, šotor, počitniško prikolico in osebni avtomobil. V ponudbi kmetije je lahko tudi namestitev v že postavljenih šotorih, počitniških prikolicah ali hišicah. Na kmetiji se lahko uredi tudi skupna ležišča za prenočevanje. Ta so najbolj primerna za sprejem skupin otrok, tabornikov ali planincev. (Krašovec, 2014).

Izletniške kmetije

Izletniška kmetija gostom nudi le hrano in pijačo, ne nudi pa prenočišča. Tovrstna kmetija lahko nudi jedi iz domačega okolja, doma pridelane in predelane pijače, napitke, ustekleničeno in mineralno vodo. Če je kmetu s strani pristojnega organa samoupravne lokalne skupnosti dovoljeno, lahko nudi tudi kupljeno pijačo. Običajno so izletniške kmetije odprte ob koncih tedna (petek, sobota, nedelja), za vnaprej naročene skupine tudi med tednom (Krašovec, 2014).

Vinotoči

Vinotoč gostom nudi hladne prigrizke, domač kruh in domače pecivo. Glavni element ponudbe je doma pridelana pijača, lastno vino, druge alkoholne in brezalkoholne pijače. Med ponujeno pijačo je lahko tudi mineralna in ustekleničena voda. Vinotoči so običajno odprti konec tedna in za naročene skupine tudi med tednom. Pred prihodom se je praviloma potrebno napovedati. Velika večina vinotočev v Sloveniji se je razvila ob številnih vinskih turističnih cestah po letu 1994 (Krašovec, 2014).

Zidanice

Zidanica je lesena ali zidana stavba ob vinogradu, katere gospodarski del je namenjen shranjevanju orodja. Ima klet in prostor za stiskanje grozdja ter bivalni del, ki je namenjen občasnemu prenočevanju vinogradnika in njegove družine ob delih v vinogradu. Danes so mnoge zidanice preurejene in so postale unikatne, privlačne in atraktivni proizvod vinskega turizma, namenjen bivanju turistov, ki iščejo mir v naravnem okolju, avtentičnost, pristnost v ponudbi in sprostitev ter predstavljajo dodano vrednost podeželja (Colarič-Jakše idr., 2010).

Osmice

Osmice izhajajo iz časa Marije Terezije. Ta je kmetom dovolila neobdavčeno prodajo vina iz preteklega leta. Razširile so se predvsem na Primorskem. Po zakonu je določeno, da lahko poleg ponudbe, ki jo ponujajo vinotoči, osmica ponuja tudi eno krajevno značilno jed. Glavna razlika med vinotoči in osmicami je ta, da so vinotoči odprti čez celo

leto (dokler imajo lastno pijačo), osmice pa le dvakrat na leto do deset dni (Krašovec, 2014).

Planšarije

Na planšariji se hrana in pijača nudi le v času pašne sezone. Slednjo potrdi pašna skupnost za tekoče leto. Ponujajo lahko sir, mleko, mlečne izdelke in hladne prigrizke, doma pridelane alkoholne in brezalkoholne pijače, tople in hladne napitke in eno domačo jed iz kotlička (Krašovec, 2014).

Dopolnilne dejavnosti na kmetiji

Dopolnilna dejavnost na kmetiji je s kmetijstvom ali gozdarstvom povezana dejavnost, ki se izvaja na kmetiji in omogoča kmetiji boljše rabo njenih proizvodnih zmogljivosti in delovne sile družinskih članov in zaposlenih na kmetiji (Ministrstvo za pravosodje in javno upravo, 2013).

