

GEOGRAPHICA ANNONICA

Volume 22, Issue 2 (June 2018)





UNIVERSITY OF NOVI SAD | FACULTY OF SCIENCES
DEPARTMENT OF GEOGRAPHY, TOURISM & HOTEL MANAGEMENT

INTERNATIONAL SCIENTIFIC JOURNAL

GEOGRAPHICA PANNONICA

Volume 22, Issue 2, June 2018

INTERNATIONAL SCIENTIFIC JOURNAL
GEOGRAPHICA PANNONICA
UNIVERSITY OF NOVI SAD | FACULTY OF SCIENCES | DEPARTMENT OF GEOGRAPHY, TOURISM & HOTEL MANAGEMENT

EDITOR IN CHIEF

Lazar Lazić, lazarus@uns.ac.rs

EDITORS

Jasmina Đorđević, jasminadjordjevic@live.com
Imre Nagy, nagy@rkk.hu
Milka Bubalo Živković, milka.bubalo.zivkovic@dgt.uns.ac.rs
Aleksandra Dragin, sadragin@gmail.com
Mladen Jovanović, mladjenov@gmail.com
Minuđer Mesaroš, minucher@gmail.com

TECHNICAL EDITOR

Dragan Milošević, dragan.milosevic@dgt.uns.ac.rs
Jelena Dunjić, dunjicjelena1@gmail.com

EDITORIAL BOARD

Armelle Decaulne
CNRS UMR6042 - GEOLAB
Clermont-Ferrand cedex, Paris, France &
Natural Research Centre of North-western Iceland
Saudarkrokur, Iceland

Slobodan B. Marković
University of Novi Sad
Faculty of Science
Novi Sad, Serbia

Tobias Heckmann
Department of Geography, Physical Geography
Catholic University Eichstätt-Ingolstadt
Eichstätt, Germany

János Kovács
University of Pécs
Faculty of Science
Department of Geology
Pécs, Hungary

Petru Urdea
West University of Timișoara
Department of Geography
Timișoara, Romania

Péter Domonkos

University Rovira i Virgili de Tarragona
Geography Department
Center on Climate Change (C3)
Tarragona, Spain

Tamás Weidinger

Eötvös Loránd University
Institute of Geography and Earth Science
Department of Meteorology
Budapest, Hungary

Thomas Borén

Department of Human Geography
Stockholm University
Stockholm, Sweden

Tadeusz Strykiewicz

Adam Mickiewicz University
Institute of Socio-Economic Geography and Spatial
Management
Poznań, Poland

Marko Krevs

University of Ljubljana
Faculty of Art, Department of Geography
Ljubljana, Slovenia

Horst Förster

Universität Tübingen
Geographisches Institut
Tübingen, Germany

Károly Kocsis

Geographical Research Institute
of the Hungarian Academy of Sciences
Budapest, Hungary

Konstantinos Andriotis

Cyprus University of Technology
Department of Hotel & Tourism Management
Cyprus

Jung Sung-Chae

Honam University
Department of Tourism Management
Gwangju, South Korea

ADVISORY BOARD

Ulrich Hambach

Geowissenschaften Universität Bayreuth
LS Geomorphologie
Bayreuth, Germany

Milivoj Gavrilov

University of Novi Sad
Faculty of Science
Novi Sad, Serbia

Darko Ogrin

University of Ljubljana
Faculty of Art, Department of Geography
Ljubljana, Slovenia

Nina Nikolova

"St. Kliment Ohridski" University of Sofia
Faculty of Geology and Geography
Department of Climatology, Hydrology and
Geomorphology
Sofia, Bulgaria

Anna Leonowicz

University of Zurich
Department of Geography
Geographic Information Science (GIS)
Zurich, Switzerland

Zorana Lužanin

University of Novi Sad
Faculty of Science
Novi Sad, Serbia

Carlos Ferrás Sexto

University of Santiago de Compostela
Geography Department
Santiago de Compostela, Spain

Lajos Boros

University of Szeged
Department of Economic and Social Geography
Szeged, Hungary

Elena Matei

Bucharest University
Faculty of Geography
Bucharest, Romania

Yoel Mansfeld

University of Haifa
Department of Geography and Environmental Studies
Center for Tourism, Pilgrimage & Recreation Research
Haifa, Israel

Klodiana Gorica

University of Tirana
Faculty of Economics, Department of Marketing
Tirana, Albania

Damir Demonja

Institute for Development
and International Relations, IRMO,
Zagreb, Croatia

Praveen Kumar Rai

Banaras Hindu University
Department of Geography
Varanasi, India

EDITORIAL OFFICE

Faculty of Sciences
Department of Geography, Tourism and Hotel Management
Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia
tel. +381 21 450-105
fax +381 21 459-696
Official site: www.dgt.uns.ac.rs

CONTACTS

Lazar Lazić, PhD, full professor

Department of Geography, Tourism and Hotel Management, Serbia, lazarus@uns.ac.rs

Dragan Milošević, teaching assistant

Department of Geography, Tourism and Hotel Management, Serbia, dragan.milosevic@dgt.uns.ac.rs

Official mail of the Journal

gpscijournal@dgt.uns.ac.rs

Internet portal

www.dgt.uns.ac.rs/pannonica.html

Instructions to authors

www.dgt.uns.ac.rs/pannonica/instructions.htm

PRINTED BY

www.sajnos.rs

CIRCULATION

300

Contents

***Uglješa Stankov, Tamara Jovanović, Vanja Pavluković,
Časlav Kalinić, Nataša Drakulić-Kovačević, Marija Cimbalević***

A Regional Survey of Current Practices on Destination Marketing Organizations' Facebook Pages:
the Case of EU and U.S.81
[DOI: 10.5937/22-16673](https://doi.org/10.5937/22-16673)

Igor Leščešen, Dragosav Pavić, Dragan Dolinaj

Correlation Between Discharge and Water Quality – Case Study Nišava River (Serbia) 97
[DOI: 10.5937/22-16674](https://doi.org/10.5937/22-16674)

Oleksiy Gnatiuk, Olga Kryvets

Post-Soviet Residential Neighbourhoods in Two Second-Order Ukrainian Cities:
Factors and Models of Spatial Transformation 104
[DOI: 10.5937/22-17037](https://doi.org/10.5937/22-17037)

Sanja Božić, Miroslav D. Vujičić, James Kennell, Snežana Besermenji, Milica Solarević

Sun, Sea and Shrines: Application of Analytic Hierarchy Process (AHP) to Assess
the Attractiveness of Six Cultural Heritage Sites in Phuket (Thailand) 121
[DOI: 10.5937/22-16983](https://doi.org/10.5937/22-16983)

Tomáš Pasternák, Viktor Verba

Pilgrimage Sites in Slovakia as the Base for the Formation of Ecomuseums –
Case Study of Ľutina Pilgrimage Site.....139
[DOI: 10.5937/22-16619](https://doi.org/10.5937/22-16619)

Snježana Mrdjen, Maja Bahník

Ethnic Inter-marriage in Croatia with Special Emphasis on the Czech Minority150
[DOI: 10.5937/22-16884](https://doi.org/10.5937/22-16884)

A Regional Survey of Current Practices on Destination Marketing Organizations' Facebook Pages: the Case of EU and U.S.

Uglješa Stankov^{A*}, Tamara Jovanović^A, Vanja Pavluković^A,
Časlav Kalinić^A, Nataša Drakulić-Kovačević^B, Marija Cimbalević^A

Received: November 26, 2017 | Revised: March 10, 2018 | Accepted: March 13, 2018

DOI: 10.5937/22-16673

Abstract

Constantly changing nature of social network sites creates the need for continuous process of online benchmarking for identifying practices used by other parties. Facebook as the most used SNS still plays an increasingly important role as a marketing channel for destination marketing organizations (DMO). This paper explores basic characteristics of the official DMO Facebook Pages in order to quantify and present those characteristics in a regional context on the case of two travel markets (EU countries and U.S. states). The results show inconsistent practices in the EU and the USA. When comparing those two markets most similarities in practices are present in general usage of Facebook Pages, while indicative differences are recorded in terms of Page popularity, some posts' characteristics and most evidently in users' engagement. Understanding the Facebook usage practice under the regional spotlight can help DMOs and other service providers to evaluate their activities and if necessary to harmonize it to regional usage practice.

Keywords: European Union, United States of America, destination marketing organization, social network sites, Facebook

Introduction

Facebook is currently the most used and most influential social network on the Internet and represents one of the most popular websites in Europe and worldwide (Azevedo, 2011; Wells, Link, 2014). On December 31st, 2017, Facebook had reached the number of 2.13 billion monthly active users (Facebook, 2017), that is almost half of the world's estimated online population (Internet World Stats, 2018). This arguably makes it one of the biggest media organizations in the history of humankind (Rieder, 2013). For many companies this social network is an indispensable element of the marketing activities (Stankov et al., 2016). Unlike in-

dividuals who use Profiles (web pages containing user's information) to present themselves on Facebook, companies mostly use Facebook Pages. User can interact and affiliate as a fan of a company's Page in the same way they interact with other Profiles (Cooper, 2010).

Many destination marketing organizations (for the consistency in the text, term destination marketing organizations - DMO is used to represent an organization on a country/state level which is responsible for tourism marketing) recognized growing popularity of Facebook. The focus in tourism indus-

^A University of Novi Sad, Faculty of Sciences, Department of Geography, Tourism and Hotel Management, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia

^B Kovacevic-engineering doo, Nemanjina 35, 26320 Banatski Karlovac, Serbia

* Corresponding author: ugljesa.stankov@dgt.uns.ac.rs

try and academic research has predominately moved from the question of adopting Facebook as a communication channel to the question how to use it, that is, how to find effective strategies for managing existing Facebook Pages. Even though some progress has been made since the beginning of social network sites (SNS) adoption, still a rather small number of DMOs fully understand and effectively use SNS (Hamill & Stevenson, 2012). In many cases, destination managers are not well informed about success strategies to maintain and manage their Facebook Pages (Lalicic & Gindl, 2018).

Having a bad practice of using Page can be more detrimental than not adopting this social network at all (Hays et al., 2013). Constantly changing nature of SNS makes research on this subject outdated in a very short period of time (Zouganeli et al., 2011). Therefore, DMOs should follow constant changes in the social media platforms. Monitoring of the competitor's use of Internet marketing needs to be a continuous process (Chaffey et al., 2006). This kind of benchmarking can help identify the best practices and marketing standards with the goal of improving online promotional strategies (Luna-Nevarez & Hyman, 2012). New SNS features and approaches that are accepted by customers and competitors could soon become standard elements of social media strategies and they can be expected by the new customers as well. To overcome that goal, there is a necessity for low-time consuming and for technically low demanding procedure for DMOs to overview a larger number of Facebook Pages that are part of a regional market context. The selection process of characteristics to review should be flexible and open with the respect to the dynamic nature of Facebook platform and needs of the organizations.

The discussion above justifies the purpose of this study, which is to explore the basic characteristics of the official DMO Facebook Pages on the tested travel markets to quantify those characteristics and to present them in a regional context (Stankov et al., 2017). Following the above mentioned, for the case studies of this research, two separate groups of DMO Facebook Pages were chosen: (1) EU countries and (2) U.S. states. Two regional markets are chosen to strengthen and support the results of the presented methodology by comparison of results in order to determine potentially existing common practices.

The rationale behind choosing DMOs from the EU and the USA was that those two groups are among the leading travel markets in the world. At the same time, their comprising members sometimes represent mutually inner-competing tourism markets for the same niches (Jeffries, 2001; Jordan, 2006) that underline the need for regional benchmarking. From international visitor's viewpoint, each member of the EU and the

USA can be seen as integral part of that group and can be expected to follow common standards in their practice, representing recognition, identity, etc. There are more general similarities between these two travel markets than any other markets in the world that also justify comparison, among most obvious are open borders between comprising members, the use of single currency in the U.S. and good parts of the EU; decision making process in most cases is the responsibility of members, etc. Finally, both markets have well organized DMO structures.

The results of this research will provide insights into the regional practice of using Facebook Pages in these two world's leading tourism markets. The paper stresses the importance of determination of common Facebook practice in regional settings by pointing out structural problems rather than focusing on separate country cases. In that sense, knowledge of the common Facebook usage standards can help DMOs and other service providers to evaluate and adjust their practice to collective regional brand efforts. Coordinated and collaborative marketing efforts at regional levels can help in communication of the desired destination image to tourists (Hudson, 2014). For example, efforts of the collective marketing are recognized in the USA (Hudson, 2014), where the decisions of international tourists for visitation are not typically driven just by a single destination, but they also include a wide scope of experiences, products, and services in several destinations (Oxford Economics, 2014).

Unlike other studies that usually examined national DMOs of one or of a limited sample of the countries, this paper, similarly to the study of Zouganeli and colleagues (2011), gives a broad territorial overview of the phenomenon and focuses on Facebook that is a most preferred and favoured platform by the DMOs at a global scale. For example, previous study of Hays and colleagues (2013) examined the usage of Facebook and Twitter among the DMOs of the top 10 most visited countries by international tourists and Roque and Raposo (2016) compared the use of social media applications of 13 key player DMOs across all continents. Other authors analyzed DMOs in one country such as, Yang and Wang (2015) in the case of China or Mariani and colleagues (2016) in the case of Italy. For that reason, insights of this overview could be of interest to the examined destinations and, if deemed appropriate, they can be used to transfer the good practice and experiences to other tourist destinations.

Finally, the findings of this paper could contribute to the existing research of the use of SNSs, specifically Facebook, by DMOs. Our research highlights the need for constant monitoring of SNSs managed by DMOs and adjusting to the good practices of their competitors.

Theoretical Framework

Organizational Aspects of DMOs in the EU and the USA

By the way of the establishment, organizational structure and its roles, official DMOs in the EU and the USA have some differences. The first obvious reason is that official DMOs, or national tourism organizations (NTOs), in the EU represent different individual countries that all are part of the EU, a union of states, compared to the USA where DMOs represent states that are part of a federal political system. For that reason, the internal organization of DMOs in the EU differs from internal organization of DMOs in the USA. DMOs in the EU are ranging from French DMO established in 1910 (Siguax, 1966, as cited in Pike 2004, p. 21), all the way to DMOs of the new EU members. The activities of DMOs are usually not limited just to tourism promotion but also include overall tourism administration in the countries. The EU policies and programs actively support tourism promotion, although there is no official EU DMO. DMOs (except France, Netherlands, UK, and Sweden) are full members of European Travel Commission (ETC), a non-profit organization responsible for supporting its members and promotion of Europe as a tourist destination in the third markets. However, ETC is not an institution of the EU. ETC also includes DMOs from European countries that are not members of the EU (European Travel Commission, 2014). ETC operates a website www.visiteurope.com in cooperation with European Commission in order to increase the attractiveness of Europe as a collection of sustainable and high-quality tourist destinations (European Commission, 2010).

Tourism administration in the USA is quite decentralized as policy decision making and funding is in a jurisdiction of state governments and rests largely on the private sector (Timothy, 2006). State DMOs or state tourism offices (STO) are organizations with overall responsibility for marketing states as tourist destinations. Many DMOs were established during the 1940s, but not until the 70s that most states had STOs (Pike, 2004). Until 2010, USA did not have a national-level public tourism organization, when the public-private marketing entity Brand USA started operating with the purpose of acting as the destination marketing organization for the USA. Brand USA is nation's first cooperative destination marketing organization with the focus on delivering programs and platforms to promote the USA worldwide (Brand USA, 2015). The official website of Brand USA tourism marketing program is www.visittheusa.com (previously www.DiscoverAmerica.com). Social me-

dia plays an important role in Brand USA's marketing strategy. The USA is among the first travel destinations that launched country-specific social media pages (Hudson, 2014).

SNS as Platform for Social Media Marketing of DMOs

The role and functions of SNSs for tourism operations have been widely discussed in tourism literature (Leung et al., 2013). Being one of the major trends attracting global interest of marketers (Baethge et al., 2016), SNSs offer many new resources and opportunities for improving and reengineering operations of travel and tourism organizations (Hvass & Munar, 2012; Minazzi, 2015; Zeng & Gerritsen, 2014).

In order to improve marketing effectiveness, successful DMOs need to develop marketing strategies adjusted accordingly to reflect the new realities represented in overflow of new SNSs (Shao et al., 2012; Yang & Wang, 2015). The role of SNSs to DMOs is especially vital for inbound marketing and content marketing strategies (UNWTO, ETC, 2014). Furthermore, SNS can be used by DMO to disseminate word of mouth electronically. In that context, Tham and colleagues (2013) suggest that DMOs with the use of SNSs could extend opportunities for communicating travellers' experiences and also they could engage them more and involve industry partners to build desirable destination images.

In June and July 2009, Stankov and colleagues (2010) identified that about half of DMOs, members of European Travel Commission (ETC) did not have an official presence on Facebook. Among those who had, almost one-third had Facebook Pages, and almost a fifth of them had a Facebook Group. One DMO even used Personal Profile as official Facebook presentation. Nowadays, the situation has changed and all DMOs in the EU have official Facebook Page. The study of Yoo and Kim (2013) found that all of 50 state tourism websites in the USA integrated at least one type of social media and all of them provide official Facebook page (Milwood et al., 2013). Recent studies found out that social media adopting capacities of DMOs differ significantly (Roque & Raposo, 2016; Shao et al., 2012; Yang & Wang, 2015). Different social media strategy approaches were also found in the international analysis of most visited countries by Hays et al. (2013). The research of Zeng and Gerritsen (2014) also confirms that there are differences between countries in social media usage. The study of Milwood et al. (2013) found that the USA widely embraces most popular social media whereas Swiss DMOs are quite cautious about

social media adoption. Similar practices will probably continue in the future, as social media approaches are not only driven by organizational structure and overall DMO competencies but also by dynamic and innovative nature of social media itself.

Facebook page as a marketing platform and post characteristics

Every Facebook Page has a unique structure to start from, in fact that is "a blank paper" that needs to be filled out by the given company. Based on the review of the contemporary studies on the business usage of Facebook (e.g. Cvijikj & Michahelles, 2013; Mariani et al., 2016; Hays et al., 2013; Hsu, 2012; Kwok & Yu, 2013; Munar & Jacobsen, 2014; Roque & Raposo, 2016; Sabate et al., 2014; Zouganeli et al., 2011) and advances in Facebook usability, in the following text, we will explain some basic characteristics of Pages and posts that DMO should consider when analyzing competitors practices. These characteristics are not conclusive, but are offered to spark consideration and to add to the constantly open debate which is necessary concerning the dynamic nature of this social medium.

When visiting a Page, if the user has not landed from an official destination website, there is always a question of Page authenticity. Simple Google search or search using Facebook internal search engine will often results in various unofficial country Pages (Dwivedi et al., 2011). Therefore, complete authenticity can be guaranteed by Facebook when Page is manually verified with assignation of special verification sign next to Page's title (Facebook Developers, 2015b).

Facebook Pages can be enriched by using Page Tabs. Facebook Page is actually a separate web page containing different content. Besides standard Facebook Tabs, such as „About“, „Photos“, „Videos“, etc) businesses can make custom Tabs containing different types of apps, welcoming messages, polls, showcase videos, reservation forms, etc. Generally, custom Facebook Tabs can create a much richer user experience and add value to the standard Facebook Page (Pitre, 2015). If business pays attention merely to the main Page News Feed (Page Wall) that can be considered as neglecting and limiting the full potential of this SNS for spreading of the information and collaboration with the users (Hsu, 2012; Zouganeli et al., 2011).

Facebook, as a democratic SNS medium, provides options for user-generated content (UGC), posting and expressing opinions on the official Pages. Even

though organizations should promote consumer participation (Belanche et al., 2010), an open expression of customer dissatisfaction can be an aspect of concern (Sarkar et al., 2014). For some type of Page categories, user ratings and reviews section can be enabled. Looking for other consumers' reviews is often practiced travel related activity of Internet users (Gretzel et al., 2007). A Page's star rating is the average of all public star ratings (star ratings that are shared publicly) that the Page has received (Facebook, 2016).

In digital marketing, "call to action" words are often used as a motivation to take a desirable action when visiting websites (Eisenberg & Eisenberg, 2006). "Call-to-action" feature on Facebook Page is a button at the top of the page that links to any destination on or off Facebook and can help Pages to drive business objectives. Currently there are seven call to action options available: book now, contact us, use app, play game, shop now, sign up and watch video (Facebook for Business, 2014).

There is no general agreement on posting frequency of travel related content. Frequent posting provides new content, keeps members engaged and allows greater interaction with the fans (Zarrella & Zarrella, 2010). However, high posting frequency does not necessarily guarantee high engagement rates. For example, Australian Tourism Commission advises travel industry to be cautious with the number of posts, putting attention to well-planning of posts, not on quantity (South Australian Tourism Commission, 2015). New study of Mariani and colleagues (2016) for the regional DMOs in Italy found that high post frequency has a negative impact on user's engagement.

Facebook users' personal news feed (i.e. Walls) are constantly filled with content coming from multiple sources (other users' profiles, Facebook Pages liked by users, sponsored content). On average, only about 17% of a business Page's post shows up on fans' walls (Hubspot, 2015). Facebook uses complex ranking algorithm based on machine learning to select and rank the content that shows up in the user's news feed.

Before every content post to Facebook Page, a DMO usually has to choose: what it will post (link, photo, video, status or event), the time of day when content should be posted and the day of week to post (Linnell, 2012). One of the determinants of internet advertising effectiveness can be the length of the message (Baltas, 2003). According to Baltas (2003), lengthy messages that involves paying close attention, can reduce direct response to it.

Methodology

Sample

In this research, we have focused our attention to official international DMO Facebook Pages of countries, that is, states in the EU and the USA. According to Hays and colleagues (2013), there are different approaches in managing Facebook Pages by DMOs – from those managed by the main office, in one language or multilingual, to those managed by the regional offices in different languages. For the purpose of this research, Pages from the EU that are international/English version of official country DMOs' websites were analyzed. Most of the Facebook Pages are managed by the main DMO's office in the country of origin, primarily in English or using bilingual posts, with few exceptions managed by the UK or the USA regional offices. In the case of the USA, all Facebook Pages are found at the official state DMOs' websites, managed by main office in English. Total data collection included 27 Facebook pages from the EU and 50 from the USA.

Data collection

For the purpose of the data collection for this research, we focused on a manual and automated approach. The data for Pages were collected manually and using the customized requests, based on the Graph API Explorer, a low-level HTTP-based API for reading and writing the Facebook's Social Graph (Facebook Developers, 2015a). Facebook's Social Graph is a graph data structure that represents social interaction and consists of nodes and connections between the nodes (Russell, 2013). The authors used Graph API Explorer v2.4 to query information, such as the number of users who like the Page, Page fans' countries, whether the page is verified, etc. For those information when automated approach was restricted by Facebook privacy policy (such as number of tabs and applications, review values, etc.), authors used manual data gathering.

The data for Page posts was gathered automatically using page data module of Netvizz v1.25 tool. This Facebook tool extracts data from different sections of the Facebook Groups and Pages (Rieder, 2013). Extracted data include information such as: Facebook's post classification, text of the post, picture URL (if a picture is attached to the post), publishing date and time, number of likes, comments, shares, etc. Only the content posted by DMO was collected.

The authors gathered information on all 3401 published posts (976 from the EU and 2452 from the USA) over one month, from April 1 to April 30, 2015. The actual time of data gathering was from June 3 to 29.

This was necessary, in order to see how fans interacted with the post. This time span between actual posting time and time of data gathering is believed to be long enough for the purpose of this study. According to Sabate et al. (2014), a content post on the net for more than a month is not likely to receive more significant interaction, especially in the case of Facebook that is extremely dynamic SNS. In addition, with the use of Facebook Graph API aggregated location data about the people who like Page are obtained and sorted by top 45 countries.

Variables

Based on the literature review above and capabilities of Facebook API the information gathered for each Facebook Page is provided in Table 1. Information about Pages is grouped into general information about usage with main page elements used and page popularity performance.

Table 1. Gathered information for Page characteristics

General usage
<ul style="list-style-type: none"> • Year when DMO joined Facebook • Page verified by Facebook • Number and type of page Tabs • Presence of Facebook review options • Availability of posting for page fans • Presence of „call to action" button and type of action • Frequency of DMO posting
Page popularity
<ul style="list-style-type: none"> • Number of Page likes/fans • Page fans continent • Average score and estimated number of reviewers obtained by Facebook review option

Authors arranged Facebook post metrics into two main groups that can be statistically compared. First group included basic metrics of users' engagement: „Likes" (indicating interest in an existing post), „Comments" about the post content, „Shares" of the content on personal Profile or other Pages or Groups and posting content on the Page's wall (depending on the communication policy set by the Page owner) (Linnell, 2012; Sabate et al., 2014; Treadaway & Smith, 2012). For the purpose of this research, we included additional variables – comment replies (number of replies to the existing comments to posts) and comment likes (number of likes on comments). Second group is content characteristics, including length of post, time of posting, day in the week when content is posted and type of post (link, photo, video, status or event).

Table 2. The information (variables) gathered for post's characteristics and users' engagement

Users' engagements	Description
• Likes	Number of likes a post received or a user made
• Comments	Number of base level comments (in threaded conversations)
• Comment replies	Number of reply level comments (in threaded conversations)
• Comment likes	Number of likes on comments
• Shares	Number of shares
Post's characteristics	Description
• Length of post	The number of characters in the post, including the characters of links
• Time of posting	Coordinated Universal Time (UTC)
• Day of posting	<i>self-explanatory</i>
• Type of post	Link, photo, video, status or event

Results

General Page usage

Average DMO Page in the USA is 5.88 years old, almost one year older than European ones. First Pages were created in 2008 (13 states in the US, but only two in the EU). In 2009, 84% of U.S. DMOs have created their Facebook pages while only 43% were created by EU DMOs. At the moment of analysis only Latvia did not have English version of Facebook Page managed by official DMO.

Pages in the EU are verified by Facebook in 40.74% cases. The verification process depends on Facebook and the number of fans clearly plays an important role, as among 10 Pages with the highest number of fans, 7 are verified. None of the 10 lowest ranking Pages, by the number of fans, were verified by Facebook. In the USA 30% of Pages were verified: 6 of the top 10 Pages by the number of fans, and 2 from the 10 lowest ranking Pages.

Table 3. Number of newly created Pages by year and cumulative percentage of total countries/states in the EU and the USA

Year	EU		USA	
	New Page	Cumulative % of total countries (28)	New Page	Cumulative % of total states (50)
2008	2	7.14	13	26,00
2009	10	42.86	29	84,00
2010	5	60.71	3	90,00
2011	6	82.14	3	96,00
2012	2	89.29	0	96,00
2013	1	92.86	0	96,00
2014	1	96.43	2	100,00
Total Pages	27	-	50	-

Average number of all tabs used in the EU is 8.37. In the EU 55.55% of the Pages had a tab containing app of some other popular social network site. Among those apps, four SNSs are among the most frequent - Pinterest (24%), Instagram, (24%), Twitter (17.78%) and YouTube (26.67%). Other social networks (Google plus, Foursquare, Flickr, Tumblr, etc.) are less frequently used as tab apps (EU 6.67%). Tabs with other type of apps (links to polls, contact forms, games, travel planners, brochures, galleries, etc.) are present on 74.07% of European Pages.

Average number of all tabs used in the USA is 9.16. For this travel market, 76% Pages had a tab containing app of some popular social network site, which is higher when compared to EU. Among those apps, as in the case of EU, the same four SNSs are among the most frequent - Pinterest (29.70%), Instagram, (28.71%), Twitter (24.75%) and YouTube (9.9%). Other social networks are less used as tab apps (6.94%). Tabs with other type of apps are present on 80% of American Pages.

Only 22.22% in the EU and 26% in the USA had a review option enabled on Page. Interestingly, in the USA, every other Page with less than 100.000 fans has this option enabled, while this trend is not recorded in the EU.

In most cases, users can post comments to Page's news feed. That option is allowed on 85.2% of European and on 95.6% of American Pages. In both markets, Wall posts often have to be approved by Page administrator in order to be visible to Page fans.

"Call-to-action" button is used on 48.15% of the Pages in the EU and on 58% in the USA. Table 4 shows proportion of available „call-to-action“ buttons used in the both travel markets. "Sign up" is the most frequent "call-to-action", showing the intention of DMOs to continue the interaction with the Fans.

Table 4. Presence and type of „call-to-action“ buttons used

"Call-to-action" button	Travel market	
	EU (%)	USA (%)
No call for actions	51.85	42.00
Book Now	3.70	6.00
Contact Us	7.41	8.00
Sign Up	29.63	32.00
Use App	3.70	0.00
Watch Video	3.70	12.00
Total	100.00	100.00

Average number of monthly posts per country in the EU was 36, that is on average 1.20 times a day. DMO posts in the USA are more frequent as they have 49 posts per state, on average 1.63 posts per day.

Page popularity

In the case of EU, the number of Page fans varies from a very small number (below a 1000 fans) to large fan communities (over 1 million fans) (see Figure 1).

In the USA none of the DMOs has less than 10 thousand fans, two Pages exceed 1 million fans, and one Page has the highest rank with 2 million fan base (see Figure 2).

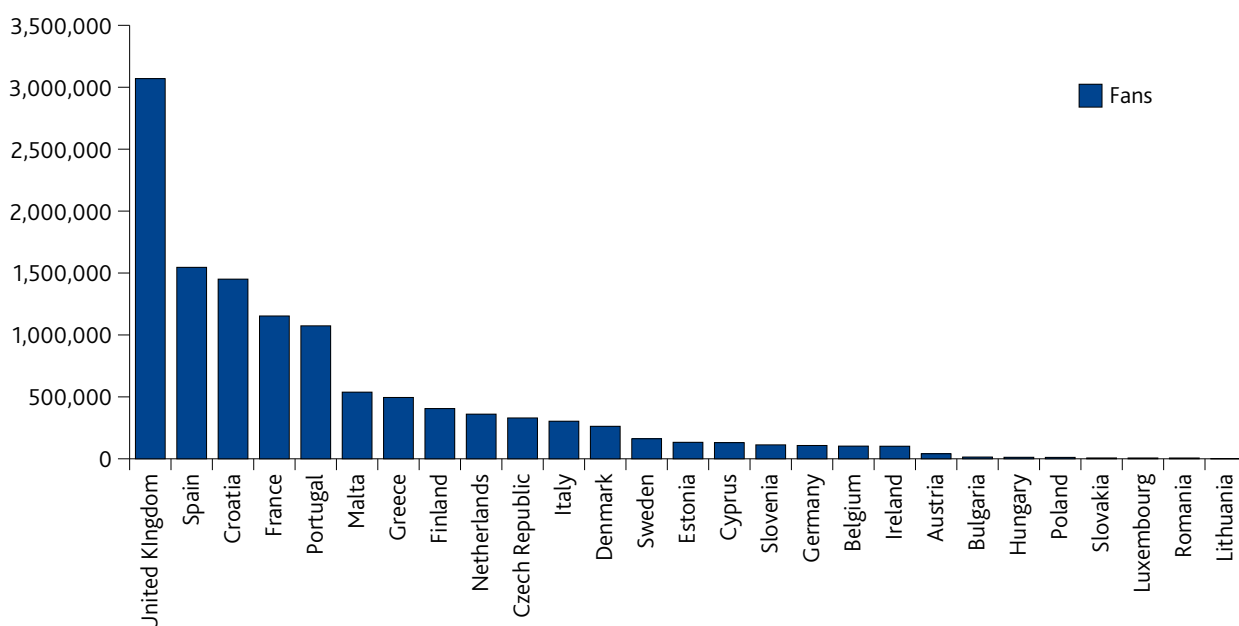


Figure 1. Number of EU DMO Facebook Page fans in August 2015

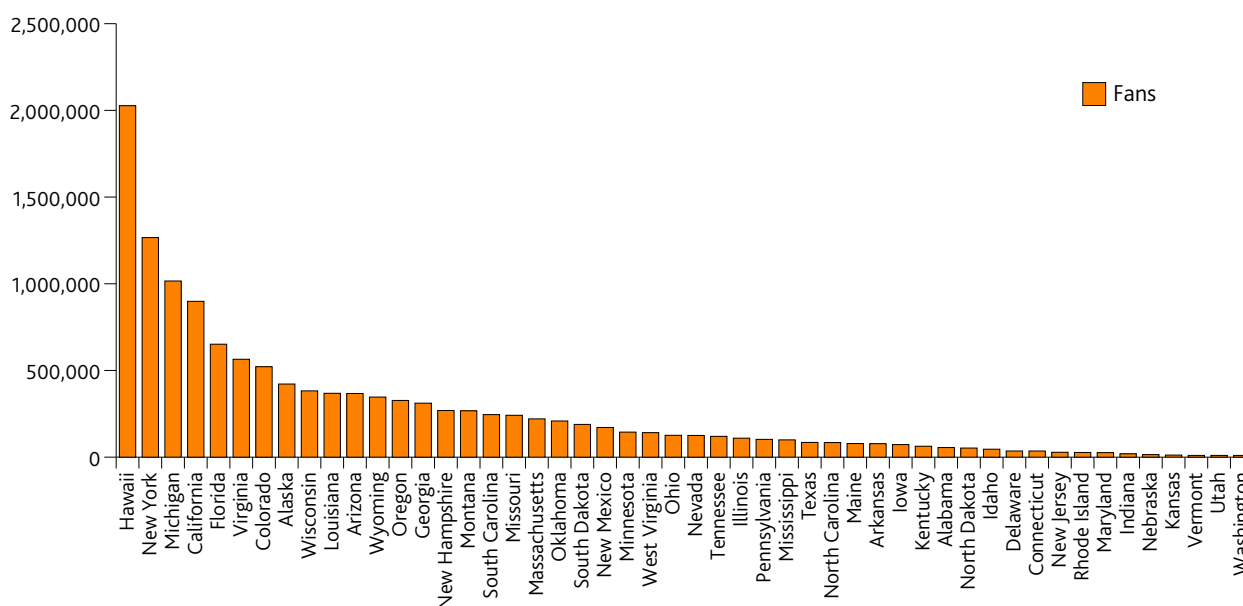


Figure 2. Number of U.S. DMO Facebook Page fans in August 2015

Total number of official DMO Page fans reached 11.9 million in the EU and 13.1 million in the USA. However, average number of fans per country in Europe is much higher than in the USA, 442,214.59 and 261,937.42 respectively.

Distribution of Page fans by their origin continent is plotted on the map in Figure 3. In general, EU Pages have good geographical distribution of people liking their pages when compared to the USA. While in the USA, North America is the dominant continent of origin of Page fans, in the EU, besides Europe, many fans are from North America, Asia and South America. Furthermore, among all fans recorded for the USA, domestic fans make 90.30%, and just 1.3% of fans are from other parts of North America. On the other hand, in the EU, from total number of fans, 44.53% are domestic fans (from EU countries) and 2.83% are fans from other countries in Europe.

Figure 4 shows a detailed insight into ratios of Page fans by their origin for EU countries. Interestingly, in most of the new member states, dominant group of fans are fans from the European continent. On other hand, Germany (91%), Netherlands (84%) and United Kingdom (78%) have the highest percentage of fans from other continents.

Figure 5 shows a detailed insight into ratios of Page fans by their origin for USA. It is clearly evident that, significant portion of fans from other continents are present in only four states - New York (81%), Nevada (54%), South Dakota (43%) and Vermont (30%). In all other states there are less than 10% of fans from the other continents.

As mentioned above, about every fifth Page in the EU and every fourth in the USA has review option enabled. Average review scores are: in the EU 4.63 (average approximate number of reviewers is 3943.8) and the USA 4.08 (average approximate number of reviewers is 1439.23).

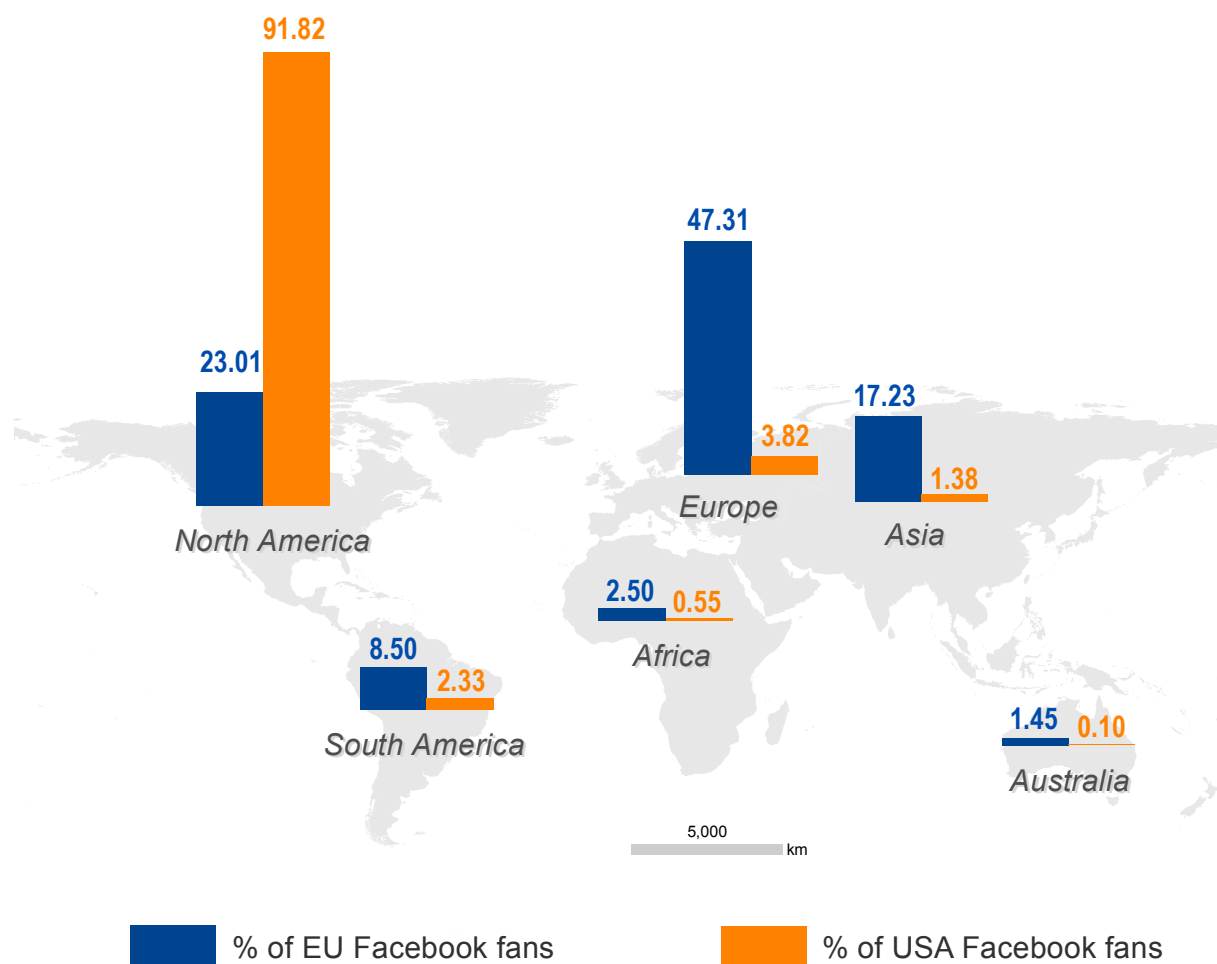


Figure 3. Distribution of Page fans by the continents of their origin (in percentages)

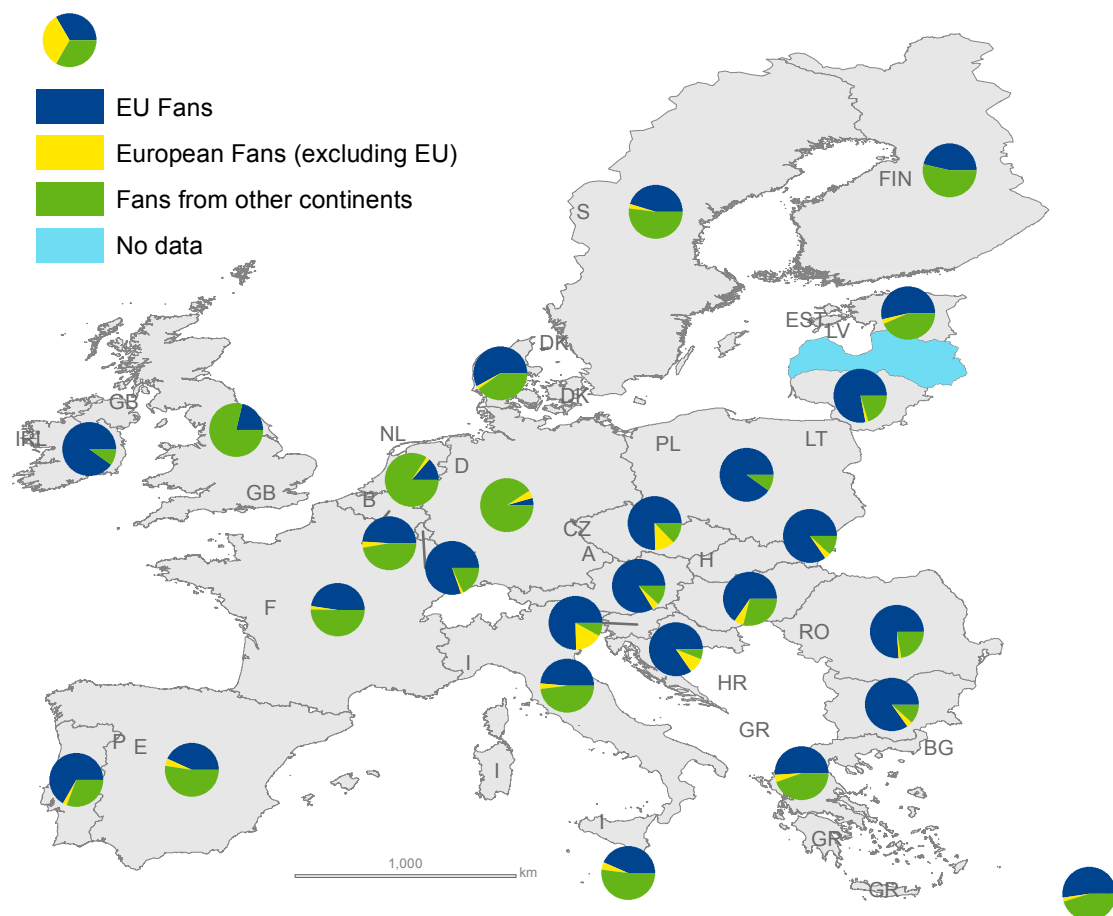


Figure 4. Distribution of EU DMO Page fans by the continents of their origin (in percentages)

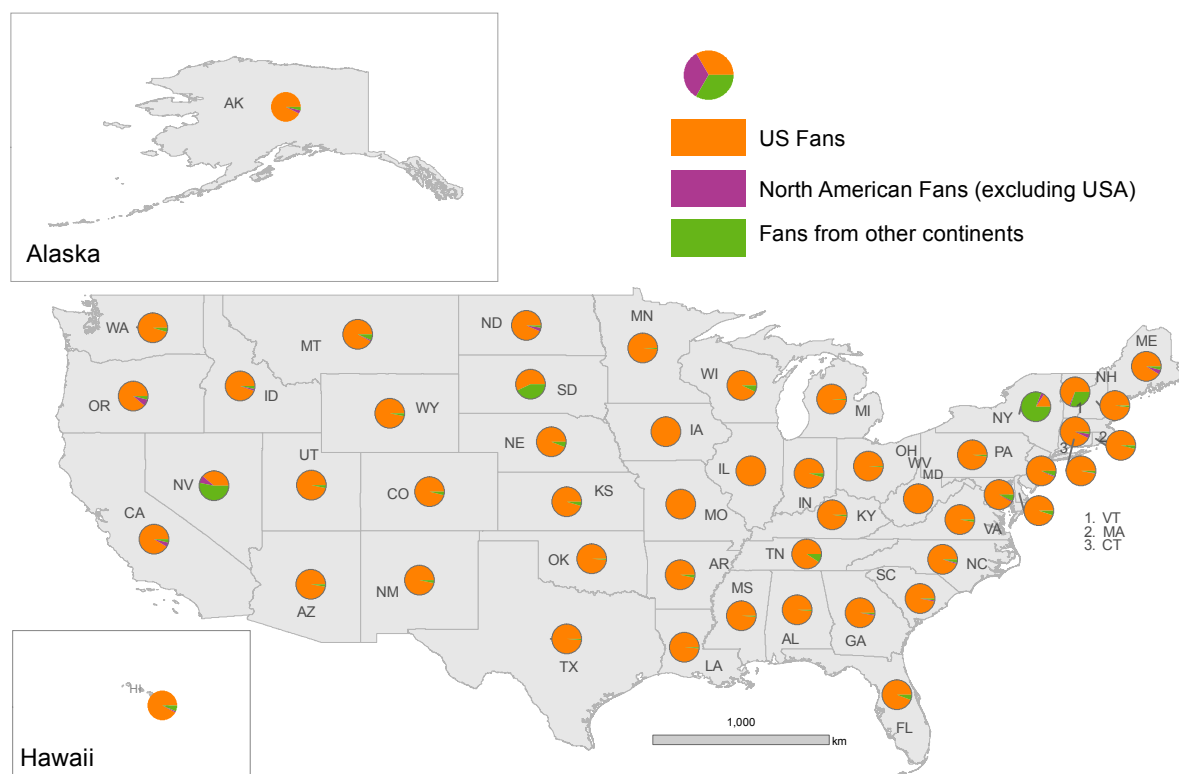


Figure 5. Distribution of U.S. DMO Page fans by the continents of their origin (in percentages)

Users' engagement and post characteristics

The results for the set of engagement variables are shown in Table 5. In both markets the most prevalent way of engagement is "like". „Likes“ are followed by „shares“ and „comments“.

The results of independent sample t-test, as shown in Table 5 indicate that there are significant mean differences for all five variables of engagement in the EU and the USA. There are about 5 times more likes, comments on posts, comments replies in the USA than in the EU, and more than 4 times more comment likes and shares.

Table 5. A comparison of engagement factors on EU and U.S. DMOs Page posts (N- Number of posts; M- Mean; SD – Standard deviation)

Engagement factor	EU				USA				t	p
	N	Total	M	SD	N	Total	M	SD		
Likes	976	545573	558.99	1112.00	2425	2705993	1115.87	3260.96	7.41	0.00
Comments base	976	12902	13.22	32.920	2425	63962	26.38	68.27	7.55	0.00
Comment replies	976	1371	1.40	3.734	2425	6992	2.88	9.071	6.73	0.00
Comment likes	976	11110	11.38	27.97	2425	48284	19.91	68.60	5.15	0.00
Shares	976	96696	99.07	306.99	2425	439478	181.23	469.69	6.00	0.00

To specify the differences and similarities in posts characteristics, t-test was used for interval variables – length of posts and hour of posting and Chi-square was used for other nominal variables – type of post and day of posting.

In the EU, the average length of post is 204.22 characters while in the U.S. the average post length is 155.92. The results of independent-samples t-test for the length of post showed significant difference in scores for the EU posts ($M = 204.22$, $SD = 163.72$) and the USA posts ($M = 155.92$, $SD = 101.60$; $t(1288.14) = 8.58$, $p = 0.00$, two-tailed). The magnitude of the difference in means (mean difference = 48.30, 95%, CI: 37.252 to 59.349) was moderate (eta squared = 0.02).