Dopolnilna dejavnost se v celoti izvaja na kmetiji ali jo delno izvajajo na zemljiščih ali v objektih, ki jih ima nosilec dopolnilne dejavnosti ali družinski član v lasti, najemu ali v zakupu, ali v skupnih objektih, razen tistih vrst dopolnilnih dejavnosti, pri katerih se določena opravila teh dejavnosti izvajajo izven kmetije. Takšna kmetija mora imeti v lasti najmanj 1 hektar ali v zakupu najmanj 5 hektarjev primerljivih površin po podatkih iz zemljiškega katastra, razen v primeru predelave medu in čebeljih izdelkov. Za en hektar primerljivih površin se štejejo: 1 ha njiv, 2 ha travnikov oziroma ekstenzivnih sadovnjakov, 4 ha pašnikov, 0,25 ha plantažnih sadovnjakov ali vinogradnikov oz. hmeljišč, 0,2 ha vrtov, vključno z zavarovanimi prostori pri pridelavi vrtnin, 8 ha gozdov, 5 ha gozdnih plantaž ali 6 ha barjanskih travnikov oz. drugih površin (Ministrstvo za pravosodje in javno upravo, 2013; Krašovec, 2014).

Ena izmed oblik dopolnilne dejavnosti na kmetiji je turizem, ki predstavlja eno izmed zahtevnejših dopolnilnih dejavnosti na kmetiji. Opredeljujeta jo Zakon o kmetijstvu (2014) in Zakon o gostinstvu (2014). Ker pa dejavnost poteka v zgradbah in prostorih, jo opredeljuje tudi Zakon o graditvi objektov (2013). Poleg tega obstajajo številni podzakonski predpisi, ki določajo minimalne tehnične pogoje in minimalni obseg storitev za opravljanje turistične dejavnosti na kmetiji, pogoje glede kategorizacije turističnih kmetij z nastanitvijo, sanitarno zdravstvene pogoje za prostore, opremo, naprave in osebe in veterinarsko-sanitarne pogoje za proizvodnjo živil živalskega izvora (Krašovec, 2014).

Turistična dejavnost se deli na gostinsko in negostinsko dejavnost. Med gostinske dejavnosti sodijo že zgoraj naštet: kmetija z nastanitvijo, izletniška kmetija, vinotoč, osmica, planšarija. Oblike negostinske dejavnosti na kmetiji niso povezane s ponudbo hrane in pijače (Krašovec, 2014):

- ogled kmetije in njenih značilnosti in ogled okolice kmetije,
- prikaz vseh del iz osnovne kmetijske in gozdarske dejavnosti,

- prikaz vseh del iz ostalih vrst dopolnilne dejavnosti na kmetiji,
- turistični prevoz potnikov z vprežnimi vozili,
- ježa živali,
- žičnice, vlečnice, sedežnice,
- oddajanje športnih rekvizitov,
- oddajanje površin za piknike.

3 Metoda

Pri raziskovanju smo uporabili sedem stopenjski model reševanja problemov, ki vsebuje naslednje korake (Marolt in Gomišček, 2005, str. 400–413):

1. Stopnja: Izbira procesa ali problema in področja izboljšave.
2. Stopnja: Opis obstoječega procesa in z njim povezane možnosti izboljšave.
3. Stopnja: Identifikacija vzrokov problema in soglasje o ključnih vzrokih.
4. Stopnja: Priprava učinkovite in izvedljive rešitve ter plana dejavnosti za doseg cilja izboljšave.
5. Stopnja: Izvršitev plana in rešitev problema ali sprememba procesa.
6. Stopnja: Preverjanje in ocena rezultatov.
7. Razmislek in ukrepi na osnovi rezultatov.

4 Rezultati in razprava

Turizem je storitev in temelji na aktivnostih ljudi, ki sodelujejo in ustvarjajo turistične proizvode, ki zadovoljujejo odjemalce in druge deležnike v turističnem gospodarstvu. Nagarjuna in Kallarakal (2014) poudarjata, da je človeški kapital osnova za rast in razvoj turističnega gospodarstva.