The relationship between post length and users' engagement (as measured by total number of likes, comments and shares) was investigated using Pearson product-moment correlation coefficient. In the EU, there was a positive correlation between the two variables (see Table 6) while in the USA there is no significant correlation, except in case of weak correlation between post lengths and number of comments. Spe-

cifically, EU page users seem to prefer to read longer posts unlike USA page users. This finding is certainly interesting and might be a product of cultural differences or some confounding factor such as the content or the quality of the given post. Nevertheless this requires further research in order to determine possible causes for this specificity of two researched destinations.

The time of posting also showed significant difference in scores for the EU posts ($M = 12:03$, $SD = 4:28$) and the USA posts ($M = 12:36$, $SD = 7:37$; $t(2958.40) = 2.61$, $p = 0.01$, two-tailed). The magnitude of the dif-

ference in the means (mean difference = -0:33, 95%, CI: -0:57 to -0:08) was very small (eta squared = 0.02). However, as presented time of posting was only available in UTC standard the interpretative value of this variable is very limited.

During working days, posting is relatively equally distributed, with the peaks on Wednesday and Thursday (see Figure 6). Wednesday is the peak for the EU when the most posting is done and for the USA that is on Thursday. Lowest percentage of posts for both regions is recorded on Sunday. A Chi-square test for independence indicated no significant association between day of posting and travel markets, $\chi^2(6, n = 3401) = 10.20$, $p = .12$.

Table 7 shows average weekly users' engagement. Posts receive most likes on Saturdays in both markets. Lowest number of likes is associated with highest number of posts, Wednesdays for the EU, and Thursdays for the USA. For comments and shares that require higher levels of engagement different patterns are recorded, as shown in Table 7.

Table 6. Pearson Product-moment Correlations between Post length and users' engagement factors

Variable	Travel markets	Likes	Comments	Shares
Post length	EU	0.245**	0.195**	0.296**
	USA	-0.029	0.051*	0.007

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

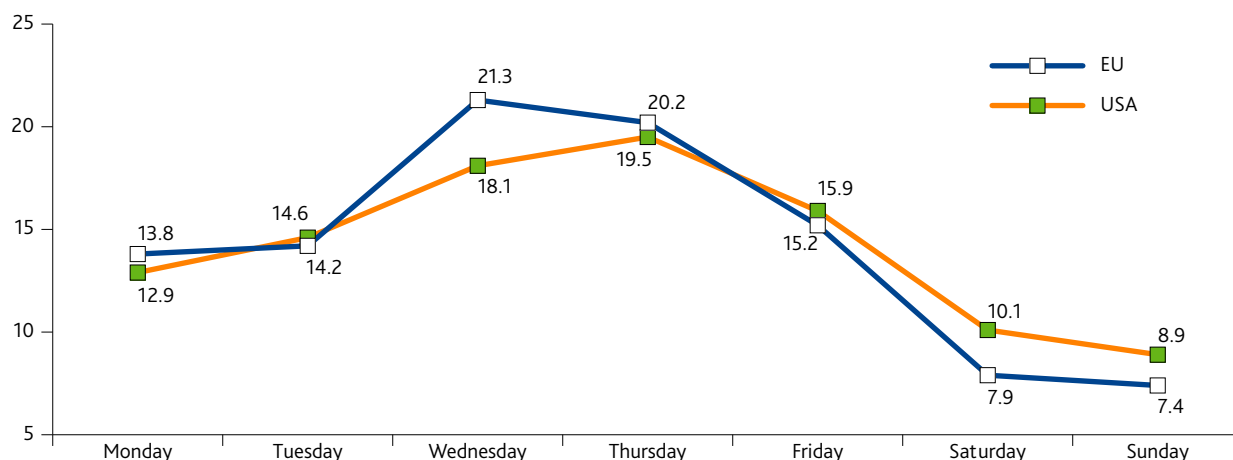


Figure 6. Average weekly distribution of Page posts by DMOs in the EU and the USA (in percentages)

Table 7. Average weekly users' engagement factors

Day	Likes		Comments		Shares	
	EU	USA	EU	USA	EU	USA
Monday	625.79	934.94	13.05	21.95	104.70	154.33
Tuesday	570.24	1097.97	17.03	29.17	145.61	203.97
Wednesday	393.95	1183.80	10.48	25.90	66.45	178.01
Thursday	596.64	880.37	15.50	22.79	108.75	168.42
Friday	545.72	1105.95	12.15	25.15	88.65	166.34
Saturday	789.75	1632.61	13.32	36.51	108.19	226.00
Sunday	566.25	1212.53	9.96	27.64	78.13	192.83

As shown in Table 8 photos are dominant type of posts as more than half of all posts are of this type. About one third of posts contain links. Lower then 10% are videos, and lower than 1% are events and statuses.

Table 8. Facebook page posts by type posted by DMOs

Type	Travel market		Total (%)
	EU (%)	USA (%)	
photo	57.2	55.8	56.3
video	9.8	5.9	7.0
link	31.7	37.3	35.7
status	0.6	0.8	0.7
event	0.7	0.2	0.3
Total	100.0	100.0	100.0

Chi-square test indicates a significant association between type of post and region of posting, $\chi^2 (4, n = 3401) = 28.67, p = .00$. However, effect size is small as Cramer's $V = 0.9$. EU DMO Pages use slightly more photo and video posts, compared to the USA. However, Pages in the USA use more link posts than in EU.

In terms of users' engagement, photos on average receive most likes, comments and shares in both markets. In general in the EU videos are more engaging then links. Photos and links receive almost the same number of likes, but number of comments and shares are higher for videos. In the USA links are more engaging, as they have more likes and shares. Statuses and events are the least engaging (see Table 9).

Table 9. Average users' engagement factors by the type of content

Type	Likes		Comments		Shares	
	EU	USA	EU	USA	EU	USA
photo	759.44	1483.55	17.86	32.71	136.41	186.84
video	299.76	566.04	10.94	20.38	54.96	128.27
link	299.67	680.35	5.98	18.41	49.51	185.71
status	6.83	29.79	4.00	5.32	0.33	4.58
event	55.43	8.75	2.00	0.00	0.00	0.00

Discussion and Conclusions

The results of this overview study present current practices and highlight regional similarities and differences in DMO Facebook Page usage in the EU and the U.S. markets.

First and foremost, this study offers a theoretical contribution, as it outlines a regional approach to the analysis of Facebook Pages in the context of travel markets with same geographical and organizational framework of DMOs.

The approach is based on meaningful and open selection of variables for the comparison, with technically low-demanding procedures of data gathering using manual and automatic data mining options freely provided by Facebook. As noted by Mich and Baggio (2015), the implementation of tools for the automatic extraction of values of quantitative variables of a Facebook Page is needed in case of large number of assets to compare. This paper also tries to facilitate the adoption of Facebook metrics by other tourism researchers and practitioner in order to find applicable insights from this SNS.

Practical implications of this overview study are diverse, as examined DMOs can use presented ideas to locate their competitive edge against the current practice of using Facebook Pages within the same geographical travel market and additional regional market for comparison. The results of the study show inconsistent practices in the EU and the USA. By adopting current regional standards, DMOs and other service providers that are lagging behind can add value to their Facebook marketing programs that leverage regional brands.

In case of the comparison of the EU and the U.S. markets this survey shows some interesting findings that can reveal some characteristics of regional markets and indicative differences.

First, there are more similarities than differences in term of general usage of Pages, such as Tab usage, presence of reviews, posting availability and Page verifications. Comparing to some preliminary studies on Facebook Page adoption by EU DMOs that showed slow and partial adoption of full potential of this SNS (Stankov et al., 2010; Zouganeli et al., 2011), the results of this survey shows improvement of DMOs Facebook characteristics.

Second, DMOs in the USA were more agile in adopting Facebook Pages and they are also presently more active, adding more daily posts than EU DMOs. Still, higher number of daily posts does not have to be a priority of the national DMOs (Mariani et al., 2017). For example, this study found out that United Kingdom has the record fan base in the EU but have lowest levels

of post frequency. Frequency of posting on Facebook can be important for some company's brands, where too large or too small number of posts can drive away fans. Gretzel and Dinhopl (2014) study found that this is not the case for travel destination. Relationship of travellers on SNS with destinations is at a deeper level of emotional attachment and social media activities therefore have a lesser effect (Gretzel & Dinhopl, 2014; Lalicic et al., 2018). This research also confirms the finding of the Hays et al. (2013) study that the date of joining to Facebook does not necessarily correspond with the number of Facebook fans. Averagely older U.S. Pages attracted slightly more of total fans for all 50 states than 27 Pages of EU countries. Still, number of fans does not necessarily mean higher engagement, that is, users may like Page of one country and become the fan, but they might never engage with Page's content.

Third, although European countries on average have a larger number of fans per country, differences between numbers of fans in the USA are lower. That makes a more balanced spatial distribution of fans in U.S. market. On the other hand, this study revealed interesting demographic difference in fans' characteristics. Fans of European DMO Pages are much better spatially distributed by continents of their origin. Most of the fans of U.S. DMO Pages are actually the citizens of the USA. This corresponds to the fact that domestic tourism significantly dominates the overall tourism market in the USA (Travel and Tourism Intelligence Center, 2014). In that context, the reason for New York and Nevada to be outliers by the number of international fans can be due to the global recognition of New York City and Las Vegas. Similarly, low international recognition of the new EU member states could lead to the dominance of European fans. As suggested by Luna-Nevarez and Hyman (2012) these interesting results imply the need for an evaluation of demographic and psychographic information provided by SNS in order to better target visitors.

Finally, DMOs have to pay attention to the characteristics of posts and management of posting. For Brand USA one of the key indicators to measure social media success, besides of total number of fans is the percentage of engagement (Hudson, 2014) as tourist involvement has a positive impact on overall destination image (Molinillo et al., 2018). This study showed that user's engagement on posts is different and statistically significant for these two tourism markets. On average, posts by U.S. DMOs attract more user's likes, comments and shares which could be because U.S. DMOs fans are generally from the USA and are therefore more prone to participate and comment

(being that English is their mother tongue). Average weekly distribution of posts is not significantly different between examined two tourism markets and corresponds to global post frequency by days of the week, that is, posts are more frequent during workdays than weekends, with small peaks on Wednesdays and Thursdays (Lee, 2014). However, this practice does not result in higher level of average likes. On the other hand, on Saturdays posts receive most likes indicating that less posts and more free time of fans can boost engagement. The sample of DMOs examined in this study shows that statistically significant differences between tourism markets are present in the length of posts and type of posts. EU DMOs have longer posts than U.S. DMOs. For the EU longer posts positively correlate with number of likes, but that is not the case in the USA. It would be interesting to examine in future research the reason for this by analyzing the linguistic characteristics (such as semantics and syntax) of these posts. Similarly, recent study of Italian DMOs suggests that moderately long posts (around 200 characters) have a statistically-significant positive impact on users' engagement (Mariani et al., 2016). Pictures and videos are predominantly used as means of communication with fans for both destinations since they are the easiest to process and are the most evident and concrete marketing tools. But, even though differences are rather small, EU DMOs post more pictures, videos and events when compared to U.S. DMOs, while they post more links and statuses than EU DMOs. Interestingly, links are more engaging in the USA than in the EU.

There are some important limitations of this study. Like in any other similar endeavours, this study only measured post characteristics for the one month period. Therefore, the results could be biased, affected by busy or low seasons or other vacation periods. Particularly, the overview period of this study included the Easter Sunday. As Facebook Graph API provides large amount of data, the analytical power of big data

analysis could be used for this kind of regional, cross-national data analyses. The approach of this study did not include content analysis of the post messages that with the use of different analytical tools can very useful in revealing valuable insights to motives of users' engagement and perception towards brands (Cervellon & Galipienzo, 2015). For example in case of users' engagement, Kwok and Yu's (2015) content analysis of Facebook messages posted by hospitality companies reveals that conversational messages receive more users' „Likes“ than sales/marketing messages. More precisely, the study of Zouganeli and colleagues (2011) showed that multimedia posts receive mostly „likes“ and conversational posts receive more „Comments“. The study of Tilly and colleagues (2015) showed that tourism-related social media can be used as a source of representative spatiotemporal macro-level tourism information. However, as it is clearly evident from the results of this study, analysis of separate country cases would require different approaches that are out of the scope of this study and many of which are out of the scope of social media sphere.

The results raise some questions for the future scientific and business research. For example, domestic fans are dominant in most of the countries and it would be interesting to find whether motivation for liking is purely travel-related or are there some patriotic or other reasons involved? (Bodroža & Jovanović, 2016; Ben-Shaul & Reichel, 2017). Could the determined Facebook Page practice be effective in other markets, having in mind different market characteristics and organizational structures of DMOs? Further, user's engagement could be under the influence of different factors in terms of characteristics of the content communicated, as discussed by other authors (Cvijikj & Michahelles, 2013; Sabate et al., 2014, Božić & Jovanović, 2017). It would be interesting to find if there are some seasonal differences in user's activity towards tourism content or in the activities of DMOs in different markets.

References

- Azevedo, H. (2011). Facebook Continues Strong Lead Across Europe. Comscore. <http://www.comscore.com/Insights/Data-Mine/Facebook-Continues-Strong-Lead-Across-Europe> (10.10. 2015).
- Baltas, G. (2003). Determinants of Internet Advertising Effectiveness: An Empirical Study. *International Journal of Market Research*, 45(4), 1-9. doi:10.1177/147078530304500403
- Baethge, C., Klier, J., & Klier, M. (2016). Social commerce—state-of-the-art and future research directions. *Electronic Markets*, 26(3), 269-290. doi:10.1007/s12525-016-0225-2
- Belanche, D., Casalo, L.V., Flavian, C., & Guinaliu, M. (2010). Online social networks in the travel sector. *International Journal of Electronic Marketing and Retailing*, 3(4), 321-340. doi:10.1504/ijemr.2010.036880
- Ben-Shaul, M., & Reichel, A. (2018). Motives, Modes of Participation, and Loyalty Intentions of Facebook Tourism Brand Page Con-

- sumers. *Journal of Travel Research*, 57(4), 453-471. doi:10.1177/0047287517704087
- Bodroža, B., & Jovanović, T. (2016). Validation of the new scale for measuring behaviors of Facebook users: Psycho-Social Aspects of Facebook Use (PSA-FU). *Computers in Human Behavior*, 54, 425-435. doi:10.1016/j.chb.2015.07.032
- Božić, S., & Jovanović, T. (2017). Gender, Age, and Education Effects on Travel-Related Behavior: Reports on Facebook. In Decrop Alain & A.G. Woodside (Eds.), *Consumer Behavior in Tourism and Hospitality Research*. (pp. 59-80). Emerald Publishing Limited. doi:10.1108/s1871-317320170000013004
- Brand USA. (2015). *Our Role in the Travel Industry*. Available online: <http://www.thebrandusa.com/About-Brand-USA/Our%20Role%20in%20the%20Travel%20Industry#sthash.Pgo5AUpc.dpuf> (10.04.2015)..
- Cervellon, M., & Galipienzo, D. (2015). Facebook Pages Content, Does it Really Matter? Consumers' Responses to Luxury Hotel Posts with Emotional and Informational Content. *Journal of Travel & Tourism Marketing*, 32(4), 428-437. doi:10.1080/10548408.2014.904260
- Chaffey, D., Ellis-Chadwick, F., Mayer, R., & Johnston, K. (2006). *Internet marketing: Strategy, implementation and practice*. Harlow: Pearson Education.
- Cooper, A. (2010). Facebook. PB works. Available online: <http://drcoop.pbworks.com/w/page/18221293/Facebook> (9.03. 2015).
- Cvijikj-Pletikosa, I., & Michahelles, F. (2013). Online engagement factors on Facebook brand pages. *Social Network Analysis and Mining*, 3(4), 843-861. doi:10.1007/s13278-013-0098-8
- Dwivedi, M., Yadav, A., & Venkatesh, U. (2011). Use of Social Media by National Tourism Organizations: A Preliminary Analysis. *Information Technology & Tourism*, 13(2), 93-103. doi:10.3727/109830512X13258778487353
- Eisenberg, B., & Eisenberg, J. (2006). *Call to Action: Secret Formulas to Improve Online Results*. Nashville: Thomas Nelson.
- European Commission. (2010). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the committee of the regions - Europe, the world's, No 1 tourist destination - a new political framework for tourism in Europe*. Available online: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52010DC0352&from=EN> (10.03.2015).
- European Travel Commission. (2014). *A message from the President of the European Travel Commission*. Available online: http://www.etc-corporate.org/bulletin/7?page=download-bulletin&bulletin_id=7 (10.03.2015).
- Facebook Developers. (2015). *Graph API Overview*. Facebook Developers. Available online: <https://developers.facebook.com/docs/graph-api/overview> (10.06.2015).
- Facebook Developers. (2015). *Facebook Developers*. Available online: <https://developers.facebook.com/docs/graph-api/reference/page> (10.06.2015).
- Facebook. (2017). *Stats*. Available online: <http://newsroom.fb.com/company-info> (07.03.2018).
- Facebook. (2016). *How is a Page's star rating determined?*. Available online: <https://www.facebook.com/help/500762053364226> (10.03.2015)..
- Facebook for Business. (2014). *New for Facebook Pages: Calls to Action' Facebook for Business*. Available online: <https://www.facebook.com/business/news/call-to-action-button> (10.03.2015).
- Gretzel, U., Yoo, K.H., & Purifoy, M. (2007). *Online travel review study: Role and impact of online travel reviews*, *Laboratory for Intelligent Systems in Tourism*. Laboratory for Intelligent Systems in Tourism, Texas A & M University. Available online: www.tripadvisor.com/pdfs/OnlineTravelReviewReport.pdf (10.06.2017).
- Gretzel, U., & Dinhopl, A. (2014). Breaking Up is Hard to Do: Why Do Travellers Unlike Travel-Related Organizations?. In Z. Xiang & I. Tussyadiah (Eds.), *Information and Communication Technologies in Tourism 2014*. (pp. 267-279). Cham: Springer Nature. doi:10.1007/978-3-319-03973-2_20
- Hamill, J., & Stevenson, A. (2012). Creating the Buzz': Merchant City (Glasgow) Case Study. In M. Sigala, E. Christou, & U. Gretzel (Eds.), *Social media in travel, tourism and hospitality: Theory, practice and cases*. Surrey: Ashgate. pp. 39-52.
- Hays, S., Page, S.J., & Buhalis, D. (2013). Social media as a destination marketing tool: its use by national tourism organisations. *Current Issues in Tourism*, 16(3), 211-239. doi:10.1080/13683500.2012.662215
- Hsu, Y. (2012). Facebook as international eMarketing strategy of Taiwan hotels. *International Journal of Hospitality Management*, 31(3), 972-980. doi:10.1016/j.ijhm.2011.11.005
- Hubspot. (2015). *How to engage fans on Facebook*. Available online: <http://cdn1.hubspot.com/hub/53/How-to-Engage-Fans-on-Facebook-04.pdf> (11.03.2017).
- Hudson, S. (2014). Selling America to the world: The case of Brand USA. *Journal of Destination Marketing & Management*, 3(2), 79-81. doi:10.1016/j.jdmm.2014.01.003
- Hvass, K.A., & Munar, A.M. (2012). The takeoff of social media in tourism. *Journal of Vacation Marketing*, 18(2), 93-103. doi:10.1177/1356766711435978

- Internet World Stats. (2018). Internet Usage Statistics. Available online: <http://www.internetworldstats.com/stats.html> (07.03. 2018).
- Jeffries, D.J. (2001). *Governments and tourism*. Oxford: Butterworth-Heinemann.
- Jordan, P. (2006). Tourism and EU enlargement: a Central European perspective. In D. Hall, M. Smith, & B. Marciszewska (Eds.), *Tourism in the new Europe: The challenges and opportunities of EU enlargement*. (pp. 65-80). Wallingford: CABI Publishing. doi:10.1079/9781845931179.0065
- Kwok, L., & Yu, B. (2013). Spreading Social Media Messages on Facebook: an Analysis of Restaurant Business-to-Consumer Communications. *Cornell Hospitality Quarterly*, 54(1), 84-94. doi:10.1177/1938965512458360
- Lalicic, L., & Gindl, S. (2017). DMOs' Facebook Success Stories: A Retrospective View. In B. Stangl & J. Pesonen (Eds.), *Information and Communication Technologies in Tourism 2018*. (pp. 172-185). Cham: Springer Nature. doi:10.1007/978-3-319-72923-7_14
- Lalicic, L., Huertas, A., Moreno, A., Gindl, S., & Jabreel, M. (2017). Do DMOs Communicate Their Emotional Brand Values? A Comparison Between Twitter and Facebook. In B. Stangl & J. Pesonen (Eds.), *Information and Communication Technologies in Tourism 2018*. (pp. 159-171). Cham: Springer Nature. doi:10.1007/978-3-319-72923-7_13
- Lee, J. (2014). *Facebook Posts See More Engagement After Hours, Weekends*. Available online: <http://www.clickz.com/clickz/news/2349587/facebook-posts-see-more-engagement-after-hours-weekends-study> (20.02.2017).
- Leung, D., Law, R., van Hoof, H., & Buhalis, D. (2013). Social Media in Tourism and Hospitality: A Literature Review. *Journal of Travel & Tourism Marketing*, 30(1-2), 3-22. doi:10.1080/10548408.2013.750919
- Linnell, N. (2012). How to Analyze Facebook Page Posts. *Search Engine Watch*, Available online: <https://searchenginewatch.com/sew/how-to/2206120/how-to-analyze-facebook-page-posts> (10.02.2015).
- Luna-Nevarez, C., & Hyman, M.R. (2012). Common practices in destination website design. *Journal of Destination Marketing & Management*, 1(1-2), 94-106. doi:10.1016/j.jdmm.2012.08.002
- Mariani, M.M., di Felice, M., & Mura, M. (2016). Facebook as a destination marketing tool: Evidence from Italian regional Destination Management Organizations. *Tourism Management*, 54, 321-343. doi:10.1016/j.tourman.2015.12.008
- Mariani, M.M., Mura, M., & di Felice, M. (2017). The determinants of Facebook social engagement for national tourism organizations' Facebook pages: A quantitative approach. *Journal of Destination Marketing & Management*, (In Press). doi:10.1016/j.jdmm.2017.06.003
- Mich, L., & Baggio, R. (2015). Evaluating Facebook pages for small hotels: a systematic approach. *Information Technology & Tourism*, 15(3), 209-231. doi:10.1007/s40558-015-0031-2
- Milwood, P., Marchiori, E., & Zach, F. (2013). A Comparison of Social Media Adoption and Use in Different Countries: The Case of the United States and Switzerland. *Journal of Travel & Tourism Marketing*, 30(1-2), 165-168. doi:10.1080/10548408.2013.751287
- Minazzi, R. (2014). Social media marketing in tourism and hospitality. Cham: Springer Nature. doi:10.1007/978-3-319-05182-6_5
- Molinillo, S., Liébana-Cabanillas, F., Anaya-Sánchez, R., & Buhalis, D. (2018). DMO online platforms: Image and intention to visit. *Tourism Management*, 65, 116-130. doi:10.1016/j.tourman.2017.09.021
- Munar, A.M., & Jacobsen, J.K.S. (2014). Motivations for sharing tourism experiences through social media. *Tourism Management*, 43, 46-54. doi:10.1016/j.tourman.2014.01.012
- Oxford Economics. (2014). The Return on Investments of Brand USA Marketing, 2013 Fiscal Year Analysis. Available online: <http://thebrandusa.com/~media/Files/Key%20Dox/2014/ROI%20Results/Brand%20USA%22ROI%20FY2013%20Final.pdf> (10.10.2015).
- Pike, S. (2004). Destination marketing organizations. Oxford: Routledge.
- Pitre, A. (2015). How to Create Custom Tabs for Your Facebook Business Page. Hubspot, Available online: <http://blog.hubspot.com/blog/tabid/6307/bid/26330/How-to-Create-Custom-Tabs-for-Facebook-Business-Pages.aspx> (10.04.2017).
- Rieder, B. (2013). Studying Facebook via data extraction: the Netvizz application. In WebSci '13 Proceedings of the 5th Annual ACM Web Science Conference. (pp. 346-355). New York, New York, USA: Association for Computing Machinery (ACM). doi:10.1145/2464464.2464475
- Roque, V., & Raposo, R. (2016). Social media as a communication and marketing tool in tourism: an analysis of online activities from international key player DMO. *Anatolia: An International Journal of Tourism and Hospitality Research*, 27(1), 58-70. doi:10.1080/13032917.2015.1083209
- Russell, M.A. (2013). *Mining the Social Web: Data Mining Facebook, Twitter, LinkedIn, Google+, GitHub, and More*. Sebastopol: O'Reilly Media.
- Sabate, F., Berbegal-Mirabent, J., Cañabate, A., & Leberherz, P.R. (2014). Factors influencing popularity of branded content in Facebook fan pages. *European Management Journal*, 32(6), 1001-1011. doi:10.1016/j.emj.2014.05.001

- Sarkar, S.K., Au, N., & Law, R. (2014). Consumer democracy in hospitality industry: a study on the role of Facebook. *International Journal of Qualitative Research in Services*, 1(3), 219-231. doi:10.1504/ijqrs.2014.060664
- Shao, J., Rodriguez, M.D., & Gretzel, U. (2012). Riding the social media wave: strategies of DMOs who successfully engage in social media marketing. In M. Sigala, E. Christou, & U. Gretzel (Eds.), *Social media in travel, tourism and hospitality: Theory, practice and cases*. Surrey: Ashgate Publishing. pp. 87-98.
- Sigaux, G. (1966). *History of tourism*. London: Leisure Arts.
- South Australian Tourism Commission. (2015). *Social Media Hints and Tips for the Tourism Industry*. Available online: http://www.tourism.sa.gov.au/assets/documents/Industry/Social_Media_Hints_and_Tips.pdf (11.10.2015).
- Stankov, U., Lazić, L., & Dragičević, V. (2010). The extent of use of basic Facebook user-generated content by the national tourism organizations in Europe. *European Journal of Tourism Research*, 3, 105-113.
- Stankov, U., Klaučo, M., Vujičić, M., Vasiljević, Đ., & Dragičević, V. (2016). National parks are going social?, An exploratory study of former Yugoslav countries on Facebook. In *Monitoring and Management of Visitors in Recreational and Protected Areas (Abstract book)*. (pp. 79-81). Novi Sad: University of Novi Sad, Faculty of Sciences.
- Stankov, U., Armenski, T., Klaučo, M., Pavluković, V., Cimbalević, M., & Drakulić-Kovačević, N. (2017). Spatial autocorrelation analysis of tourist arrivals using municipal data: A Serbian example. *Geographica Pannonica*, 21(2), 106-114. doi:10.5937/geopan1702106s
- Tham, A., Croy, G., & Mair, J. (2013). Social Media in Destination Choice: Distinctive Electronic Word-of-Mouth Dimensions. *Journal of Travel & Tourism Marketing*, 30(1-2), 144-155. doi:10.1080/10548408.2013.751272
- Tilly, R., Fischbach, K., & Schoder, D. (2015). Mineable or messy? Assessing the quality of macro-level tourism information derived from social media. *Electronic Markets*, 25(3), 227-241. doi:10.1007/s12525-015-0181-2
- Timothy, D.J. (2006). Supply and organization of tourism in North America. In D.A. Fennell (Ed.), *North America: A tourism handbook*. Clevedon: Channel View Publications. pp. 53-81.
- Travel & Tourism Intelligence Center. (2014). *Travel and Tourism in the US to 2018*. Available online: <https://www.prnewswire.com/news-releases/travel-and-tourism-in-the-us-to-2018-300004063.html> (11.10.2017).
- Treadaway, C., & Smith, M. (2012). *Facebook marketing: An hour a day*. Indianapolis: John Wiley & Sons.
- Wells, T., & Link, M. (2014). Facebook User Research Using a Probability-Based Sample and Behavioral Data. *Journal of Computer-Mediated Communication*, 19(4), 1042-1052. doi:10.1111/jcc4.12058
- World Tourism Organization (UNWTO); European Travel Commission (ETC). (2014). *Handbook on E-marketing for Tourism Destinations Fully revised and extended version 3.0*. Madrid.
- Yang, X., & Wang, D. (2015). The Exploration of Social Media Marketing Strategies of Destination Marketing Organizations in China. *Journal of China Tourism Research*, 11(2), 166-185. doi:10.1080/19388160.2015.1017071
- Yoo, K., & Kim, J.R. (2013). How U.S. state tourism offices use online newsrooms and social media in media relations. *Public Relations Review*, 39(5), 534-541. doi:10.1016/j.pubrev.2013.08.005
- Zarella, D., & Zarella, A. (2010). *The Facebook marketing book*. Sebastopol: O'Reilly Media.
- Zeng, B., & Gerritsen, R. (2014). What do we know about social media in tourism? A review. *Tourism Management Perspectives*, 10, 27-36. doi:10.1016/j.tmp.2014.01.001
- Zouganeli, S., Trihas, N., & Antonaki, M. (2011). Social media and tourism: the use of Facebook by the European national tourism organizations. *Tourism Today*, 11, 110-121.

Correlation Between Discharge and Water Quality – Case Study Nišava River (Serbia)

Igor Leščešen^{A*}, Dragosav Pavić^A, Dragan Dolinaj^A

Received: November 19, 2017 | Revised: April 11, 2018 | Accepted: May 02, 2018

DOI: 10.5937/22-16674

Abstract

The water quality and river discharges were surveyed at two sites in Nišava River basin (Dimitrovgrad and Niš) with complete data series for the ten-year period (2005–2014). For these stations SWQI was calculated and correlation analysis was applied. The index value is dimensionless and varies between 0 and 100 (best quality). It is derived from numerous physical, chemical, biological and microbiological parameters. At Niš station average annual value of SWQI is 78 (good) with a clear decrease trend over a ten-year period. On the other side, on Dimitrovgrad station, average annual SWQI is 89 (very good) with a clear positive trend. Goal of this paper was to determine if there is a correlation between river discharge and values of SWQI. Results of the Pearson correlation test between SWQI and daily discharge values for Dimitrovgrad station show a moderate linear relation was observed, $r = -0.287$, $p = 0.002$. On Niš station same test has shown that there is no statistically significant relation between discharge and water quality ($r = 0.103$, $p = 0.297$). This study has shown that the correlation between SWQI and discharge is weak or not present at all at the investigated river.

Keywords: Water Quality, Discharge, Nišava River, Serbia

Introduction

Identifying relationships between river water quality and discharge provides insight into understanding the river process chain. This is an important challenge because hydrological extremes (such as droughts and floods) are expected to become more commonplace in a changing climate (Kundzewicz et al., 2007). Aquatic ecosystems must be protected and managed to ensure that they retain their inherent vitality and remain fit for domestic, industrial, agricultural and recreational uses, for present as well as for future generations. River systems worldwide are reported to be polluted due to untreated sewage disposal and industrial effluents being disposed directly or indirectly into the rivers. Wastes contain a wide variety of organic and inorganic pollutants. Serbian Water Quality Index (SWQI) was used for description of water quality. Results of several studies show that water quality,

will be affected by streamflow volumes, both concentrations and total loads. Research conducted in Finland (Frisk et al., 1997; Kallio et al., 1997) indicates that changes in stream water quality, in terms of eutrophication and nutrient transport, are very dependent on changes in streamflow (Prathumratana et al., 2008). On the other hand, result of Eh Rak et al (2010) shows that pH, dissolved oxygen, conductivity and water temperature are not dependant on river discharge. As the SWQI is calculated based on the same parameters that were investigated in mentioned studies (Oxygen saturation, BOD, Ammonium, Ph value, Total oxidized nitrogen, Orthophosphates, Suspended solids, Temperature, Conductivity and Coliform bacteria). This study focused on finding relationship between river discharge and water quality parameters (SWQI) for Nišava River.

^A Climatology and Hidrology Research Centre, Faculty of Science, University of Novi Sad Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia

* Corresponding author: Igor Leščešen; e-mail: igorlescesen@yahoo.com

Study area

The spring of Nišava River is located in Bulgaria, and the length of its course through Serbia is 195 km, and it is oriented SE-NW (Protić & Trajković, 2004). Its source is close to the Serbian border, on Bulgarian side of Stara Planina Mountain. It enters Serbia after 67 km of flow through Bulgarian territory without receiving any major tributaries. The river flows generally to the west for the remaining 151 km, it passes near cities of Dimitrovgrad, Pirot, Bela Palanka, and Niš after which the Nišava River flows into the Južna Morava River. The river belongs to the Black

Sea drainage basin. The surface area of the river basin is 3,74 km² in total, 3,641 km² belonging to Serbia (Branković & Trajković, 2007; Gocić & Trajković, 2013). The Nišava River is not navigable. It is the largest tributary of the Južna Morava, both in length and in discharge (36 m³/s). The highest discharge occurs during the month of April - 55.14 m³/s, while the lowest discharge occurs in September, 10.25 m³/s (Đokić, 2015). It has many tributaries, the biggest are Temštica from the right, and the Jerma, Crvena reka, Koritnička reka and Kutinska reka from the left.

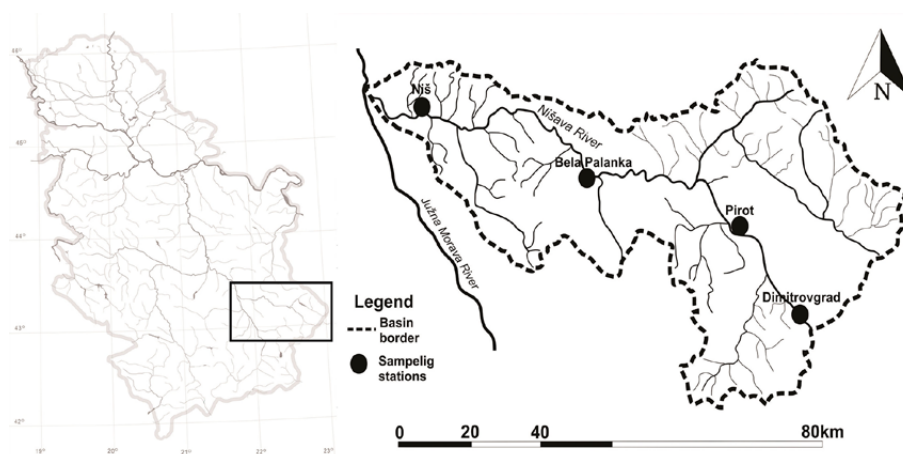


Figure 1. Map of the study area with stations with sufficient data

Methods and data

In this paper database of the Republic Hydrometeorological Service of Serbia for the 2005–2014 (Hydrological yearbook 2005–2014) period was used to present the existing state of water quality of Nišava River. Four kinds of parameters were measured at the two furthered stations on Nišava River: Dimitrovgrad and Niš during ten year period 2005–2014. Those parameters are physical, chemical, biological and microbiological and all are used in determining Water Quality Indices.

In Serbia, Serbian Water Quality Index (SWQI) is widely accepted index which is based on ten parameters (Oxygen saturation, BOD, Ammonium, Ph value, Total oxidized nitrogen, Orthophosphates, Suspended solids, Temperature, Conductivity and Coliform bacteria) and then their quality (q_i) represents features of surface water reducing them to one index number. Each parameter has different influence on general water quality, because of that, to each of them was assigned the weight (w_i) and the score of points according to their contribution to water quality endangering. The result ($q_i \cdot w_i$) gives the index 100, as an

ideal summation of weights of all parameters (Oregon Water Quality Index Summary Report, 1996–2005). Index points, from 0 to 100, are assigned to particular waterbody according to the points assigned to particular parameters (Pantelić et al., 2012; Leščešen et al., 2014). Many studies show that SWQI method ensures general overview of surface water quality at certain place (Veljković, 2000; Veljković 2001; Đurašković & Vujović, 2004; Pantelić et al., 2012; Bjelajac et al., 2013; Leščešen et al., 2014).

Descriptive quality indicator has been determined for each SWQI values, ranging from excellent (90–100), very good (84–89), good (72–83), poor (39–71) and very poor (0–38). The limitation of SWQI is the relative small number of parameters that is used. For example, used parameters provide information about organic loading, but there is no information about heavy metal pollution. Since there is no single, universal parameter that properly describes surface water quality, investigators typically use several indicators related to sanitary quality, ability to sustain aquatic

life, ecosystem productivity and aesthetics (Pharino, 2007; Bjelajac et al., 2013).

Correlation between SWQI and discharge data were estimated with Pearson Correlation Test. The Pearson Correlation Test was applied in order to establish the variables with significant differences. The correlation means the connection between variables while correlation coefficient means the measure based on which it can be concluded about the extent of their connection (Pantelić et al., 2015).

In case the value is equal to, or it makes approximately zero, the variables are independent from each other, but the opposite case is not always exclusively true (namely, if two variables are mutually dependent their correlation coefficient can be 0) because the cor-

relation coefficient defines only the linear dependence between variables. The squared correlation coefficient (r^2), which is defined by an identical formula that is squared, is used in the analysis of linear dependence between two variables:

$$r_{xy}^2 = \frac{\sigma_{xy}^2}{\sigma_{xx}\sigma_{yy}^2} = \frac{\left[\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y}) \right]^2}{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}$$

In this case, the value of r^2 between two variables has to be positive in all cases (Wilks, 2006; Pantelić et al., 2015)

Results and discussion

After evaluating available data it was concluded that two stations have a satisfactory length of available data. SWQI was calculated 120 times throughout ten-year period for gauging station at Dimitrovgrad and average annual value of the index varies from 86 in 2006 to 90 in 2007, 2008, 2013 and 2014. These val-

ues, according to descriptive statistics vary from very good to excellent water quality. In Figure 2, (1a) it is clearly noticed a positive trend in SWQI values over ten year period ($y=0.176x+87.93$). For Niš station, same calculations for the same number of times were conducted and it has shown drastically different result.

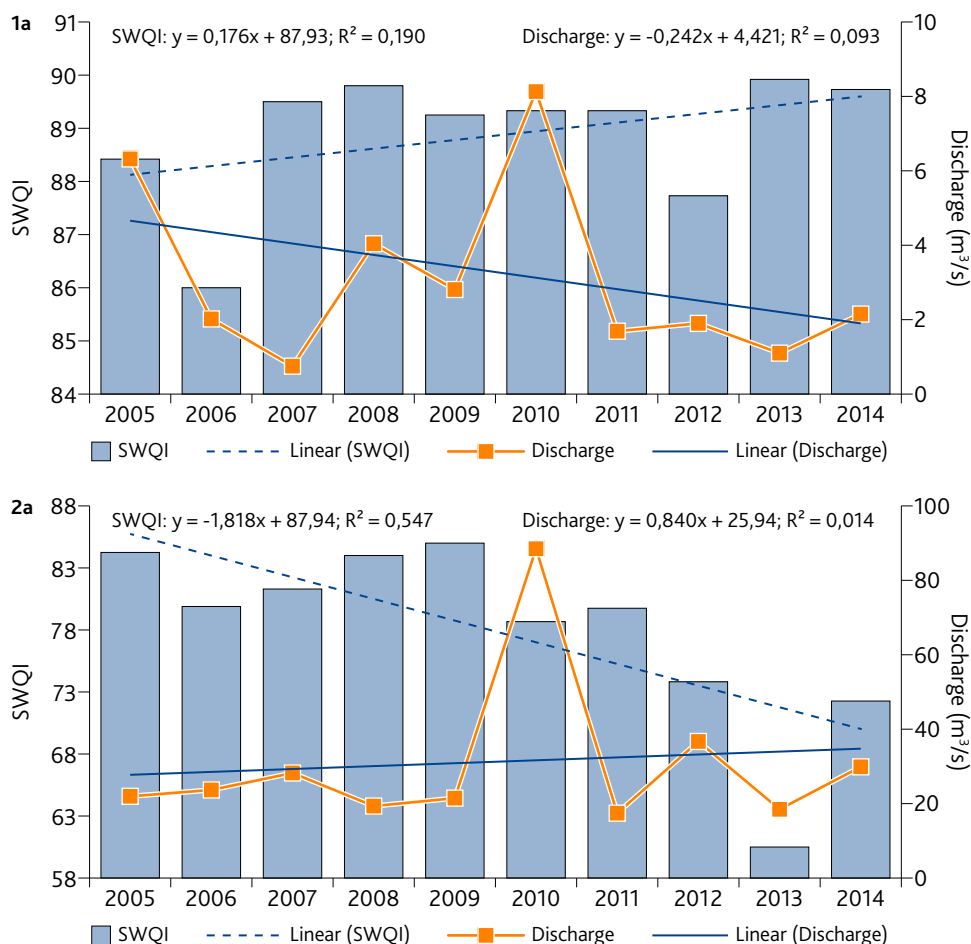


Figure 2. Average annual SWQI and discharge values at Dimitrovgrad (1a) and Niš (2a) stations

Lowest water quality was measured in 2013, 61 index points or descriptively poor water quality. The highest index was measured in 2009, 85 (very good). For this station, only two more times, in 2005 and 2008 index value was in the range of very good quality, both times index value was 84. In figure 2 (1b) a clear downward trend in water quality is noticed ($y = -1.818x + 87.94$).

Annual average discharge values for Dimitrovgrad station vary from highest value in 2010 $8.13 \text{ m}^3/\text{s}$, with a negative trend $y = -0.242x + 4.421$. On the other station, a moderate positive discharge trend over ten year period is noticed $y = 0.840x + 25.94$.

The results of monthly values of SWQI and discharge values are presented in figure 3. While the SWQI on Dimitrovgrad station remains in very good-excellent range a negative trend is noticed $y = -0.064x + 89.33$. On Niš station, monthly index values show the same range as the yearly index values, from poor till very good. As is the case with Dimitrovgrad station, Niš station shows negative trend $y = -0.791x + 82.58$, starting from January till December. The reason for this situation at Niš station is that the biggest polluters of the Nišava river water are waste waters from the sewages of the settlements along the river, upriver from the city of Niš. Industrial waste waters, for the time

being, do not represent a big threat for the river. However, future increase of the industrial production may cause further deterioration of water quality. Monthly discharge values show the same trend as water quality indexes.

Figure 3 shows that discharge of Nišava River is highest during April and lowest August and September. On the other side, SWQI values are highest during January and lowest during April (Dimitrovgrad station) and October (Niš station). The trend lines are showing that both discharge and SWQI are declining from January till December. The monthly analysis of SWQI shows that during summer months (Jun, July and August) the values of SWQI are the lowest on both stations. At Dimitrovgrad station negative trend for the months of June ($y = -0.630x + 90.66$) and July ($y = -0.084x + 88.26$) are observed while during August a positive trend is observed ($y = 0.139x + 87.73$). A negative trend is clearly visible during summer months over ten-year period at Niš station, Jun ($y = -0.387x + 75.33$) July ($y = -2.375x + 88.66$) and August ($y = -3.883x + 91.63$).

Results of Pearson correlation test between SWQI and daily discharge values for Dimitrovgrad station show a moderate linear relation was observed, $r =$

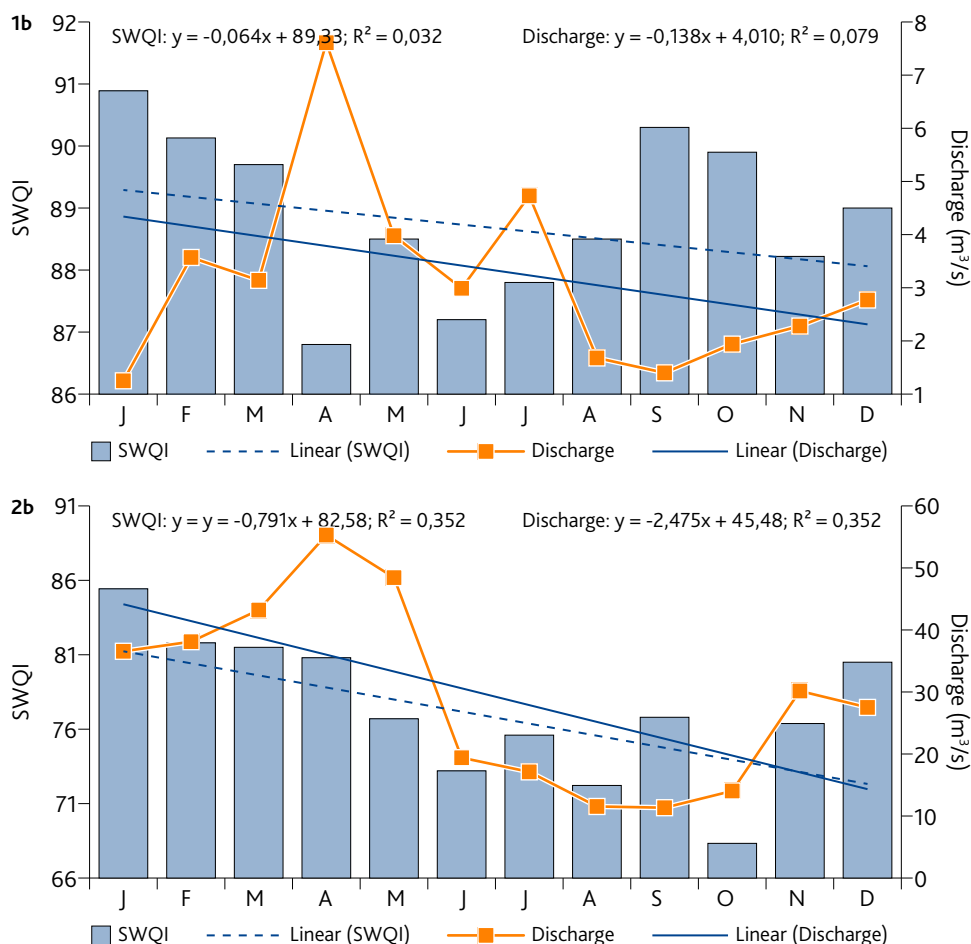


Figure 3. Average monthly SWQI and discharge values at Dimitrovgrad (1b) and Niš (2b) stations

-0.287, $p = 0.002$ (2-sided). On Niš station same test has shown that there is no statistically significant relation between discharge and water quality ($r=0.103$ $p=0.297$).

The results of correlation tests show that there is weak statistically significant correlation between discharge and SWQI parameters at Dimitrovgrad station. We can conclude that water discharge will not influence the concentrations of ten parameters that are crucial in estimating SWQI at Niš station. The similar conclusion is given by Eh Rak et al. (2010) in their study of Endau Catchment in Malaysia. On the other side, low discharge values show statistically significant correlation between discharge and SWQI. Results of Prathumratana et al (2008), also show that Dissolved oxygen and Total suspended solids had weak correlations with the discharges of Mekong River. Negative relationship between the values of all water quality variables (except water temperature, and pH) and discharge were observed in Yeşilırmak River in Turkey. That is, as discharge increased the values and concentration of these variables decreased (Kurnuc et al., 2005). WQI of Subernarekha River in India shows that values at various sampling stations generally progressively decline in WQI values along the river, this is also the case with Nišava River. Thus, a general progressive decline in WQI values along the downstream

parts of river indicated an increase in pollution due to the discharge by various industries along the stretch (Parmar et al., 2010). According to the recorded values of WQI of Qalyasan stream in Iraq, the studied sampling sites, show a decreasing trend in WQI values with increasing of discharge downstream (Khwakaram et al., 2015).