Po Dimmoku in drugih (2003) je turizem globalna dejavnost, ki se uresničuje na lokalni ravni in se krepi z gostoto povezav na globalni ravni. Deležniki v turizmu potrebujejo pravo znanje, da lahko vzpostavijo uspešne načine organiziranosti, ki temeljijo na tesnem sodelovanju pri zadovoljevanju skupnih interesov in interesov drugih deležnikov na vseh ravneh delovanja.

Denicolai in drugi (2010) so raziskovali razmerje med mrežnimi pristopi, delovanjem turističnih podjetij in razvojem osrednjih kompetenc za sodelovanje v ustvarjanju turističnih proizvodov. Ugotovili so, da so osrednje kompetence zelo pomembne za razvoj turističnega gospodarstva in da so razvojna pot za vse, ki ustvarjajo razvojne politike v turizmu.

4.1 Izbrana kakovost - Slovenija

Med slovenskega potrošnika vse bolj prodira zavedanje, da s poseganjem po lokalni hrani dobimo zagotovilo, da taka hrana ni prepotovala na stotine kilometrov, da z nakupom lokalne hrane pomagajo lokalnim, domačim pridelovalcem in predelavi ter da s tem

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ohranjamo naša delovna mesta. V veliki meri se že zavedamo, da imamo kot potrošnik vpliv, da obrnemo trend nenehnega povečevanja uvoza hrane v našo korist, in zmanjšamo drastično številko letnega uvoza hrane, ki je lani znašala 1,9 MRD € (<http://lokalnakakovost.si/o-projektu/opis-projekta/>). Z zaščitnim znakom »Izbrana kakovost Slovenije« je označena hrana, ki je pridelana in predelana v Sloveniji in ki ima tudi shemo »izbrana kakovost«.

4.2 Doživetja razpršenega hotela v Sloveniji

Hitrejši razvoj proizvodov in prostorov ter učinkovit sistem trženja predstavlja inovativen organizacijski model, ti. »model razpršenega hotela«, kjer so vsebine zasnovane na skupni promociji in prodaji namestitvenih kapacitet s trženjem ostale ponudbe v prostoru ter povezovanjem in mreženjem lokalnih ponudnikov v turistične kooperative ali združenja. Turistična kooperativa kot ena izmed oblik organiziranja razpršenega hotela skrbi za vzdrževanje objektov in koordinira tržne, socialne in prostovoljne aktivnosti prostora, sodeluje z lokalnim prebivalstvom glede ponudbe in organiziranja dogodkov, lokalno skupnostjo, določa skupne točke pri različnih projektih in aktivnostih. Predstavlja celovito turistično ponudbo prostora in je gonilna sila lokalnega razvoja. Model organiziranosti razpršenega hotela sledi načelom krožnega gospodarstva, saj zagotavlja trajnostno upravljanje z viri. Pomembna je povezanost in vključenost lokalnih skupnosti, institucij, organizacij in posameznikov.

V Sloveniji se razvija nov inovativni turistični proizvod (začetek pomlad 2017, zaključek jesen 2018) Doživetja razpršenega hotela: Live like a local, Enjoy like a local, Feel like a local, ki ponuja individualno nastanitev v neposrednem stiku z okoljem, prebivalci, doživljanje lokalnega, avtentičnega življenja in aktivnosti, po meri posameznega gosta. Proizvod, ki ga razvijajo Tour As Ljubljana, Turizem Ljubljana, Konzorcij Turizem v zidanicah, Hiša s tradicijo, Razvojna agencija Sotla ter Turizem in kultura Radovljica (2017), nudi doživetje pristnega stika s prebivalci prostora, preizkušanje tipičnih, hišnih jedi, spoznavanje običajev in navad. Proizvod, namenjen individualnim gostom, neodvisnim turistom, družinam, parom, mladim turistom, poslovnim stanovalcem, raziskovalcem, izobražencem vsebuje poleg nastanitev tudi dopolnilne ponudbe in doživetja, predvsem pa daje poudarek na spoznavanju lokalnega življenja prebivalcev prostora, uživanja v vseh lokalnih vsebinah, predvsem hrane in pijače ter dobrem počutju v lokalnem prostoru.