Projections of future show that climate change will affect hydrologic and thermal regimes of rivers, having a direct impact on freshwater ecosystems and human water use (Schneider et al., 2013). Projections of water quality in the future indicate further deterioration of water quality in southeastern United States, Europe, eastern China, southern Africa and southern Australia. These regions could potentially be affected by increased deterioration of water quality and freshwater habitats, and reduced water available for human uses such as thermoelectric power and drinking water production (van Villet et al., 2013). Our preliminary research has shown that the models that project changes of water quality based on discharge changes do not work on Nišava River because the correlation between discharge and water quality parameters are very weak or non existing. On water quality of Nišava River is under stronger influence by waste water from settlements then under discharge changes during years.

Conclusion

Overall average water quality index was 83 which indicate good quality of water in the Nišava River. The water quality index reduced towards the downstream of the river. Sampling sites under investigation fell under the very good quality index (Dimitrovgrad 89), with Niš station exhibiting the lowest index values 78 (good quality). Water quality deteriorated, as river flows downstream towards river confluence into Južna Morava River. Impact of river discharge on water quality parameters is statistically significant at Dimitrovgrad station, where lower discharge values are measured. Downstream parts of the river, where discharge values increases the impact of discharge to water quality parameters decreases.

On the basis of the analyzed data and presented results, in order to provide an appropriate long-term water quality of the river Nišava, it is crucial to take certain steps which would provide a sustainable water management. Sustainable management of the water quality of Nišava River should lead toward improving the quality of life of the entire population of the region and improvement of the environmen-

tal conditions in all settlements along this river. Furthermore, these results can be helpful for planning and controlling the water quality of the Nišava River as this river is the most important natural resources of the third largest Serbian city (Niš) but the sustainable development and improvement of river water quality is not possible without the wider regional approach.

As a conclusion, it can be clearly stated that it is important to understand the relationship between water quality and river discharge and their effect. Water quality monitoring is importance due to threat such activities are harmful to aquatic organisms and public health. Furthermore, discharging of industrial and domestic wastewater and also other anthropogenic activities were the main sources for contaminating Nišava River. Also, there should be regular and continuous monitoring for water quality of the river in order to detect changes in physiochemical parameters of the river water at different sites. The results presented here provide a baseline reference on the future monitoring of the Nišava River basin.

References

- Khwakaram, I.A., Majid, N.S., Ahmed, H.Z., & Hama, Y.N. (2015). Application of water quality index (WQI) as a possible indicator for agricultural purpose and assessing the ability of self purification process by Qalyasan stream in Sulaimani City / Tray Kurdistan Region. *International Journal of plant, animal and environmental Sciences*, 5(1), 162-173.
- Parmar, K., & Parmar, V. (2010). Evaluation of water quality index for drinking purposes of river Subarnarekha in Singhbhum District. *International Journal of Environmental Sciences*, 1, 77-81.
- van Vliet, M.T.H., Franssen, W.H.P., Yearsley, J.R., Ludwig, F., Haddeland, I., Lettenmaier, D.P., & Kabat, P. (2013). Global river discharge and water temperature under climate change. *Global Environmental Change*, 23(2), 450-464. doi:10.1016/j.gloenvcha.2012.11.002
- Kurunç, A., Yürekli, K., & Ozturk, F. (2005). Effect of Discharge Fluctuation on Water Quality Variables from the Yeşilirmak River. *Tarım Bilimleri Dergisi*, 11(2), 1. doi:10.1501/tarimbil_00000000415
- Bjelajac, D., Lescesen, I., Micic, T., & Pantelic, M. (2013). Estimation of water quality of Sava River (Vojvodina, Serbia) in the period 2004-2011 using Serbian Water Quality Index (SWQI). *Geographica Pannonica*, 17(4), 91-97. doi:10.5937/geopan1304091b
- Brankovic, S., & Trajkovic, S. (2007). The Nišava river water quality as the indicator of the sustainable development of the city of Niš. *Spatium*, 15-16, 80-84. doi:10.2298/spato716080b
- Đokić, M. (2015). *Nišava-Potamology study*. University of Niš - Faculty of Science and Mathematics - Department of Geography. PhD thesis.
- Đurašković, P.N., & Tomić, N. (2009). Skadar Lake Water Quality by WQI Method. *Conference "Zastitavoda 09"*, Zlatibor, Serbia.
- Eh, R.A., Said, I., & Mohamed, M. (2010). Effect of River Discharge Fluctuation on Water Quality at Three Rivers in Endau Catchment Area, Kluang, Johor. *Australian Journal of Basic and Applied Sciences*, 4(9), 4240-4249.
- Frisk, T., Bilaletdin, A., Kallio, K., & Saura, M. (1997). Modeling the effects of climatic change on lake eutrophication. *Boreal Environ Research*, 2(1), 53-67.
- Gocic, M., & Trajkovic, S. (2013). Trend analysis of water quality parameters for the Nisava river. *Facta universitatis - series: Architecture and Civil Engineering*, 11(3), 199-210. doi:10.2298/fuace1303199g
- Kallio, K., Rekolainen, S., Ekholm, P., Granlund, K., Laine, Y., & Johnsson, H. (1997). Impacts of climate change on agricultural nutrient losses in Finland. *Boreal Environ Research*, 2, 33-42.
- Kundzewicz, Z.W., Mata, L.J., Arnell, N., Döll, P., Kabat, P., Jiménez, B., Miller, K., Oki, T., Şen, Z., Shiklomanov, I. (2007). Freshwater resources and their management. Climate Change 2007: Impacts, Adaptation and Vulnerability. In M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden & C. E. Hanson (Eds.), *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. (pp. 173-210). UK: Cambridge University Press.
- Leščešen, I., Pantelic, M., Dolinaj, D., & Lukic, T. (2014). Assessment of water quality of the Tisa River (Vojvodina, North Serbia) for ten year period using Serbian water quality index (SWQI). *Geographica Pannonica*, 18(4), 102-107. doi:10.5937/geopan1404102l
- Leščešen, I., Pantelić, M., Dolinaj, D., Stojanović, V., & Milošević, D. (2015). Statistical Analysis of Water Quality Parameters of the Drina River (West Serbia), 2004-11. *Polish Journal of Environmental Studies*, 24, 555-561. doi:10.15244/pjoes/29684
- Pantelic, M., Dolinaj, D., Lescesen, I., Savic, S., & Milosevic, D. (2015). Water quality of the Pannonian basin rivers the Danube, the Sava and the Tisa (Serbia) and its correlation with air temperature. *Thermal Science*, 19(2), 477-485. doi:10.2298/tsci150325114p
- Pantelić, M., Dolinaj, D., Savić, S., Stojanović, V., & Nađ, I. (2012). Statistical Analysis of water quality parameters of Veliki Bački Canal (Vojvodina, Serbia) in period 2000-2009. *Carpathian Journal of Earth and Environmental Sciences*, 7(2), 255-264.
- Potic, O., & Trajkovic, S. (2004). Irrigation of the Bela Palanka field from the "Zavoj" reservoir. *International Conference BALWOIS 2004, Ohrid, Macedonia*. pp.113.
- Prathumratana, L., Sthiannopkao, S., & Kim, K.W. (2008). The relationship of climatic and hydrological parameters to surface water quality in the lower Mekong River. *Environment International*, 34(6), 860-866. doi:10.1016/j.envint.2007.10.011
- Turjančanin, V., & Čekrljija, Đ. (2006). *Osnovne Statističke metode i tehnike u SPSS-u - Primaena SPSS-a u društvenim naukama / Basic Statistical methods and techniques in SPSS: Application of SPSS in human sciences*. Banjaluka: Centar za kulturni i socijalni popravak.
- Veljković, N. (2000). Determining water quality index of the Southern Morava basin by the application of

- WQI method. In *Waters Protection*. Belgrade: Yugoslav Society for Waters Protection.
- Veljković, N. (2001). Measuring indicators of sustainable water development for agglomerations in the SouthMorava basin. In *11th Stockholm Water Symposium, Abstract Volume: Building Bridges Through Dialogue*. Stockholm, Sweden.
- Wilks, D.S. (2006). Statistical methods in the atmospheric sciences. In *International Geophysics Series*. Academic Press.

Post-Soviet Residential Neighbourhoods in Two Second-Order Ukrainian Cities: Factors and Models of Spatial Transformation

Oleksiy Gnatiuk^{A*}, Olga Kryvets^A

Received: February 26, 2018 | Revised: May 07, 2018 | Accepted: May 09, 2018

DOI: 10.5937/22-17037

Abstract

Post-socialist urban transformation constitutes an important segment of the contemporary urban studies. In this paper we focused on transformation processes in two typical post-Soviet residential neighbourhoods, built in the period of mass construction in the second half of XX century and located in the Ukrainian cities of Vinnytsia and Kherson. Our goals were to reveal the spatial and temporal transformation patterns, to identify the factors of transformation, and to delineate certain transformation mechanisms and models. The assessment of morphological and functional changes of urban objects was carried out via field observation according to a specially developed methodology with the further comparison of results with urban planning documents reflecting the reality in the beginning of 1990s. Our findings permitted to identify key transformation processes (deindustrialization, commercialization, revitalization, functional diversification), to list a set of factors promoting more intense transformations, and to explain mechanisms defining existing spatial pattern of transformations within the test neighbourhoods. Private commercial activity, including rapid development of retail sector, was the main source of transformation, thus defining its partial, fragmented and somewhere controversial nature. Since the probability of further transformation in each point of the territory is determined by the already existing pattern, the existing heterogeneities tend to enhance with a lapse of time, and therefore the initial stages of transformation are especially important for the further development of the neighbourhood. Despite the similar starting conditions, two neighbourhoods demonstrated different outcomes in terms of modernization, explained by the differences in the urban spatial structure, spatial and sectorial structure of industrial zones, position (importance) of the neighbourhood in the whole city, as well as the economic dynamics of the city. Based on detected factors and mechanisms, we proposed models for further transformation intended to maximize the level of modernization within the entire test neighbourhoods.

Keywords: post-socialist city, post-Soviet residential neighbourhood, spatial transformation, transformation factors, transformation models, Ukraine

^A Research Lab "Regional Problems of Economics and Politics", Faculty of Geography, Taras Shevchenko National University of Kyiv, Prosp. Akademika Hlushkova 2a, Kyiv, Ukraine

* Corresponding author: Oleksiy Gnatiuk; e-mail: alexgnat22@ukr.net; ORCID: 0000-0003-1818-2415

Introduction

The question of post-socialist urban transformation and adaptation to the new competitive market conditions on the background of globalization processes holds a prominent place in the modern scientific discourse. This process has quite diverse forms and consequences. Transformations are not always progressive; in particular, sometimes they are destructive and lead to negative demographic processes, degradation of the city-forming economic base, destruction of the balance between certain functional or morphological components, deterioration of the improvement and aesthetics of urban space, reduced life quality. However, the process of transformation can stimulate positive changes in the functioning of the city: modernization of economy and infrastructure, growth of life quality and reinforced resilience to heterogeneous external and internal challenges. Therefore, the process of urban transformation requires thorough analysis, reasonable evaluation and scientifically sound management.

It is widely acknowledged that the socio-economic transformation of post-socialist economies, resulting in the return of the land and housing market mechanisms paralleled by the withdrawal of the welfare-state principals, triggered the process of socio-spatial polarization (Marcinčzak, 2007; Marcinčzak & Sagan, 2010), which can be further described in terms of suburbanization, gentrification, segregation and separation (Węclawowicz, 1998). The listed processes have been well known in Western cities and nowadays have penetrated the post-socialist cities (Matlovič et al. 2001). Nowadays, a wide scientific literature is dedicated to each of the processes. E.g. manifestations and peculiarities of gentrification in post-socialist cities were described on the examples of large cities, including capitals, like Prague (Sýkora, 2005), Budapest (Kovács, 1998; Kovács et al., 2012), Moscow (Badyina & Golubchikov, 2005), Warsaw (Węclawowicz, 1998), Poznan (Kotus, 2006), Vilnius (Standl & Krupickaitė, 2004), Tallinn (Feldman, 2000), Tbilisi (Gentile et al., 2015). Issues of ethnic and socio-economic spatial segregation are reflected in contributions of Gentile (2003, 2004), Blinnikov et al. (2006), Stoyanov and Frantz (2006), Marcinčzak et al. (2014). Some authors focused on more precise aspects of transition like vigorous commercialization of urban public spaces, including development of retail (Gritsai, 1996; Nagy, 2001; Rebernik & Jakovčić, 2006; Garb & Dybicz, 2006; Sýkora, 2007; Bouzarovski et al., 2014), transformation of industrial areas, including their degradation, rehabilitation and revitalization (Kiss, 1999, 2004; Bárta et al., 2006; Dannert & Pirisi, 2017), metropolitan process-

es (Borén & Gentile, 2007). Urban development challenges, models and strategies in post-socialist reality, including those related to the urban spatial planning and policy, were discussed by Haase and Steinführer (2005), Axenov et al. (2006), Sýkora (2008), Hirt and Stanilov (2009), Scott and Kuhn (2012), Sýkora and Bouzarovski (2012), Węclawowicz (2013), Golubchikov, et al. (2014) etc. Functional and morphological spatial changes in certain cities were evaluated by Sýkora, et al. (2000), Parysek (2004), Marcinčzak (2007), and others.

In Ukraine, a series of studies, focused on spatial transformations in topologically, functionally and morphologically distinct cities has been carried out, including the capital (Melnychuk et al., 2012; Melnychuk & Kovalchuk, 2015), regional centre in industrial region (Gnatiuk, 2017), regional and sub-regional centres in agrarian regions (Melnychuk & Khmelnytskyi, 2015; Melnyk et al., 2016; Oreshchenko, 2016; Gnatiuk & Oreshchenko, 2017; Kryvets, 2017), small mono-functional industrial (Gnatiuk, 2017) and agrarian (Melnyk & Batychenko, 2016, 2017) towns, satellite cities of Kyiv's suburbia (Batychenko, 2016; Koroma, 2016; Kryvets, 2016; Melnyk, 2016). Recently, special attention is paid to the transformation of public spaces in big cities as an inherent and dynamic part of urban environment (Mezentsev et al., 2011; Mezentsev & Mezentseva, 2011, 2017; Mezentseva & Palchuk, 2016; Mezentseva, 2017). The review of metropolitan processes in Ukraine and forecast for their future dynamics and spatial patterns were given by Denysenko (2012).

Most of studies in Ukraine, as well as in the other post-socialist countries, are focused on specific aspects of transformations, and cover predominantly the central parts of cities. However, transformation of the post-Soviet residential neighbourhoods, where the majority of the Ukrainian urban population live (and also work and recreate), remains scarcely investigated and deserves more attention. There is also a lack of comparative studies, opening the possibilities to find common essential patterns and, simultaneously, draw comparisons between different alternative development models.

The significant decline in the housing stock after the Second World War and the accelerating growth of urban population encouraged urban planners to search for cheap housing construction methods (van Kempen et al., 2005). The practical realization of such ideas became possible in the late 1950s as a result of new technologies that allowed the massive construction of panel and brick houses. Although such pro-

jects have been implemented in most countries of the Central and Eastern Europe, the Soviet Union had a tremendous scale of such a construction. In order to maximize cost savings and increase the speed of construction, the building was realized according to typical projects without any architectural decorations and minimal technical equipment.

This mass construction typically was carried out in the form of separate residential neighbourhoods, divided by a street network into large quarters, so-called microrayons, usually planned for 5,000-15,000 inhabitants (Smith, 1996). Usually, such microrayons were built after development of a specific and complicated detail plan, including not only residential development, but also health, educational, cultural, sports and retail services. Thus, microrayons were planned to be self-sufficient territories with their own residents and maintenance structures (Ušča, 2010). Typically, the neighbourhood was located not far from one or several industrial enterprises (industrial zone), where most of its economically active inhabitants were employed.

The construction of such neighbourhoods has stopped with the collapse of the Soviet Union. Today, in the process of post-socialist transition, these residential areas are facing many diverse problems and challenges. First of all, due to the collapse or decay of the relevant industrial enterprises, a significant part of the residents lost their jobs. Increasing unemployment and reducing welfare have caused such negative phenomena as the growth of crime, alcoholism, and use of drugs. Respectively, such neighbourhoods have become more dangerous and less prestigious. Consequently, people with higher incomes are trying to leave such areas, while younger population consider such neighbourhoods as a temporary residential place. However, the older residents, predominantly pensioners with low incomes, have the strategy to live in their apartments until death. This contributes to further spatial social segregation.

Moreover, post-Soviet large residential neighbourhoods have typical engineering and technical problems: exhausted water supply, sewerage and central heating networks, poor sound and thermal insulation, dangerous balconies, leaking roofs etc. (Musterd & van Kempen, 2007). Much of the buildings (especially early series of 1950-1960s) were not designed for such a long lifetime. In addition, residents' low incomes limit their ability to invest in housing modernization. Underdeveloped infrastructure including lack of enough parking spaces for private vehicles, playgrounds, side-walks, benches etc., is also a typical thing (Dekker & van Kempen, 2004). There is also a question of aesthetics: individual buildings and entire microrayons are looking similar, creating the impression of a monotonous and grey city landscape (Murie et al., 2005).

Many neighbourhoods have peripheral location on the city outskirts, which impairs the transport accessibility to the city centre and other important locations. All these factors reduce the prestige of these neighbourhoods in the housing market.

However, post-Soviet residential neighbourhoods also have a number of advantages deriving from the obligatory functional zoning and strict observance of building and sanitary norms in the Soviet times. First, all basic social infrastructure is available for residents, including kindergartens, schools, hospitals and outpatient departments. Second, a developed network of public transport, typically buses, trolleybuses, trams and, in the largest cities, underground railway, alleviates the disadvantage of peripheral position. Third, the residents have easy access to basic public utilities: electricity, gas and water supply, central heating. Finally, the presence of significant green yard spaces between houses, which make the neighbourhood similar to the "garden city"; the importance of this factor is confirmed by sociological surveys (Dekker & van Kempen, 2004; Musterd & van Kempen, 2007; Mezentsev & Stebletska, 2017).

Although some scholars argued that the high-rise housing estates may represent the future slums of the 21st century (Szelényi, 1996), more recent studies point out that post-socialist neighbourhoods are relatively stable. Social stratification and segregation in the countries of Central and Eastern Europe, especially in the post-Soviet space, are not so pronounced, on the contrary: post-Soviet residential neighbourhoods are characterized by a social mix, when one block of flats is inhabited with people having significantly different incomes (Kährlik & Tammaru, 2010; Neugebauer & Kovacs, 2015; Mezentsev & Stebletska, 2017). Only the blocks inhabited by older people (pensioners) suffered from impoverishment (Węclawowicz, 1998), while similar neighbourhoods with a younger economically active population have maintained their status (Ruopila & Kährlik, 2003). The main reason for this is the fact that the apartments are privately owned by residents after the privatization (free or at reduced prices), so the mechanism of rental price difference, which determines the overwhelming trend of gentrification in traditional capitalist world, practically does not work in the post-Soviet countries. Numerous studies show that the level of satisfaction with residence place is quite high (Bernt, 2007; Herfert et al., 2013), often much higher compared to the central areas of the city (Kovacs & Douglas, 2004).

The total demolition of post-Soviet neighbourhoods, or at least their most declining parts, in modern Ukraine is not on the agenda, as it requires significant funds and creates a number of social risks. Therefore, real strategies will be limited to less radi-

cal means of revitalization and regeneration (Džervus, 2013). In this context, the analysis of really existing more or less successful transformation models of post-Soviet residential neighbourhoods becomes very important from the practical side.

Thus, the aim of this paper was to reveal manifestations, factors and models of morphologic and functional transformations in the residential post-Soviet neighbourhoods. In particular, we posed the following research questions:

1. What functional and / or morphological transformations have taken place in post-Soviet residential neighbourhoods, and by what basic processes these transformations are driven?
2. What are the nature / pattern of transformations in time and space: continuity or discreteness? In other words, was the process of transformation uni-

form in nature during all post-socialist transition, or differentiated between certain periods? And, is a whole neighbourhood covered by transformations, or they are concentrated in certain topological or functional areas?

3. What factors have influenced the observed transformations? Are these factors identical for different cities / neighbourhoods? How much the character of transformation is determined by the general features of post-socialist urban development, and how much it is shaped by the individual characteristics of a particular city or neighbourhood?
4. Is it possible to delineate certain transformation mechanisms and to define general transformation models, which, if successful, could be considered by urban planners for the further development of post-Soviet residential neighbourhoods?

Data and Methods

The changes in urban space in this study were characterized by fixing changes in urban spatially localized objects that are relatively stable and immovable in the system of geographical coordinates: residential and non-residential buildings, public and sacred spaces, infrastructure objects, etc. We distinguished between morphological and functional changes of spatially localized objects. Morphological change is a change in the spatial configuration of an object, its size, appearance, or internal structure. Functional change is a change in the type of human activity for which this object is intended and used. An assessment of the current morphological and functional state of urban objects was carried out by field observation according to a specially developed methodology, some elements of which were taken from the paper of Melnychuk, et al. (2016).

First, a function was determined for each urban object detected within a test neighbourhood. We considered 8 main functional types of urban objects which certain subtypes (Table 1). The same object may have several functions simultaneously, however, almost always one of them will be the main one; this is the function without which the existence of the object as such would not be possible. E.g., placing a store on the ground floor of a residential building would be impossible without the existence of a residential building; thus, residential function in this case is the main, while service function - an additional one. Estimation of the functional dynamics was carried out by comparing the results of field observation with urban planning documentation of the late 1980s.

Then, morphological changes were studied by assessing the level of modernization of spatially local-

ized objects in relation to their condition fixed by the urban planning documentation of the 1980s. For each spatially localized object, we made an assessment of its condition, and, if possible, the level of improvement of the facade and courtyard areas (Table 2). The integral modernization index was calculated according to the formula: $MI_{int} = (C + F + Y)/3$, where MI_{int} - integral modernization index, C - condition of the spatially localized object, F - level of façade territory improvement, Y - level of level of yard territory improvement. Consequently, the value of MI_{int} for each spatially localized object lies between 0 (the lowest possible index) and 1 (the highest possible index). Then the test neighbourhoods were covered with a 200 m grid, and mean values of the integral index of modernization were calculated for spatially localized objects located into each grid quadrangle. Based on these mean values, we created isoline maps, reflecting the spatial differences in the level of modernization within each test site. Such an approach allowed to abstract from purely local fluctuations in the level of modernization but to capture more general patterns.

In this study we focused on two rather typical post-Soviet residential neighbourhoods - Vyshenka and KhBK, located in two second-order Ukrainian cities, Vinnytsia and Kherson respectively (Figure 1).

The construction of Vyshenka began in the 1960s. At the moment, Vyshenka is the largest residential neighbourhood of Vinnytsia, accounting for about 120,000, which constitutes almost one third of the total city population. The neighbourhood occupies area of about 10 km² and is divided by streets and avenues into 10 microrayons. The neighbourhood encloses mainly residential development, however, its substantial part is

occupied by industrial zones, vocational and higher educational establishments (in particular, Vinnytsia National Technical University) and scientific institutions. Residential development of Vyshenka consists of pan-

Table 1. Functional assessment of spatially localized urban objects

Functional types	Functional subtypes
Residential development	<ul style="list-style-type: none"> high-rise apartment buildings (over 5 floors) low-rise apartment buildings (1 – 5 floors) low-rise private buildings and cottages
Public services	<ul style="list-style-type: none"> Education Culture Trade Catering Social Security Sports Science Administration Financial institutions Medical institutions Legal institutions Tourism and travelling Housekeeping services Lotteries Security
Infrastructure	<ul style="list-style-type: none"> Roads Communications Municipal utilities Public utilities Institutional infrastructure
Sacral space	<ul style="list-style-type: none"> Cemeteries Memorials, monuments Religious buildings
Open space	<ul style="list-style-type: none"> Public gardens Parks Forests Squares Pedestrian streets Areas unsuitable for development due to the natural conditions
Industry	<ul style="list-style-type: none"> Local significance Citywide and regional significance National significance or unique
Office centres	Office centres of all kinds
Public organizations	Public organizations of all kinds

el and brick 5-storey “khrushchevkas” of the 1960-70s, panel and brick 9-storey houses of improved planning of the 1970-80s, and modern buildings of the 2010s, represented by brick high-rises. In Soviet times, the residents of Vyshenka were employed mostly in machine-building enterprises (precision and electrical engineering), built in industrial zones in the eastern and western parts of the neighbourhood.