4.3 Gospodarski grozd za podeželje

Na zavodu Grm Novo mesto – centru biotehnike in turizma in Visoki šoli za upravljanje podeželja Grm Novo mesto razvijajo model »Gospodarskega grozda za podeželje« po sistemu »zaupanja vreden«, ki bo temeljil na pravičnih razmerjih med posameznimi deležniki v verigi preskrbe hrane in v verigi vrednosti hrane. Temeljil bo na konceptu »Zaupanja vreden« ponudbe slovenskih pridelkov / izdelkov, ki bodo temeljili na razvoju novih medsebojnih odnosov med posameznimi deležniki v prehranski verigi, čigar rezultat bo ponudba zaupanja vredne slovenske hrane slovenskim potrošnikom po vsaj

enaki ceni kot so cene primerljivih izdelkov primerljive kakovosti v tujini. Temelj gospodarskega grozda in zaupanja vredne ponudbe bo v razvoju koncepta odličnosti (Hrovat idr., 2015).

Namen projekta je trženje surovin, pridelkov in izdelkov slovenskega podeželja v slovenskem tržnem prostoru, saj trenutno prevladuje premoč velikih trgovcev proti slabše organiziranim in nepovezanim pridelovalcem, živilsko predelovalni industriji in predelovalnim obratom na kmetijah. Projektne aktivnosti bodo usmerjene k vzpostavitvi nove filozofije trženja ter ponudbe izdelkov in pridelkov slovenskega podeželja pod parolo »Zaupanja vredno«, pri čemer je potrebno slediti cilju poštene trgovine, kjer bo imel vsak deležnik priznane stroške in si bodo vsi deležniki enakomerno porazdelili ustvarjen dobiček, od vsega pa bo imel korist pri nakupu tudi potrošnik, saj bo ponudba temeljila na zaupanja vrednih slovenskih dobaviteljih (Hrovat idr., 2015).

4.4 Slovenija kot zelena butična globalna destinacija

Turizem nikakor ni več priložnost za samo neomejeno jemanje iz naravnega okolja. Razumevanje pomena turizma kot sodobnega fenomena v človeku oblikuje prvo globalno vrednoto, in sicer zavedanje odvisnosti človeka od naravnega okolja in njegovih zakonov. Zato lahko nestrokovno delovanje v turizmu ogrozi življenjsko okolje, delovanje ekosistemov in enkratno kulturno dediščino. Trajnostni razvoj ima lokalno in globalno priložnost tudi v razvoju zelenega turizma. Danes se vse bolj zavedamo potrebe po uresničevanju trajnostnega turizma oziroma težimo k uravnovešenemu razvoju, ki ne samo da ne ogroža naravnega okolja, temveč prispeva k njegovemu ohranjanju in revitalizaciji (Veljković, Colarič-Jakše, 2014).

V Strategiji razvoja trajnostne rasti slovenskega turizma 2017 - 2021 je velik poudarek na Sloveniji kot zeleni butični globalni destinaciji za zahtevne obiskovalce, ki iščejo raznolika in aktivna doživetja, notranji mir in osebno zadovoljstvo, drugačno od masovnega turizma in ne trajnostnih konceptov.

Poleg doslej predstavljenih usmeritev bi bilo potrebno poglobljeno preučiti in poudariti pomen lokalnih surovin, pridelkov in izdelkov za vzpostavitev produkta zdrave kulinarike »od njive do mize« oziroma »od vil do vilic«. Pri tem poudarjamo kratke verige prehojene oziroma prevožene poti surovin, pridelkov in izdelkov do človeka, lokalnega prebivalca ali gosta v prostoru. Poleg poudarka na kratkih verigah bi bila generalna spodbuda poleg uvedbe obveznih kvot v javnih ustanovah (vrtni, šole, bolnišnice, domovi za ostarele, idr.) in ekološko pridelanih živil s kratkimi verigami še uvedba ogljičnega odtisa (Carbon Footprint) v gradnji objektov (vrtni, šole, bolnišnice, idr.), spodbujanje uporabe domačih materialov (predvsem les, kamen, slama) še ogrevanje javnih ustanov, obnovljivi viri in hrana z ogljičnim odtisom.