The KhBK neighbourhood (pronounced as “khebe-ka”) started to be built in the mid-1950s near the Kher-son Cotton Factory (Khlopchatobumazhnyi Kombi-nat), from which the neighbourhood got its name. In addition to housing development, the neighbourhood

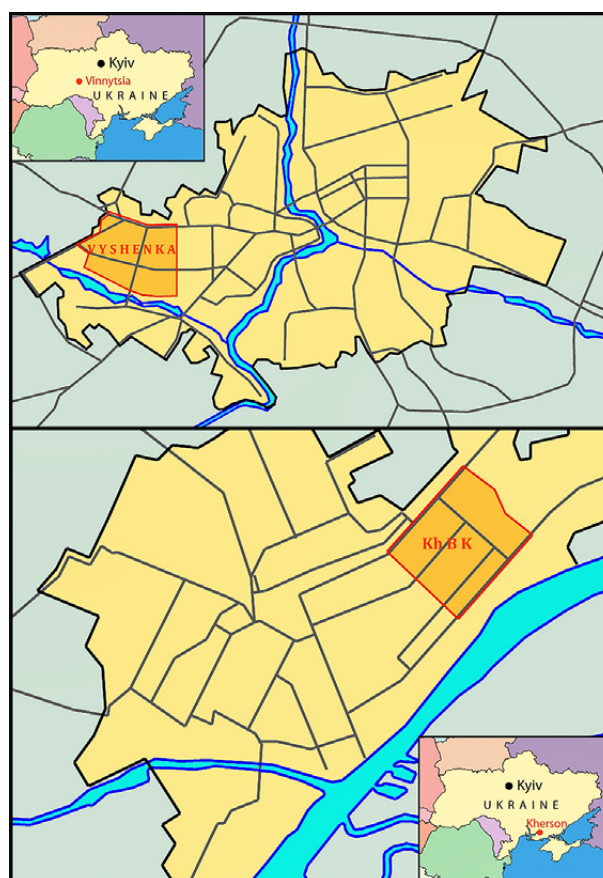


Figure 1. Location of the tested neighbourhoods

Table 2. Morphologic assessment of spatially localized urban objects

Condition*		Façade territory**		Yard territory***	
Valuation	Score	Valuation	Score	Valuation	Score
Exclusive or innovative	1.00	High improvement	1.00	High improvement	1.00
New or modernized	0.75	Partial improvement	0.50	Partial improvement	0.50
Partially modernized	0.50	Low improvement	0.00	Low improvement	0.00
Requires modernization	0.25				
Distressed and wreck	0.00				

* save for sacral and open urban spaces; ** save for infrastructure, and services in cases when impossible to evaluate (e.g., if a shop is located on the ground floor of residential building, the level of improvement was assessed for the residential building in general only);

*** save for infrastructure, sacral and open urban spaces, and services in cases when impossible to evaluate (e.g., if a shop is located on the ground floor of residential building, the level of improvement was assessed for the residential building in general only)

includes an industrial zone, a number of vocational schools, and also Kherson National Technical University. KhBK still remains one of the largest neighbourhoods in Kherson accounting approximately for 70,000 residents and occupying area of about 9 km². Residential development is made up of brick Stalin-era buildings of 1950s, panel and brick 5-storey “khrushchevkas” of the 1960-70s, panel and brick

9-storey houses of improved planning of the 1970-80s, separate fragments of low-rise private buildings, which existed on the territory before the mass construction, as well as individual samples of modern development represented by brick multi-story buildings and cottages. The neighbourhood is broken down by streets into about 14 residential microrayons and the industrial zone.

Results and Discussion

Functional changes

The first glance at the maps of functional changes (Figure 2) shows functional diversification that occurs within both housing and industrial zones.

The industrial zones of both neighbourhoods experienced the most dramatic functional changes. Special aspects of functional diversification within the indus-

trial zones are determined by the process of deindustrialization, resulting in partial disappearance of the industrial function with the simultaneous emergence of new functions. As of today, within the industrial zones, operating industrial enterprises neighbour on different service facilities, warehouses, residential houses and religious buildings.

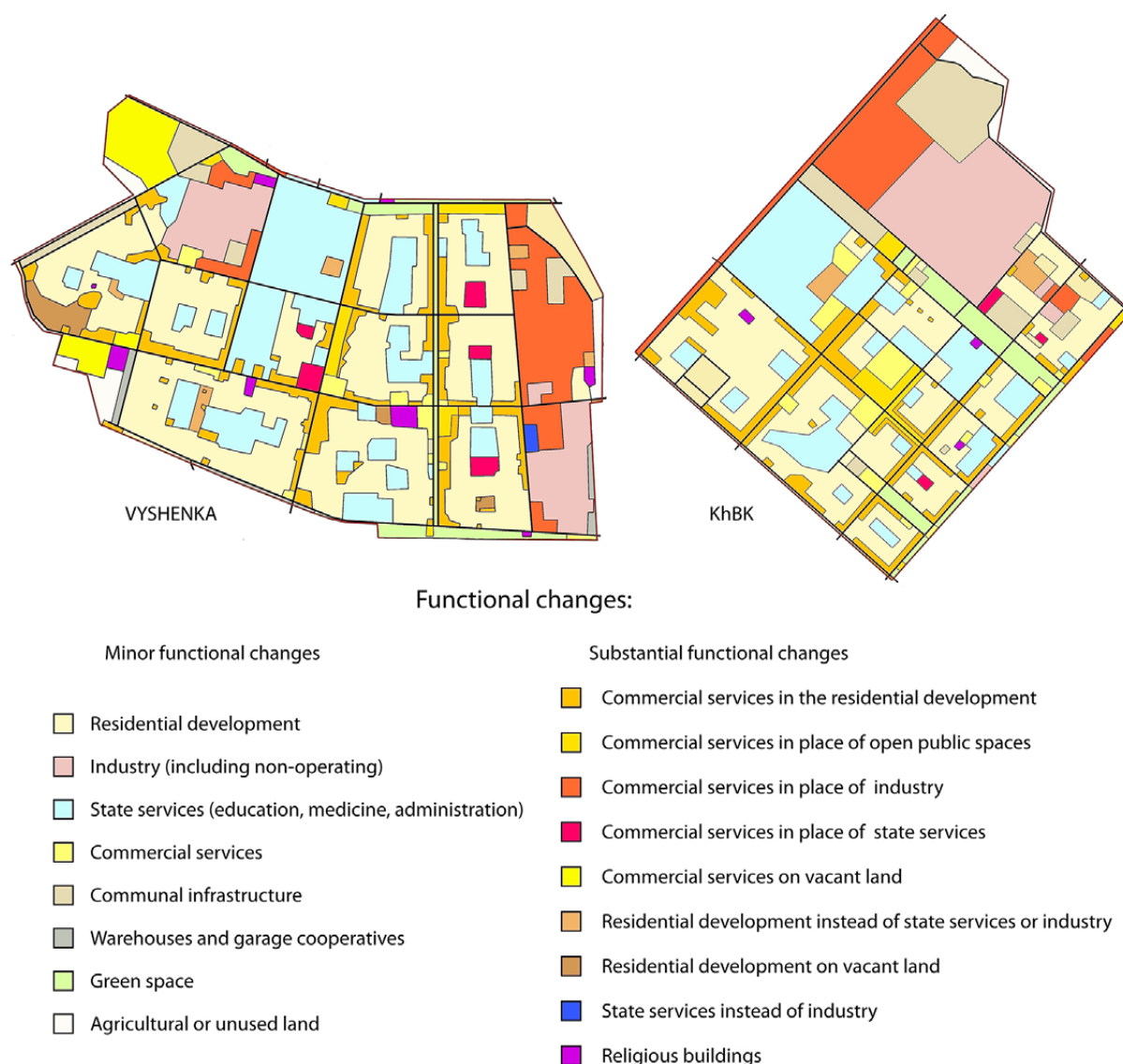


Figure 2. Functional changes within the tested neighbourhoods

Development trajectories of the industrial enterprises within the test neighbourhoods are described, firstly, in terms of preservation or loss of specialization, and secondly, with relation to the level of preservation of the industrial function. The majority of industrial enterprises have undergone partial or complete conversion in accordance with new public queries and market economy requirements. Simultaneously, some enterprises managed to maintain their initial specialization. In respect to the level of preservation of the industrial function, the following three trajectories are possible: 1. Complete preservation of the industrial function; 2. Partial deindustrialization with the partial transfer of assets (including the landsite) into ownership or lease to other businesses; 3. Complete disappearance of the industrial function with the subsequent parcelling of the former industrial site between other economic entities.

Since the owners of surviving industrial enterprises primarily try to get rid of facade parts of industrial site, stretching along the streets and therefore promising to accommodate service sector facilities, industrial enterprises are apparently hiding inside the quarters, disappearing from the urban landscape for the innocent observer. Simultaneously, the change in the functional structure is clearly visible along the streets, where often clusters of specialized services are shaped.

Although the general trends of functional transformation of industrial zones are similar in both test neighbourhoods, there are also significant differences. Compared with Vyshenka, KhBK is characterized, first, by a significantly higher level of deindustrialization and a significantly lower level of functional diversification. Apparently, this is due to the differences between sectorial and organizational structure of the two industrial zones. The presence of many enterprises with different specializations in Vyshenka resulted in greater resilience of the industry to challenges and greater potential for functional diversification compared to KhBK, where one huge factory constituted the core of the industrial zone.

However, the most noticeable functional transformation within the industrial zones of the two neighbourhoods was the emergence of large shopping and entertainment malls in the converted buildings of the former large enterprises: MegaMall in Vyshenka and Fabrika ("Factory") in Kherson. The opening of these facilities led to further changes in the functions of the adjoining territory within the former industrial zones due to the concentration of smaller service facilities.

With regard to the actual residential zone of both neighbourhoods, the main factor for functional diversification was commercialization as a result of the emergence of numerous private small-scale service providers, predominantly retailers. New insti-

tutions of the service sector appeared mostly by removing from the housing stock apartments on the first floors of multi-apartment buildings. In addition, a large number of service facilities were located in small architectural forms (vendor stands, cabins, etc.). Some service facilities were located in separate capital buildings, constructed on vacant land plots. The new phenomena were food and non-food markets where trade was conducted mainly in metal trading containers. There was also a change in the functional purpose of educational (primarily preschool) and scientific premises: some of them became used as warehouses, offices or shops. All these newly-appeared service institutions supplemented the existing network of service facilities located in specially designed premises on the ground floors of residential buildings, their annexes or separate buildings.

Especially intensive loci of commercialization in residential zone developed along the periphery of the quarters, along the streets, near public transport stops and major transport interchanges, around the markets and shopping malls, as well as in areas of new residential development.

Besides commercialization, an important feature of post-socialist transformation was sacralisation of urban space, manifested in the emergence of numerous religious buildings located within open green spaces, vacant land plots, former industrial zones and other areas not used for direct purpose. Churches near the hospitals are also typical. As a rule, religious institutions are located in specially constructed buildings, although in some cases - in the reconstructed premises of other facilities.

The development of reserve areas was by means of new housing construction, construction of large stores, including chains, as well as the construction of religious buildings. The intensity of these processes in Vyshenka is much higher in comparison with KhBK due to the fact that Vyshenka has significant spatial reserves for further growth, whereas in KhBK free land plots for development are practically exhausted.

The sites of educational establishments have practically not changed their functions, while green urban spaces were affected by the processes of commercialization and sacralisation: some former open public spaces were converted into markets and later transformed into trade pavilions and shopping malls; some green spaces hosted religious buildings.

Morphologic changes

Three components of modernization were detected within the test neighbourhoods depending on the source and purpose of the investments:

1. Municipal investments in the housing, public utilities and urban infrastructure.

2. Investments of the residents in the modernization of housing.
3. Private investments in commercial activity.

The main contribution to the modernization of the urban space within the two neighbourhoods belongs to the last component. Therefore, areas with a relatively high level of modernization, as a rule, are located in places of concentration of private service facilities, predominantly retail, which, in turn, tend to locate in the most crowded places (main streets, public transport stops, and open public spaces with high level of improvement, markets, large stores and shopping malls). That is why highest levels of modernization within residential zones are typically observed along the streets and around important intersections, while in the middle of microrayons the level of modernization is significantly lower.

This peculiarity of the spatial differentiation in the level of modernization is typical for both test neighbourhoods, but it is especially pronounced in the case of Vyshenka, whereas in KhBK the pattern of isolines is less tied to the street network (see Figure 3). The reason for this, besides the somewhat higher intensity of commercialization in Vyshenka comparing to KhBK, is the difference between the forms of commercialization and the average level of modernization of functionally identical service facilities. KhBK still have large badly organized markets, factually constituting a set of small architectural forms, predominant-

ly metal trading containers. These markets are surrounded by areas of semi-legal or even illegal trade. The road infrastructure around the markets is usually worn out, which also afflicts the inhabitants of neighbouring residential buildings. Public transport stops are usually surrounded by semi-chaotic clusters of kiosks. Simultaneously, in Vyshenka, such markets also existed from the beginning of the 1990s to the middle of the 2000s, but then were replaced with modern shopping malls or rebuilt as covered pavilions. The number of small architectural forms is minimized, and those that are still functioning are stationary structures having satisfactory design. On the whole, there are 2 large shopping malls, 4 large stores and up to a dozen of supermarkets within Vyshenka, while KhBK has only one large shopping mall (Fabrika) and one large chain store (EpiCentr) both located outside the residential zone. However, it should be mentioned that Fabrika rents out premises for many service facilities, including chain stores and caterings, boutiques of well-known companies, cinemas, etc., but all these facilities are all concentrated in one place, while in Vyshenka these services are more or less evenly dispersed within the neighbourhood.

Industrial zones, where private investments were practically the only source of modernization, have expressed variability (patchiness) in terms of modernization: it is particularly high in the areas of successful revitalization (large shopping malls, office centres, residential development, educational institutions, religious

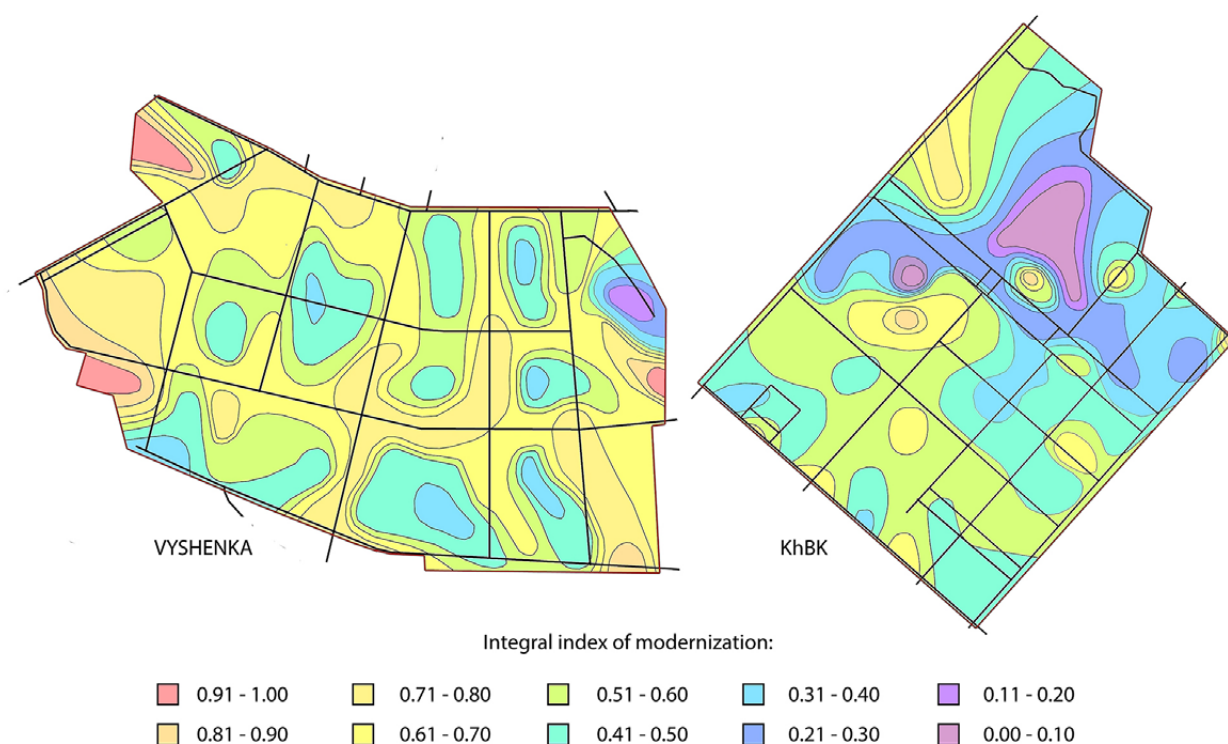


Figure 3. Morphological changes within the tested neighbourhoods

buildings etc.), but rather low on the rest of the territory, especially in places where warehouses and garage co-operatives are concentrated. In general, industrial zone in Vyshenka is characterized by a significantly higher overall level of modernization compared to KhBK due to more successful examples of revitalization and still operating industrial enterprises.

Partial modernization of residential development is practically of a widespread nature and is manifested in the repair of inter-panel joints, partial external insulation, replacement of old wooden glass units with modern metal-plastic or wooden ones, installation of code locks and intercoms. These findings are very similar to those depicted by Soaita (2012) for Romanian large residential estates. A somewhat higher level of improvement is typical for relatively new microrayons. In addition, more intensive improvement is typical for areas around the new residential developments. This is partly due to the efforts of the developer company, which, at its own expense, carries out partial beautification of the adjoining territory. However, the main driving force behind this phenomenon is the initiative of the residents of the houses bordering on the new buildings, having a desire to recreate the modern standards in their own yards. Two mechanisms for the practical implementation of such an initiative have been observed. The first is realized by attracting funds from the city budget within the framework of municipal-private partnership programs. The results of such cooperation are installation of modern playgrounds, building parking facilities for private vehicles, repair of roads and sidewalks. The second mechanism is to make improvement using own resources: creation of flowerbeds, alpine skylights, wooden or wicker fences in the yards, as well as installation of original carved wood figures using also other improvised materials (rubber, plastics, cardboard, plastic bottles, etc.).

Till the beginning of 2010s, the city administration practically did not participate in the modernization of both test neighbourhoods due to the lack of budget funds. At the present stage, the active financial and organizational involvement of the municipality favourably distinguishes Vyshenka from KhBK. Since 2015 the oldest part of Vyshenka, built up by five-story panel houses, is a subject of a complex centralized improvement. Typical reconstruction involves construction of sidewalks and parking lots, restoration of road covering, organization of resting places by installing benches, arbours and playgrounds. Intensive transformations also cover the space around secondary schools. According to the practice, widespread in Vinnytsia, a private developer signs an agreement with the municipality and carries out improvement of the school territory, including, first of all, reconstruction

of school sports grounds. Instead, the school transfers part of its territory to an investor for the construction of multi-apartment residential building. Moreover, since 2015, the major development trend of Vyshenka was a large-scale improvement of green public spaces. In particular, the municipality has partially completed a complex reconstruction of the main recreational zone, Prospekt Kosmonavtiv (Avenue of Cosmonauts): the reconstruction involves re-planning of pedestrian paths, creation of bike lanes, renovation of grassland and landscape design, construction of light-and-musical fountains, installation of new ergonomic benches and wireless street lighting system, as well as sockets for gadget recharge. In 2016, the improvement of the central alley and the main square of Lisopark (Forest Park) took place, including a new gravel coating, a bike lane, a playground, and information stands. Also, the municipality announced a large-scale project on the reconstruction of the Druzhby Narodiv Park in the southern edge of the neighbourhood. Furthermore, projects for the complex repair and reconstruction of a number of streets have been implemented, a new tram line has been built, and a reversible tram ring with a maintenance point has been reconstructed. At the same time, in KhBK, where municipality makes practically no investment into urban improvement, the areas of secondary schools and green public spaces (e.g. boulevard on Zalaegerszeg Street, which separates the main housing development from the industrial zone) are in an abandoned and even dreadful condition.

The common feature of Vyshenka and KhBK is the low level of modernization within the university campuses. This is especially true for their peripheral parts, represented by student dormitories, sports complexes, dining halls, motor depots and housekeeping departments. This is caused, firstly, by the lack of university funds for the improvement of the peripheral territory, and, secondly, by the total absence of private business as a modernization factor: private businesses, with rare exceptions, are not allowed to be located within the campuses.

Factors and mechanisms of transformation

It follows from the previous subsections that the rapid development of private entrepreneurship in its various forms and manifestations was the main source of transformation within the test neighbourhood, especially at the initial stage. Thus, the spatial pattern of transformation depends, above all, on the allocation factors of such private enterprises. Two main factors can be traced: possibility of placing a facility (availability of the appropriate premises or possibility of building such premises), and maximal accessibility for consumers.

Accessibility for consumers was particularly critical for small businesses that could be located almost everywhere within residential development zone, e.g. in redesigned residential premises or small architectural forms. Therefore, at an initial stage, these enterprises concentrated in most crowded areas, and stops of public transport were exactly such places. As a rule, public transport stops are located at the intersection of the streets, so in most cases these intersections became the concentration places for new private service facilities. With the lapse of time, small service facilities began to be located also along streets with intensive traffic of transport and pedestrians, intercepting the transit flow of consumers. The concentration of service facilities in these primary loci has been increasing over time as a result of the clustering of the facility services, especially of the similar specialization. At this stage, the concentration of visitors grew even more, as people came here purposefully to meet their certain demands regardless of the transport stops etc. However, configuration of the public transport network was only one among many factors preconditioning high accessibility for consumers. E.g., modernized open public space has great chances to turn into popular leisure place for residents. This is quickly reacted by private business, changing the function and aesthetics of the surrounding area. Areas of urban transformation as a result of the small private entrepreneurship are shaped also in and around areas of new residential development. This is due to the following circumstances: first, new residential buildings are typically designed with ready-made premises for business needs on the ground floor; second, private entrepreneurs are attracted by the aesthetics and status of the location and the availability of profitable wealthy clientele living in newly constructed buildings.

As for large enterprises (markets, chain trade and catering, shopping malls, cinemas, etc.), availability of placement is at least equivalent but sometimes even more important factor than access for consumers. Therefore, large enterprises typically have the following locations: existing specially equipped premises or structures, inherited from the Soviet large department stores; vacant areas within residential zone or on the periphery of the neighbourhood; industrial sites of closed industrial enterprises. In any case, the emergence of a powerful service facility led to an intensive influx of consumers (coming not only from the neighbourhood but even from the whole city using their own vehicles), which stimulated the further development of private entrepreneurship within adjacent areas and, consequently, their functional and morphological transformation. Particularly powerful transformation effect is observed in the case of a combination of all the favourable factors: the location of a large service facility

within a residential zone in a place with good transport accessibility for all categories of consumers.

Transformations are also observed around religious buildings. They are manifested by construction of auxiliary structures around the main temple and beautification of the surrounding area. However, in this case, the transformation is limited exclusively to the site of the religious building and its immediate surroundings.

The processes of transformation inspired by the municipality, in contrast to private business, are not spontaneous, and therefore it is difficult to describe some general patterns and regularities. Therefore, such transformations can be predicted only by knowing the priorities of the municipal policy in each particular city. E.g., in Vyshenka, the oldest residential quarters and the areas around secondary schools are turning recently into the loci of intense transformations due to relevant municipal renovation practice, which is not observed in KhBK.

As for the investments of the residents in the modernization of housing and the improvement of the adjoining areas, they are somewhat higher in the quarters of relatively new development (starting from 1980s) and in areas adjacent to the recent residential development.

Thus, the following areas have the greatest potential for transformation (potential for transformation we define here as a probability of transformation in a certain point of urban space):

1. Areas adjacent to public transport stops, as well as streets, intersections, crossroads, streets and transport interchanges with the largest traffic.
2. Areas adjacent to the existing service facilities (especially those of trade, catering and leisure); the larger is the service facility - the greater is the potential for transformation.
3. Areas adjacent to open public spaces with a high level of improvement.
4. Industrial sites of enterprises that have stopped their operation or are currently optimizing their assets.
5. Other areas, depending on the actual municipal policy.

The map, demonstrating most and least transformed areas (by the sum of functional and morphological changes), with aforementioned factors overlaid, proves the reliability of our conclusions (Figure 4).

In all cases a key underlining condition is the large concentration of people (consumers) that attracts private business. This concentration serves as either the primary factor of transformation (item 1), or arises (or increases) as a result of the already existing changes, reinforcing further transformation (items 2-5).

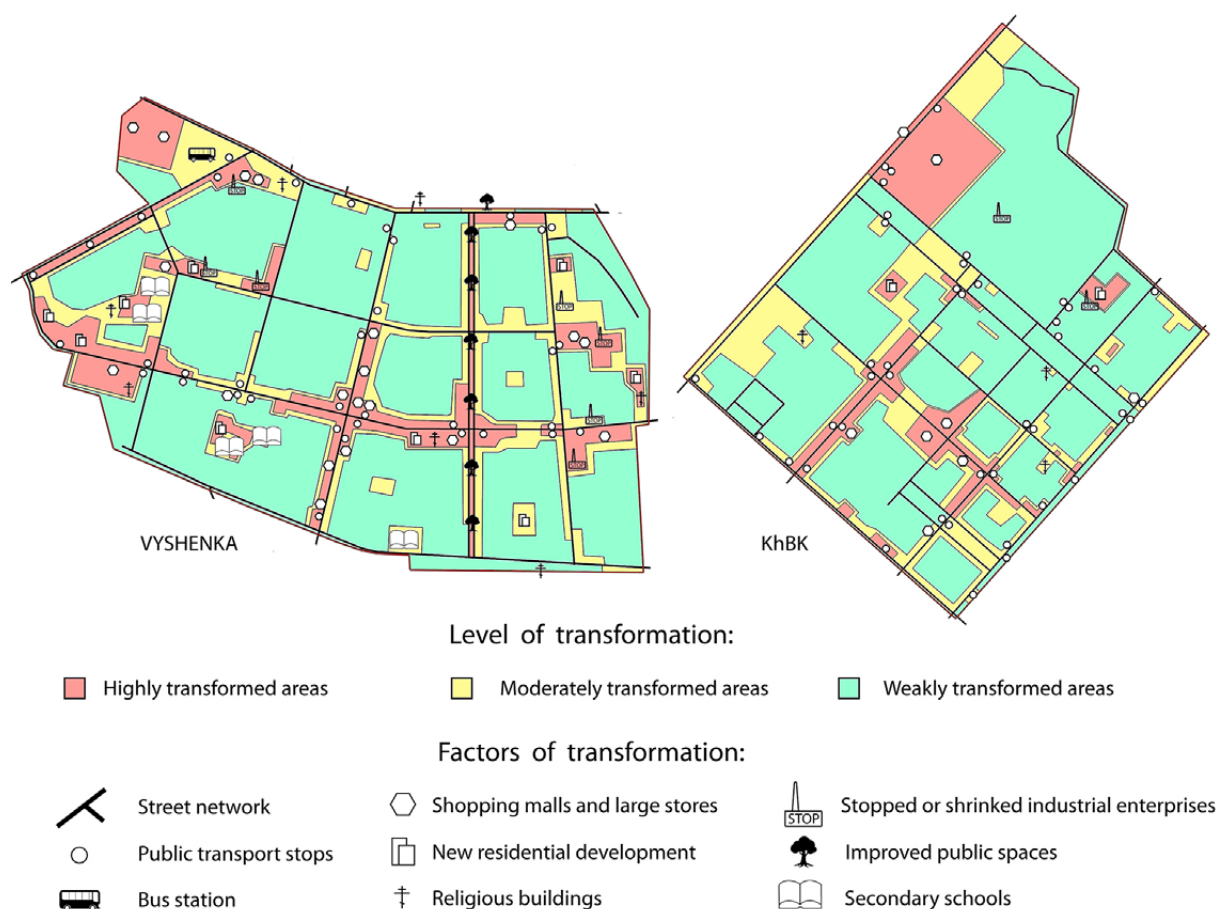


Figure 4. Spatial patterns of transformation and its factors

Based on aforementioned facts and speculations, we may conclude that areas with greater and smaller potential for transformation shape a continuous spatial field of transformation potential. In the early stages, the development of this field is rather spontaneous and can occur in different scenarios, passing through numerous bifurcation points. E.g., large shopping mall may be located with the same probability in different parts of the former industrial zone, or at different neighbouring crossroads; reconstruction of this or that open public space is also a matter of chance. However, having once emerged, such loci of transformation will intensify their influence on the adjoining territory, defining its further changes. Thus, since the probability of further transformations in each point of the territory is determined by the already existing pattern, the already shaped spatial structure has the ability to consolidate in the future, fixing the existing heterogeneities. Given this fact, the initial stages of transformation are especially important for the further development of the neighbourhood, since they are responsible for key spatial patterns and models that are rather difficult or even impossible to change on the subsequent stages.

Models of transformation

The theory and practice show the possibility of different models of post-socialist transformation for post-Soviet residential neighbourhoods. These models differ in the ratio of different transformation factors, their spatial pattern, the set and sequence of stages.

The transformation of the test neighbourhoods, which in the early 1990's were in similar starting conditions, can be divided into several stages: 1. Deindustrialization. 2. Commercialization due to small business. 3. Commercialization due to medium and large businesses. 4. Activation of local governance participation in urban transformations.

The first stage (1990s - early 2000s) was characterized by reduction of industrial activity. In result, large areas of former industrial zones stopped to be used for purpose and fell out of the urban public life, turning into neglected and deserted greyfields and brownfields. The second consequence of deindustrialization was that industry workers were pushed out on the labour exchange. The fall in the living standard has practically brought zero investment of the people to housing modernization. Municipal and state investments in the development and maintenance of infrastructure were also minimized.

The second stage (mid-2000s) was marked by the intensification of private entrepreneurship in the service sector. The prerequisites for this were the revival of the economic situation in the country, the obvious shortage (rooted in the planned economy period) of quality and diverse goods and services, as well as the presence of a significant number of economically active population pushed out from industry. This initial commercialization had two main manifestations with a different effect on the beautification of the territory and the life quality. On the one hand, the emergence of large, semi-chaotic and bad-organized markets (which, however, were a source of survival for a large segment of the population) in place of former open public spaces has led to overload and deterioration of urban infrastructure, numerous inconveniences for neighbouring residents of houses and damage to the aesthetics of urban space. On the other hand, placement of service facilities on the ground floor of residential buildings was accompanied by improvements of the surrounding area, creating in this way something like modernization oases in the grey post-socialist desert. Such transformations were concentrated within the residential zone along the network of streets, primarily in the vicinity of public transport stops and major transport interchanges.

The third stage (end of 2000s - the first half of 2010s) was marked by activation of the medium and large business that began to invest in the restructuring of former Soviet supermarkets, as well as the revitalization of the abandoned objects of industry, education, science, etc. At this stage, availability of premises (or possibility of building such premises) was an important location factor together with good transport accessibility. These stores and especially shopping malls had intense traffic of visitors due to still unimproved open public spaces and growing popularity of new types of entertainment like shopping, visiting a cafe or restaurant, bowling, billiards, skating, etc., thus creating a huge potential for further commercialization (and, consequently, transformation) of the adjoining area. Location of new shopping malls on the former industrial site caused partial revitalization of the industrial zones, as they again became integrated into the urban space.

If earlier the transformation process of both test neighbourhoods occurred without significant differences, at this stage, development scenarios began to differ.

First, Vinnytsia in that period started to demonstrate intensive economic development in comparison with Kherson, and Vyshenka had no competitors among other peripheral residential neighborhoods in terms of population and importance in the urban spatial framework of the city, which cannot be said about

KhBK since it is comparable to some other residential neighborhoods in Kherson. Therefore, the first major stores and malls in Vyshenka opened significantly earlier (2007-2011) than in KhBK (2012).

Second, Fabrika and EpiCentr are located nearby each other and on the periphery of KhBK, in the former industrial zone, and are separated from residential zone by a belt of communal enterprises, warehouses and abandoned green spaces, which minimizes their direct impact on the residential zone. Regarding the transformation of the rest of the industrial zone, revitalization of the other two abandoned buildings of the cotton factory requires large investments comparable to the investments into Fabrika, making it difficult to search an investor for such a project.

Third, Fabrika, concentrating various facilities in its premises, in one place on the map, has exhausted the existing demand for a long time, blocking in this way the further construction of large stores and malls in KhBK. Instead, in Vyshenka, such facilities are dispersed across the neighbourhood; therefore their fields of increased potential for transformation more or less evenly cover the whole neighbourhood.

Finally, in Vyshenka, due to the greater investment potential and stronger coverage of the residential zone by transformations, large stores, malls and trade pavilions were constructed on the places of the former markets, existing from 1990s. Thus, a fundamentally different level of improvement of the respective areas was achieved, as opposed to the KhBK, where primitive markets have survived to these days in the heart of the residential zone.

At the fourth stage, started in the middle 2010s in Vyshenka, private investment were joined by those of municipalities, which generated additional transformation factors: public spaces and secondary schools.

Thus, although Fabrika can undoubtedly be considered a successful revitalization project for the city of Kherson, its opening had limited and even negative consequences for KhBK neighbourhood. The multi-nuclear model, which involves creation of many transformation loci of different types, evenly distributed throughout the area, including within the residential zone, has proved to be more effective.

The aforementioned stages and their sequence could be different in the case of different social, economic and political transition of the country. E.g., municipal investments and policies of integrated urban development at the initial stages of transformation would have a positive effect. However, even under the actual conditions of the post-socialist transition in Ukraine, we see the possibility of more and less successful development models. In particular, the case of Vyshenka could be an alternative scenario for KhBK, which, unfortunately, was not implemented.

Could the case of Vyshenka be an alternative scenario for KhBK? Obviously, absolute analogy is unattainable due to differences in the general urban dynamics of the respective cities. However, different localization of the initial transformation loci could lead to the fundamentally other final results. If Fabrika did not open in 2012, other investors would have an incentive to invest in the construction of shopping malls and hypermarkets in the central part of the residential zone, e.g. in the place of Dniprovskyi market. In this case, we would receive a powerful transformation nucleus for the entire residential zone. Visitors from the other parts of the city could meet their needs not only in such shopping malls, but also in nearby small facility services, which is impossible in the present situation, since Fabrika is located in isolation on the periphery of the neighbourhood. In addition, if the abandoned green area on Zalaegerszeg Street, which is currently serving as a barrier between the residential and former industrial zones, was well-maintained, this would not only stimulate the transformation of the adjoining area, but would also create

a comfortable pedestrian corridor between residential zone and Fabrika.

Moreover, the existing model of KhBK transformation has some comparative advantages for future development. Since large stores and shopping malls are located outside the residential zone, there are fewer seizures and damages to public spaces for the needs of private sector. If the municipality of Kherson will strictly ensure compliance with construction norms while transforming existing markets, the construction of such facilities in the residential zone may be less aggressive in relation to the urban environment and to the residents comparing to Vyshenka.

Based on knowledge of the identified transformation factors and the spatial structure of the test neighbourhoods, we proposed some spatial models for their further transformation (Figure 5). The meaning of such proposals is the creation of the minimum sufficient number of transformation nuclei (based on existing conditions and possibilities) that would allow the most comprehensive coverage and maximize the level of modernization of the entire neighbourhood.

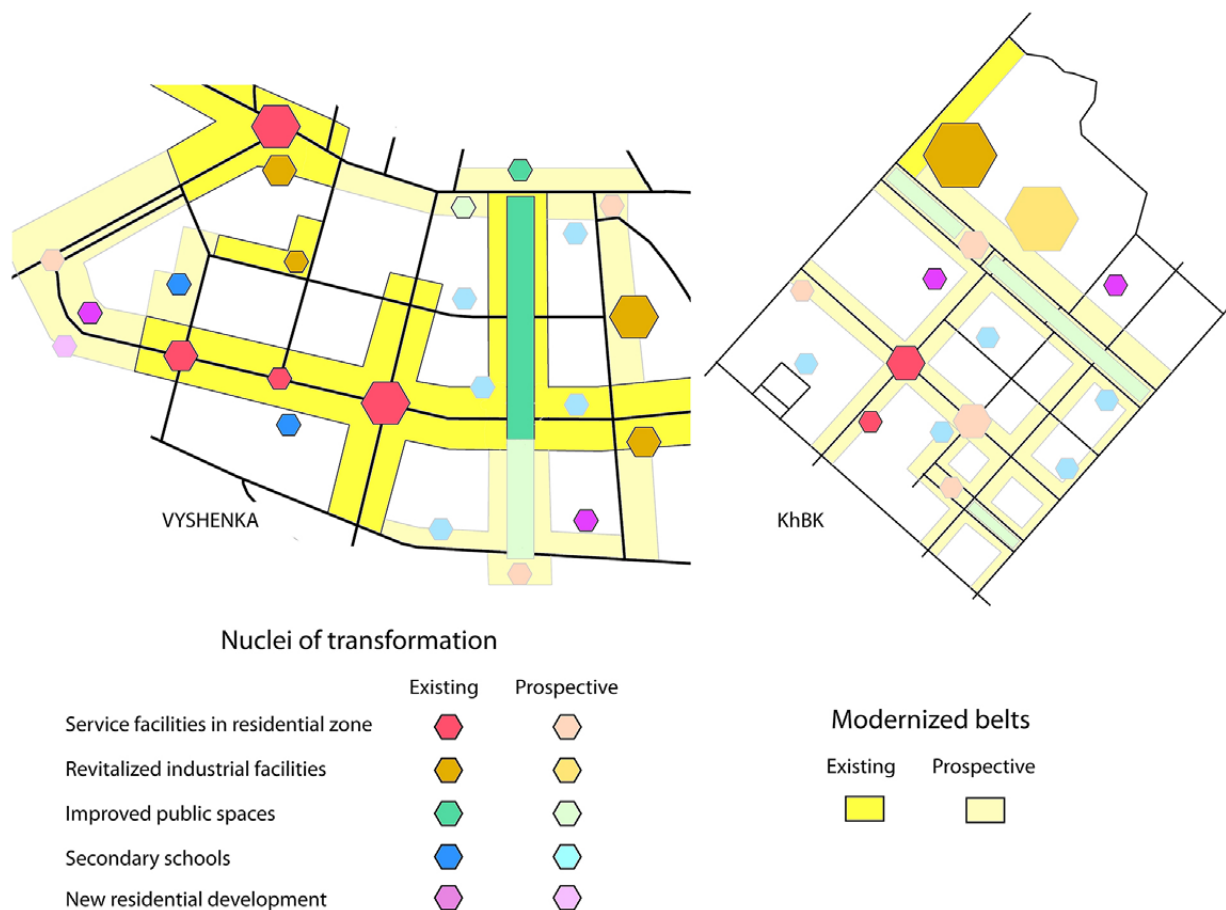


Figure 5. Proposed transformation models for test neighbourhoods

Conclusions

Post-Soviet neighbourhoods have undergone a significant transformation expressed both in functional and morphological changes. Functional diversification, including combination of several functions within a single territory, is a typical pattern of the modern period of development compared with the Soviet period, when the functional zoning of the territory was quite rigid. This contributes to the revitalization and internal integration of the neighbourhoods. However, processes of modernization are spatially fragmented, incomplete, and often contradictory: due to the lack of a consolidated municipal and / or state policy, uncontrolled private investments constitute the main source of transformation; therefore, existing transformation models reflect, first and foremost, the interests of private business, but not the interests of residents. Slightly paraphrasing Marcińczak's wording about gentrification in post-socialist city (2007), we may state that modernization takes the form of oases, while the total restoration remains a song of tomorrow. Post-Soviet capitalism widely remains the capitalism of ground floors and street facades. Nevertheless, we have not found any radical decline, including housing deterioration, as well as deep socioeconomic polarization.

Test neighbourhoods continue to play an important role in the spatial functional structure of their cities.

Although we have generally identified the same factors, mechanisms, and stages of transformation in both test neighbourhoods, apparently different result of this process is explained by the differences in the urban spatial structure (network), spatial and sectorial structure of industrial zones, position (importance) of the neighbourhood in the whole city, as well as the economic dynamics of the city. The early stages of modernization often have crucial importance as once emerging spatial patterns tend to enhance in future. Interestingly, large investment projects, which are clearly beneficial for the city as a whole, may have a negative impact on the development of the neighbourhood in which they are located.

Considering the scale of the Soviet mass housing construction, post-Soviet neighbourhoods will soon compel attention of urban specialists trying to inspire them with new life. The knowledge of the factors, mechanisms and basic models of transformation will permit to better understand the instruments and measures needed to push the transformation toward more successful scenarios.

Acknowledgements

This research was made within the framework of scientific project No 16BP050-02 "Spatial Transformation in Ukraine: Models of Urban Modernization and Planning" funded by the Ministry of Education and Science of Ukraine.

References

- Axenov, K., Brade, I., & Bondarchuk, E. (2006). *The Transformation of Urban Space in Post-Soviet Russia*. Abingdon: Routledge. 200 pp.
- Badyina, A., & Golubchikov, O. (2005). Gentrification in central Moscow: A market process or a deliberate policy? Money, power and people in housing regeneration in ostozhenka. *Geografiska Annaler: Series B, Human Geography*, 87(2), 113-129. doi:10.1111/j.0435-3684.2005.00186.x
- Bárta, G., Beluszky, P., & Czirfusz, M. (2006). *Rehabilitating the Budapest brownfield zone*. Pécs: Centre for Regional Studies of Hungarian Academy of Science. Discussion Paper No. 51.
- Batychenko, S. (2016). Spatial Transformations of Urban Areas in the Suburbs of the Capital on the Example of Boryspil. *Bulletin of Cartography*, 16, (in Ukrainian with English summary).
- Bernt, M. (2007). Neither normalisation, nor decay: housing estates in Eastern Germany. In B. Komar & B. Kucharczyk-Brus (Eds.), *Housing and Environmental Conditions in Post-Communist Countries*. (pp. 41-55).
- Blinnikov, M., Shanin, A., Sobolev, N., & Volkova, L. (2006). Gated communities of the Moscow green belt: newly segregated landscapes and the suburban Russian environment. *GeoJournal*, 66(1-2), 65-81. doi:10.1007/s10708-006-9017-0
- Borén, T., & Gentile, M. (2007). Metropolitan processes in post-communist states: an introduction. *Geografiska Annaler: Series B, Human Geography*, 89(2), 95-110. doi:10.1111/j.1468-0467.2007.00242.x
- Bouzarovski, S., Salukvadze, J., & Gentile, M. (2011). A Socially Resilient Urban Transition? The Contested Landscapes of Apartment Building Extensions in

- Two Post-communist Cities. *Urban Studies*, 48(13), 2689–2714. doi:10.1177/0042098010385158
- Dannert, É., & Pirisi, G. (2017). Rusty Hungary: New Insights in Brownfield Research. *European Spatial Research and Policy*, 24(1), doi:10.1515/esrp-2017-0001
- Dekker, K., & Van, K.R. (2004). Large Housing Estates in Europe: Current Situation and Developments. *Tijdschrift voor Economische en Sociale Geografie*, 95(5), 570–577. doi:10.1111/j.0040-747X.2004.00340.X
- Denysenko, O. (2012). *The Metropolitan Process: World Economic Aspect*. Kyiv, Ukrainian: National Academy of Science of Ukraine - Institute of Geography. 193 pp..
- Džervus, P. (2013). Postmodern Discourse of Post-Soviet Large Housing Districts: Modelling the Possibilities. *Architecture and Urban Planning*, 7, 51–58.
- Feldman, M. (2000). *Gentrification and social stratification in Tallinn: Strategies for local governance*. Vienna: Institute für die Wissenschaften vom Menschen. Project Paper No. 86, SOCO.
- Garb, Y., & Dybicz, T. (2006). The retail revolution in post-socialist Central Europe and its lessons. In S. Tsenkova & Z. Nedović-Budić (Eds.), *The Urban Mosaic of Post-Socialist Europe: Space, Institutions and Policy*. (pp. 231–252). Springer Nature. doi:10.1007/3-7908-1727-9_12
- Gentile, M. (2003). Residential Segregation in a Medium-Sized Post-Soviet City: Ust'-Kamenogorsk, Kazakhstan. *Tijdschrift voor Economische en Sociale Geografie*, 94(5), 589–605. doi:10.1046/j.1467-9663.2003.00285.x
- Gentile, M. (2004). Divided post-soviet small cities? Residential segregation and urban form in Lenínogorsk and Zyrýanovsk, Kazakhstan. *Geografiska Annaler: Series B, Human Geography*, 86(2), 117–136. doi:10.1111/j.0435-3684.2004.00157.x
- Gentile, M., Salukvadze, J., & Gogishvili, D. (2015). Newbuild Gentrification, Tele-urbanization and Urban Growth: Placing the Cities of the post-Communist South in the Gentrification Debate. *Geografie*, 120(2), 134–163.
- Gnatiuk, O. (2017). Space Transformations of Urban Peripheral and Industrial Areas in Ukraine (On the Example of Cities of Zaporizhia and Zhovti Vody). *Bulletin of Karazin Kharkiv National University, series "Geology. Geography. Ecology"*, 46, 68–74. (in Ukrainian with English summary).
- Gnatiuk, O., & Oreshchenko, A. (2017). Spatial Transformation of Residential District in Post-Socialist City (Case of Vinnytsia). *Odessa National University Herald. Geography and Geology*, 23(11), 149–161. (in Ukrainian with English summary).
- Golubchikov, O., Badyina, A., & Makhrova, A. (2014). The Hybrid Spatialities of Transition: Capitalism, Legacy and Uneven Urban Economic Restructuring. *Urban Studies*, 51(4), 617–633. doi:10.1177/0042098013493022
- Gritsai, O. (1997). Business services and restructuring of urban space in Moscow. *GeoJournal*, 42(4), 365–376. doi:10.1023/a:1006866100356
- Haase, A., & Steinführer, A. (2005). Cities in east-central Europe in the aftermath of post-socialist transition: some conceptual considerations about future challenges. *Europa*, 21(13), 97–110.
- Herfert, G., Neugebauer, C.S., & Smigiel, C. (2012). Living in Residential Satisfaction? Insights from Large-Scale Housing Estates in Central and Eastern Europe. *Tijdschrift voor economische en sociale geografie*, 104(1), 57–74. doi:10.1111/j.1467-9663.2012.00727.x
- Hirt, S., & Stanilov, K. (2009). *Twenty years of transition: The evolution of urban planning in Eastern Europe and the former Soviet Union, 1989–2009*. Nairobi: UNON Print Shop. 166 pp.
- Kährlik, A., & Tammaru, T. (2010). Soviet Prefabricated Panel Housing Estates: Areas of Continued Social Mix or Decline? The Case of Tallinn. *Housing Studies*, 25(2), 201–219. doi:10.1080/02673030903561818
- Kiss, E. (1999). Restructuring in industry and industrial areas in Budapest. *Geographia Polonica*, 72(1), 29–45.
- Kiss, E. (2004). Spatial Impacts of Post-Socialist Industrial Transformation in the Major Hungarian Cities. *European Urban and Regional Studies*, 11(1), 81–87. doi:10.1177/0969776404039148
- Koroma, N. (2016). The Urban Space around Big City: The Results of Fieldworks. *Bulletin of Cartography*, 16, 145–156. (in Ukrainian with English summary).
- Kotus, J. (2006). Changes in the spatial structure of a large Polish city – The case of Poznań. *Cities*, 23(5), 364–381. doi:10.1016/j.cities.2006.02.002
- Kovács, Z., & Douglas, M. (2004). Hungary: From socialist ideology to market reality. In R. Turkington, R. van Kempen, & F. Wassenber (Eds.), *High-rise Housing in Europe: Current Trends and Future Prospects. Housing and Urban Policy Studies*. (pp. 231–248). Delft: University Press.
- Kovács, Z., Wiessner, R., & Zischner, R. (2013). Urban Renewal in the Inner City of Budapest: Gentrification from a Post-socialist Perspective. *Urban Studies*, 50(1), 22–38. doi:10.1177/0042098012453856
- Kryvets, O. (2016). Spatial Transformations in Ukrainka – Typical Satellite City of Kyiv. *Bulletin of Cartography*, 16, 173–180. (in Ukrainian with English summary).