Ogljični odtis je kazalnik, ki se uporablja za ponazoritev količine emisij CO₂ in drugih toplogrednih plinov, ki jih posredno ali neposredno povzroči posameznik, organizacija, izdelek, storitev ali druga aktivnost v določenem časovnem obdobju. Različne izvedenke

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izračuna ogljičnega odtisa in identifikacija ukrepov za zmanjšanje izpustov toplogrednih plinov so ključnega pomena za določanje odgovornosti posameznikov in organizacij ter za načrtovanje in izvajanje vseh vrst podnebnih ukrepov (<http://www.zelenaslovenija.si/kaj-nudimo/trajnostno-svetovanje/ogljicni-odtis>).

Pomembnost pri uvedbi modela v javni sektor je v zgledu, da se družba pravilno, racionalno, okoljsko in trajnostno usmeri. Če se ogljični odtis prenese v turistično panogo se dodatno poudarijo zelene usmeritve in trajnostni razvoj, zdravje, avtohtonost, avtentičnost, okoljska sprejemljivost, tradicionalnost. Nizko ogljična usmerjena družba v javnem sektorju bi s svojim pristopom spodbudila nove in bolj prijazne tehnologije in vire, ki bi bili zelo dobrodošli tudi v turizmu.

Eno od teh so lokalno pridelane surovine, pridelki in izdelki, torej lokalno pridelana hrana. Razmisliti je potrebno, da se lahko del hrane pridelava tudi v okolici turističnih objektov, kot so na primer turistični objekti na podeželju, namesto da jih krasi okrasno drevje, cvetlice in trava, ki jo je treba pogosto kositi zaradi lepšega videza. Na ta način pridelane surovine in pridelki naj ne bi bili velik strošek, pač pa poseben turistični produkt. Takšen način vzgoje in pridelave surovin in pridelkov vsi opazijo, tako lokalno prebivalstvo kot gostje v prostoru, in sprejemajo pozitivno ter z navdušenjem. Hkrati pa je ta pristop v velikem segmentu močna oglaševalska in promocijska znamka. Lokalno pridelane surovine, pridelki in izdelki v turizmu niso možnost ali priložnost, ampak nuja za visoko kakovostni turizem, kakršnega razvijajo npr. v prostorih Avstrije, Švice in drugod. Zgovorno priča slogan »*Ne uporabi in zavrzi, pač pa obnovi*«, kar je sicer v osnovi povezano z nekoliko višjimi stroški, ni pa toliko različnih materialov, pripeljanih od drugod, in ni potrebne toliko delovne sile.

Tabela 1: Prikaz slabosti in izboljšav za ponudbo surovin, pridelkov in izdelkov v turističnih objektih

LOKALNI PRODUKTI V TURISTIČNIH OBJEKTIH	PROBLEM	IZBOLJŠAVA/E
Ozaveščanje lastnikov turističnih objektov	Introvertiranost in samozadostnost	Ozaveščeni lastniki
Izobraževanje lastnikov	Pomanjkanje časa	Izobraženi lastniki
Vlaganje v dodatno infrastrukturo	Finančna sredstva	Prijave na razpise za pridobitev sredstev
Prevzem mladih generacij	Starejši ne zaupajo mladim	Novi pristopi in svežina
Sveža ponudba	Tradicionalizem	Inovativnost v ponudbi
Promocija ponudbe	Finančna sredstva	Večje število gostov
Sodelovanje in povezovanje	Ni želje po sodelovanju in povezovanju	Stalnost ponudbe tudi pri porabi zalog
Urejanje okolice objektov in zasaditve	Dodatni posegi v prostor	Urejene okolice objektov, ki bodo obdani z uporabnimi rastlinami
Nove ciljne skupine gostov	Prilagajanje ponudbe	Lokalne in ekološke surovine, pridelki in izdelki, višja kakovost
Izobraženi kuharji, sommelierji in interpretatorji ponudbe	Pomanjkanje znanja	Ustrezna in kakovostna prezentacija ponudbe

Opomba. *potrebno bo podrobno raziskati področje možnosti prijav na razpise za pridobitev finančnih sredstev

Vsi podatki o izboljšavi bodo narejeni naknadno, ko bodo lastniki oziroma upravjalci turističnih objektov umestili v ponudbo lokalne surovine, pridelke in izdelke in ko bo ta ponudba stalna. Nato se bodo pokazali prvi rezultati povečanja gostov v turističnih objektih, ki bodo imeli v svoji ponudbi lokalne surovine, pridelke in izdelke. Ob povečanjem številu obiska gostov v turističnih objektih in povečanjem povpraševanju po

lokalnih pridelkih in izdelkih se bo turistični prostor lahko dodatno razvijal, v nasprotnem primeru bo potrebno poiskati še dodatne rešitve, ki bodo prinesle željene rezultate.

Menimo, da bi bilo potrebno ustanoviti »forum« o uvedbi lokalnih surovin, pridelkov in izdelkov v turističnih objektih, medsebojno sodelovati, se povezovati in mrežiti ter na ta način skozi različne oblike promocije razširili trg prodaje. Osnovno izhodišče za sodelovalno mreženje na področju turizma je povezovanje po interesnem načelu. V literaturi o mreženju in povezovanju na področju turizma imajo pomembno vlogo formalne oblike sodelovanja, kot so konzorciji, združenja poslovnih partnerjev in druge skupne strukture, ki spodbujajo sodelovanje in skupen nastop na turističnem trgu (Hastings, 2008, str. 43). Hall in Boyd (2005) menita, da je nujen pogoj za lokalni razvoj določenega turističnega prostora razvoj socialnega kapitala. Razlog je predvsem v tem, da se na družbeni ravni vedno bolj zavedamo dejstva, da je potrebno medsebojno sodelovati in združevati vire.

5 Zaključek

Lokalno pridelana hrana je bolj kakovostna, sveža, polnega okusa, sezonska, varna in zdrava ter omogoča ohranjanje domačih delovnih mest, zelenih površin in kmetijskih zemljišč, prispeva k ohranjanju skupnosti in podpira lokalno gospodarstvo. Pridelava takšne hrane prispeva k dvigu lokalne samooskrbe, poseljenosti podeželja in ohranjanju krajine. Kratke prehranske verige imajo nižji ogljični odtis in manj negativnih vplivov na okolje. Rezultati problema nakazujejo, da lokalne surovine, pridelki in izdelki spodbujajo goste za dopustovanje v turističnih objektih, saj ima kulinarika moč pri spoznavanju turističnih prostorov in predstavlja dediščino naroda. Ob sodelovanju ponudnikov lokalnih surovin, pridelkov in izdelkov, ob ciljnem usmerjanju razmerij med ljudmi, povezovanju in sodelovanju z ustreznimi institucijami in organizacijami bi lahko povečali prihod gostov in povečali dopustovanje v turističnih objektih. Prav tako s povečanjem ozaveščenja in izobraževanja lastnikov in upravljalcev turističnih objektov na podeželju ter zaposlenih. Potrebno bo oblikovati nove in inovativne turistične produkte ter jih ustrezno in kakovostno prezentirati.

Raziskava problema je pokazatelj stanja in trendov na področju ponudbe na podeželju ter navaja na spremembe v ponudni, ciljnih skupinah in dodani vrednosti v podeželskem prostoru. V Sloveniji je precej ponudnikov lokalnih surovin, pridelkov in izdelkov, zato bi bilo potrebno preveriti še količine in možnosti oskrbe. Glede na izkušnje se pridelovalci na konstantno povpraševanje in stabilen trg kar hitro odzovejo (npr. pestrost trga zelenjave nekoč in danes). Če bo povpraševanje po lokalnem in ekološkem konstantno se bodo tudi pridelovalci kaj hitro odzvali, prav tako tudi trg. Gostje postajajo čedalje bolj izobraženi in ozavešeni, cenijo lokalno in avtentično, in prav gotovo bo to motiv za dopustovanje v turističnih objektih na podeželju.

References

- Albergo Diffuso. (2017). <http://sutrio.ivationmade.it/> (Dostopno 20. 10. 2017)
- Colarič-Jakše, L.-M., Česnovar, F., Vučajnk, P. (2010). Priročnik z navodili. Turizem v zidanicah. Center za podjetništvo in turizem Krško.
- Denicolai, S., Cioccarelli, G., Zucchella, A. (2010). Resource-based local development and networked core competencies for tourism excellence. *Tourism Management*, 31(2), 260–266.
- Dimmock, K., Breen, H., & Walo, M. (2003). Management competencies: An Australian assessment of tourism and hospitality students. *Journal of the Australian and New Zealand Academy of Management*, 9(1), 12–26.
- Hal, C. M., Boyd, S. (2005). Nature-based tourism in peripheral areas: Development or disaster? Channel View Publications.
- Hastings, E. (2008). Tourism partnerships as a method for increasing destination creativity and competitiveness. V G. Richards, & J. Wilson (ur.), From cultural tourism to creative tourism, Part 2: Changing structures of collaboration. Proceedings of the ATLAS international conference Barcelona 2005.
- Hrovat, T. idr. (2015). Gospodarski grozd za podeželje.
- Hrovat, T., Hrovat, A. (2016). Etični kodeks članov gospodarskega grozda »zaupanja vreden«.
- Krašovec, J. (2014). Pogoji za opravljanje turistične dejavnosti na kmetiji. Združenje turističnih kmetij Slovenije. URL: <http://www.turisticnekmjetije.si/pogoji-za-opravljanje-turisticne-dejavnosti-na-kmetiji> (Dostopno 12. 04. 2017).
- Lokalna kakovost. (2017). <http://lokalna-kakovost.si/o-projektu/opis-projekta/> (Dostopno 18. 10.2017)
- Marolt, J., Gomišček, B. (2005). Management kakovosti. Kranj. Fakulteta za organizacijske vede.
- Nagarjuna, G., Kallarakal, T. K. (2014). Expectations of tourism industry on competencies and tourism education. *International Journal of Advanced Research*, 2(1), 738–745.
- Republika Slovenija, Ministrstvo za gospodarski razvoj in tehnologijo. Strategija trajnostne rasti slovenskega turizma 2017 – 2021
http://www.mgrt.gov.si/fileadmin/mgrt.gov.si/pageuploads/Strategija_turizem_koncno_5.10.2017.pdf (Dostopno 17. 10. 2017).
- Tour As Ljubljana idr. (2017). Doživetja razpršenega hotela v Sloveniji.
- Veljković, B., Colarič-Jakše, L.-M. (2014). Turizem - Teoretični aspekti evolucije krožnega gibanja. Fakulteta za turizem Univerze v Mariboru.
- Veljković, B., Colarič-Jakše, L.-M. (2014). Turizem - Uvod in osnove in teorijo turizma. Fakulteta za turizem Univerze v Mariboru.
- Zakon o kmetijstvu. 2014. URL:<http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO4716#> (Dostopno 12. 4. 2017).
- Zelena Slovenija. Portal za trajnostni razvoj. (2017). <http://www.zelenaslovenija.si/kaj-nudimo/trajnostno-svetovanje/ogljicni-odtis> (Dostopno 20. 10. 2017).



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