- Marcińczak, S. (2007). The socio-spatial structure of post-socialist Łódź, Poland: Results of national census. *Bulletin of Geography (Socio-Economic Series)*, 8, 65-82.
- Marcińczak, S., Gentile, M., Rufat, S., & Chelcea, L. (2013). Urban Geographies of Hesitant Transition: Tracing Socioeconomic Segregation in Post-Ceaușescu Bucharest. *International Journal of Urban and Regional Research*, 38(4), 1399-1417. doi:10.1111/1468-2427.12073
- Marcińczak, S., & Sagan, I. (2011). The Socio-spatial Restructuring of Łódź, Poland. *Urban Studies*, 48(9), 1789-1809. doi:10.1177/0042098010379276
- Matlovič, R., Ira, V., Sykora, L., & Szczyrba, Z. (2001). Procesy transformacji struktury przestrzennej miast postkomunistycznych (na przykładzie Pragi, Bratysławy, Ołomuńca oraz Proszowa). In I. Jazdewska (Ed.), *Miasto postsocjalistyczne - organizacja przestrzeni miejskiej i jej przemiany, XIV Konwersatorium Wiedzy o Mieście*. (pp. 9-22). Łódź, Polish: Grotesk.
- Melnychuk, A., Kauk, Y., & Palchuk, M. (2012). Transformations trends of the main city's functions in Pechersk district of Kyiv at the beginning of XXI century. *Ekonomichna ta Sotsialna Geografiya*, 65, 173-183. (in Ukrainian with English summary).
- Melnychuk, A., & Khmelnytskyi, O. (2015). Напрями та особливості зміни функції території середнього міста в Україні у пострадянський період розвитку (на прикладі міста Бердичів). *Ekonomichna ta Sotsialna Geografiya*, 71, 68-74. doi:10.17721/2413-7154/2015.71.68-74
- Melnyk, L. (2016). Functional Transformation of Urban Space in Bucha, Satellite City of the Capital. *Bulletin of Cartography*, 16, 181-191. (in Ukrainian with English summary).
- Melnyk, L., & Batychenko, S. (2016). Transformation Processes Perception by Urban Residents of the Town of Shpola. *Human Geography Journal*, 21(2), 122-125. (in Ukrainian with English summary).
- Melnyk, L., & Batychenko, S. (2017). Transformation Directions and Elements of Modernization Identification Within the Research Test Area in the City of Shpola. *Bulletin of Taras Shevchenko National University of Kyiv. Geography*, 68-69, 87-91. doi:10.17721/1728-2721.2017.68.16
- Melnyk, L., Kryvets, O., & Batychenko, S. (2017). Urban areas space transformations in the suburb cities of the capital. *Bulletin of Karazin Kharkiv National University, series "Geology. Geography. Ecology"*, 46, 121-129. (in Ukrainian with English summary).
- Melnyk, L., Oreshchenko, A., & Batychenko, S. (2016). Трансформації міського простору на прикладі тестової ділянки в м. Луцьк. *Bulletin of Taras Shevchenko National University of Kyiv. Geography*, 64, 53-57. doi:10.17721/1728-2721.2016.64.8
- Mezentsev, K., & Mezentseva, N. (2011). Public Spaces in Kyiv: Availability and Modern Transformation. *Human Geography Journal*, 11(2), 39-47. (in Ukrainian with English summary).
- Mezentsev, K., & Mezentseva, N. (2017). Modern transformations of Kyiv public spaces: prerequisites, manifestation and specifications. *Human Geography Journal*, 22(1), 39-46. (in Ukrainian with English summary).
- Mezentsev, K., Mezentseva, N., & Bura, T. (2011). Transformation of Public Spaces in the Big Cities of Ukraine: Example of Shopping Malls. *Ekonomichna ta Sotsialna Geografiya*, 63, 172-184. (in Ukrainian with English summary).
- Mezentsev, K., & Stebletska, Y. (2017). Residential Neighbourhoods of a Socialist City: The Past and Future of "khrushchevkas" in Kyiv. In K. Mezentsev, Y. Oliynyk, & N. Mezentseva (Eds.), *Urban Ukraine: In the Epicentre of Spatial Changes*. (pp. 227-240). Phoenix - Kyiv. (In Ukrainian).
- Mezentseva, N. (2017). Public spaces of Kyiv: A model and a Modern Transformation. In K. Mezentsev, O. Ya, & N. Mezentseva (Eds.), *Urban Ukraine: In the Epicentre of Spatial Changes*. (pp. 185-210). Phoenix - Kyiv. (In Ukrainian).
- Mezentseva, N., & Palchuk, M. (2016). Urban Public Spaces: Understanding Through the Prism of Foreign Discourse. *Ekonomichna ta Sotsialna Geografiya*, 76, 19-26. doi:10.17721/2413-7154/2016.76.19-26
- Murie, A., Tosics, I., Aalbers, M., Sendi, R., & Cernic-Mali, B. (2005). Privatisation and after. In R. van Kempen, K. Dekker, S. Hall, & I. Tosics (Eds.), *Restructuring large housing estates in Europe Restructuring and resistance inside the welfare industry*. (pp. 84-103). The Policy Press. doi:10.1332/policypress/9781861347756.003.0005
- Musterd, S., & Ronald, V.K. (2007). Trapped or on the Springboard? Housing Careers in Large Housing Estates in European Cities. *Journal of Urban Affairs*, 29(3), 311-329. doi:10.1111/j.1467-9906.2007.00345.x
- Nagy, E. (2001). Winners and Losers in the Transformation of City Centre Retailing in East Central Europe. *European Urban and Regional Studies*, 8(4), 340-348. doi:10.1177/096977640100800406
- Neugebauer, C., & Kovacs, Z. (2015). Paths of Socio-Spatial Change in Post-Socialist Cities – Insights from Five City-Regions in Central and Eastern Europe. In S. Henn, T. Lang, K. Ehrlich, & W. Sgibnev (Eds.), *Understanding Geographies of Polarization and Peripheralization*. (pp. 171-196). London: Springer Nature. doi:10.1057/9781137415080_10

- Oreshchenko, A. (2016). Transformation Factors of Residential and Industrial Development in the Inner City in the Agrarian Region (The Example of Lutsk). *Bulletin of Cartography*, 16, 214-229. (in Ukrainian with English summary).
- Parysek, J.J. (2004). The socio-economic and spatial transformation of Polish cities after 1989. *Dela*, 21, 109. doi:10.4312/dela.21.8.109-119
- Scott, J.W., & Kühn, M. (2012). Urban Change and Urban Development Strategies in Central East Europe: A Selective Assessment of Events Since 1989. *European Planning Studies*, 20(7), 1093-1109. doi:10.1080/09654313.2012.674345
- Soaita, A.M. (2012). Strategies for In Situ Home Improvement in Romanian Large Housing Estates. *Housing Studies*, 27(7), 1008-1030. doi:10.1080/02673037.2012.725833
- Standl, H., & Krupickaitė, D. (2004). Gentrification in Vilnius (Lithuania): the example of Užupis. *Europa Regional*, 12(1), 42-51.
- Stoyanov, P., & Frantz, K. (2006). Gated communities in Bulgaria: interpreting a new trend in post-communist urban development. *GeoJournal*, 66(1-2), 57-63. doi:10.1007/s10708-006-9016-1
- Sýkora, L. (2007). Office development and post-communist city formation. In K. Stanilov (Ed.), *The Post-socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism*. (pp. 117-145). Springer.
- Sýkora, L. (2008). Revolutionary change, evolutionary adaptation and new path dependencies: socialism, capitalism and transformations in urban spatial organisations. In W. Strubelt & G. Gorzelak (Eds.), *City and Region: Papers in Honour of Jirří Musil*. (pp. 283-295). Leverkusen: Budrich UniPress.
- Sýkora, L., & Bouzarovski, S. (2012). Multiple Transformations: Conceptualising the Post-communist Urban Transition. *Urban Studies*, 49(1), 43-60. doi:10.1177/0042098010397402
- Sýkora, L., Kamenický, J., & Hauptmann, P. (2000). Changes in the spatial structure of Prague and Brno in the 1990s. *Acta Universitatis Carolinae Geographica*, 35(1), 61-76.
- Szelényi, I. (1996). Cities Under Socialism and After. In G. Andrusz, M. Harloe, & I. Szelényi (Eds.), *Cities after Socialism. Urban and Regional Change and Conflict in Post-Socialist Societies*. (pp. 286-317). Oxford: Blackwell.
- Rebernik, D., & Jakovčić, M. (2006). Development of retail and shopping centres in Ljubljana. *Dela*, 26, 5. doi:10.4312/dela.26.2.5-26
- Ruoppila, S., & Kährik, A. (2003). Socio-economic residential differentiation in postsocialist Tallinn. *Journal of Housing and the Built Environment*, 18(1), 49-73. doi:10.1023/a:1022435000258
- Węclawowicz, G. (1998). Social Polarisation in Postsocialist Cities: Budapest, Prague and Warsaw. In G. Enyedi (Ed.), *Social Change and Urban Restructuring in Central Europe*. (pp. 55-66). Budapest: Akadémiai Kiadó.
- Węclawowicz, G. (2013). *Transnational Development Strategy for the Post-Socialist Cities of Central Europe*. Warsaw. 80 pp.
- Ušča, M. (2010). *Urban activity spaces: The case of a post-Soviet neighbourhood in Riga*. (pp. 583-593). Southampton, UK: Witpress LTD. doi:10.2495/sc100491

Sun, Sea and Shrines: Application of Analytic Hierarchy Process (AHP) to Assess the Attractiveness of Six Cultural Heritage Sites in Phuket (Thailand)

Sanja Božić^{A*}, Miroslav D. Vujičić^A, James Kennell^B, Snežana Besermenji^A, Milica Solarević^A

Received: March 28, 2018 | Revised: May 05, 2018 | Accepted: May 09, 2018

DOI: 10.5937/22-16983

Abstract

In order to make recommendations for the diversification of tourism products on the Thai island of Phuket, this paper applies the analytic hierarchy process (AHP) method to rank the attractiveness of six cultural heritage sites in the island of Phuket to make recommendations for sites that could be incorporated in to cultural tourism development in the region. In addition, it applies a quantitative-qualitative evaluation structure with weighted criteria, based on local expert opinion. The research identified which of the many potential cultural tourism sites would be the most attractive to tourists and shows the utility of the AHP method, combined with quantitative-qualitative evaluation, for decision making in tourism destination development contexts.

Keywords: Analytic hierarchy process (AHP); cultural tourism; cultural heritage; diversification; Thailand.

Introduction

This paper provides an assessment of potential cultural heritage sites for inclusion in a diversified cultural heritage tourism product on the Thai island of Phuket. A significant aim of the research is to combine the analytic hierarchy process (AHP) with the quantitative-qualitative method of cultural site assessment. Doing this allows for the ranking of the assessment factors used in the process according to their importance, as well as the ranking of the cultural sites according to those criteria. Although AHP is widely used in the tourism field, this is the first study that applies AHP in combination with the quantitative-qualitative method of cultural heritage site assessment. The reason for combining these two methods strives

from the fact that quantitative-qualitative method of assessment, although being at the same time comprehensive and simple to implement, suggests the equal importance of all assessment criteria. On the other hand, AHP method provides an opportunity to determine the importance of each criterion (by calculating criteria weights and creating a hierarchy), meaning that criteria weight will determine the effect of particular criteria in the overall assessment. For instance, if tourism attractiveness is less important for respondents when assessing the heritage site compared to artistic value, it will have a lower impact on the overall assessment (the procedure is better explained in the methodology and results).

^A University of Novi Sad, Faculty of Sciences, Department of Geography, Tourism and Hotel Management, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia

^B University of Greenwich, Old Royal Naval College, Park Row, Greenwich, London SE10 9LS.

* Corresponding author: Sanja Božić; e-mail: sanja.bozic@dgt.uns.ac.rs

Destination experts' opinions on the relative attractiveness of six key cultural heritage sites to cultural tourists were analyzed using this approach. Doing this enabled the making of recommendations for sites which should be developed as part of the island's attempts to diversify its core tourism product away from an over-concentration on the beach and coastal tourism in the destination, which does not consistently support sustainable development in the region (Martin & Assenov, 2015). As Bravi and Gasca (2014) show, the literature on the development of tourism destinations has tended to focus on the preferences and needs of tourists, and the assessment of the suitability of sites has not featured as prominently. When it comes to complex decisions such as the evaluation of potential tourism sites, which involves a wide range of criteria and alternative options, decision-making becomes a complex process that is reliant on a number of interrelated and interdependent factors, each of which can exert more or less influence over the final decision (Jandrić & Srđević, 2000). Due to this complexity, specialist software applications – known collectively as Decision Support Systems (DSS) – are increasingly being used to aid in this process. The analytic hierarchy process (AHP) approach, developed by Saaty (1980), is one of the most frequently applied DSS, as well as one of the most extensively used Multi-Crite-

ria Decision Making (MCDM) methods. This mathematical method makes use of data gathered through qualitative techniques that draw on the judgment and experience of experts involved in a selection process.

This paper shows how the AHP method can be applied to make decisions about destination development, through a case study of the development of cultural tourism (Du Cros & McKercher, 2015) in the island of Phuket in Thailand. However, in order to address a criticism of the AHP method, as it is commonly applied, which suggests that the importance of each criterion or indicator that it uses is unrealistically equal in the AHP model, because each possesses its own individual significance and meaning. In order to further investigate the relative importance of the criteria in destination decision making, this study uses a combination of AHP and the quantitative-qualitative method, to provide a hierarchy of factors for assessing cultural heritage according to their importance. Based on this, the study seeks the answers to two most important questions:

1. What is the ranking of criteria for assessing the attractiveness of cultural tourism sites in destinations?
2. How can potential cultural tourism sites in Phuket be ranked, in terms of their potential for inclusion in local cultural tourism development?

Literature Review

Cultural heritage tourism in Phuket – time for product diversification?

Thailand was one of the first countries in Asia to develop its tourism industry in a strategic way and it continues to be at the forefront of the international tourism market in the region (Song et al., 2003; Wattanacharoenkil & Schuckert, 2014). In 2016, Thailand received 32,588,000 international arrivals (World Bank, 2017), making an economic contribution of \$82.5bn, or 20.6% of Gross Domestic Product (GDP), and this is forecasted to rise to \$169.9bn by 2027 (WTTC, 2017). From the mid-1980s onwards, the Thai Government realized the potential of the tourism industry for contributing to national development priorities (Song, Witt and Li, 2003) and following the Asian Financial Crisis in 1997, the Government again identified tourism as a key source of international currency and investment (Untong et al., 2014). As Cohen and Neal (2010) have identified, the Thai tourism industry has continued to grow at around 6% per year through a series of further crises caused by various external shocks (Cohen 2008, Saleh et al., 2011) including the 2004 Tsunami, Severe Acute Respiratory Syndrome and Bird Flu, and its reliable contribution to Thai GDP means that it has received consistent policy

attention. The Thai government decided to base tourism development on the wide array of natural and cultural resources in the country, especially in southern Thailand. In the late 1980s, recognizing the possibilities and limits for future tourism development, the Thai government engaged the Japanese International Cooperation Agency to create a comprehensive plan for the development of tourism of Southern Thailand (Kontogergopoulos, 1998). This study recognized three tourism development “clusters”, one of which was based in Phuket. It emphasized the importance of cultural and historical places as significant tourist attractions, suggesting the opportunity of using cultural and historical heritage in terms of diversification of the tourist product, but concluded that the tourist offer of the region should be based mainly on 3s (“sea, sun, sand”) tourism. Phuket was then promoted heavily to international tourists as part of the “Amazing Thailand” campaign of this period (Boonchai & Beeton, 2015). As a result, the center of tourism in Southern Thailand traditionally continues to be the island of Phuket, situated on the Andaman Sea.

Phuket is Thailand's most popular diving and surfing tourism destination (Biggs et al., 2012; Martin &

Assenov, 2015), with its core product based on its tourist beaches (Kontogeorgopoulos, 2004). This island is the location of significant tourism investment and it is the primary center of international tourism development in the region, in part due to the fact that it hosts the country's second largest airport (Smith & Henderson, 2008). Phuket's tourism product is mainly based on its high concentration of attractions and recreational opportunities, including the attractiveness of its coast, as well as the accessibility of nearby islands. As Cohen (2008) explains, despite the different stages of tourism development of the region since its 'discovery' by Western backpackers in the 1970s, this region of Thailand has been consistently promoted as a 'paradisiac' destination for tourists. The national Thai tourism product has evolved significantly over the past twenty years to include more consideration of cultural and creative tourism opportunities. This is exemplified in the recent Tourism Authority of Thailand (TAT) campaign which aims to promote Thailand as Asia's first creative tourism destination (Wattanacharoensil & Schuckert, 2014), despite the country's core tourism product continuing to be overwhelmingly coastal and traditional (Nara, Mao and Yen, 2014).

Prideaux et al (2008) explain how the development of tourism in the Asia-Pacific region has led to significant debates about the role of cultural heritage in tourism development in the region, and they identify the management of cultural heritage sites within tourism as a significant theme in research in this location. There have been recent attempts to diversify Phuket's tourism



Figure 1. Map of Phuket's most visited Cultural Heritage sites

product including the construction of a convention and events centre, new retail development and the promotion of an emerging spa sector (Sakolnakorn et al., 2013),

Table 1. Phuket's most visited Cultural Heritage sites*

Site Nº	Cultural site	Description
1.	Big Buddha statue	This 45- meter- high marble statue is a famous island landmark. Relatively newly built, in 2004, it is dedicated to the King and it is a popular tourist attraction. This statue is located on a prominent hill and it is visible from any place in the southern part of Phuket island. It has about 1,500 visitors a day.
2.	Wat Chalong	It is the biggest and the most popular of all Buddhist temples on the island. The importance of this temple comes from the fact that it houses a relic which is thought to be a piece of Buddha's bone.
3.	Jui Tui temple	Jui Tui temple is the most popular Chinese temple on the island. Moreover, this temple has an essential role in the organization of the popular annual Vegetarian festival, which has a significant impact on the overall number of tourist visits.
4.	Sri Soonton temple	Sri Soonton temple is famous for the 29-meter-high figure of a sleeping Buddha at the top of the central building of the temple, so large that it can clearly be seen from the road.
5.	Wat Phra Thong	Phra Thong temple is widely known for the golden statue of a Buddha. This temple is also reputed to be the oldest temple on the island.
6.	Old Phuket Town	This area preserves important cultural heritage assets such as temples and old buildings in the sino-portuguese style. It provides tourists with the possibility to experience a mixture of European and Asian influences which have shaped the history of this part of Southern Thailand. Bearing in mind that 5.3 million tourists visiting Phuket every year, and that almost all of them visit Phuket town as a central point of the island, we can claim that it is the most visited cultural heritage site in the island.

* The sites are selected according to their tourist attractiveness promoted by: the official website of Phuket (www.phuket.com), www.tripadvisor.com and culturetrip.com

but there has been relatively little emphasis on developing cultural tourism as part of a diversification of the primary tourism product (Sharpley, 2002; Bramwell, 2004; Benur & Bramwell, 2015), which remains focused on beaches, diving and surfing (Martin & Assenov, 2015). This is despite the presence of significant cultural heritage sites in the Island, the most visited of which are shown in the table 1 and figure 1.

The six cultural sites described in table 1 are the focus of this paper, which seeks to evaluate their potential as part of the development of cultural heritage tourism in Phuket. Cultural Tourism is defined as “visits by persons outside the host community motivated wholly or in part by interest in historical, artistic, scientific or lifestyle/heritage offerings of a community, region, group or institution” (Silberg, 1995, p. 361 cited in du Cros, 2001). Cultural products are seen as a part of the destination image of Thailand for international tourists (Tavitiyaman & Qu, 2013) and cultural tourism can be regarded as a more sustainable form of tourism than Phuket’s traditional core product, an approach identified as possible for other destinations seeking similar diversification (Wallace & Russell, 2004; Richards, 2007; Nara et al., 2014; Saarinen et al., 2014, Du Cros & McKercher, 2015). Cultural tourism forms a more significant part of the core tourism product in other regions of Thailand, for instance in Sakon Nakhon in the north, where the majority of tourism is cultural tourism, based on a similar set of heritage resources (Panich et al., 2014), Bueng Kan, on the border with Laos (Maneteer & Tran, 2014) and Ayutthaya, the historic capital of Thailand, which is visited by around 10% of all visitors to the country (Saipradist & Staiff, 2008). Cultural Tourism is viewed by many destinations as a preferred mode of tourism development because of a range of factors, including its popularity with wealthy baby-boomer generation tourists, a growing sophistication in pre-travel internet searching for destination information by tourists who will be attracted by a destination with cultural features, and cultural tourism’s potential to help extend the stay of non-cultural tourists (Wang et al., 2011). Other coastal destinations have also begun to consider diversification strategies in recent years as their traditional product becomes less attractive to postmodern tourism markets (Lacher et al., 2013; Đeri et al., 2017), leading to a restructuring (Agarwal, 2002) of many coastal tourism destinations as they seek to remain competitive, as well as to develop more sustainable forms of local tourism.

Diversification strategies have been researched in many tourism destinations, suffering from a range of problems, including the decline in traditional markets (Schmallegger et al., 2011), sustainability (Farmaki 2012), seasonality (Garau-Vadell & Borja-Sole 2008)

local economic development (Erkus-Ozturk & Terhorst, 2015) and as a response to changing macro-economic conditions (Boukas & Ziakas 2012). Benur and Bramwell (2015) offer a framework for the categorization of tourism development options for destinations seeking to diversify their tourism offer. This framework contains five strategic options, ranked according to their level of diversification and the intensity of their tourism development. The most intense, and least diversified of these options is *concentrated mass tourism*, where tourists are attracted to a region based on a limited number of high volume tourism products, and in high numbers. This corresponds to the current tourism development situation in Phuket. The alternatives to the *concentrated mass tourism* model are: *Concentrated niche tourism*, where a small number of tourism products attract a small number of tourists; *Diversified / integrated mass or niche tourism*, where corresponding volumes of tourists are attracted by either a range of mass or niche tourism products, which may or may not be integrated into a coherent destination-wide product; and *Diversified / integrated mass and niche tourism*, where a destination makes use of a range of mass and niche tourism products to attract different types of tourist markets, in varying volumes.

Tourists are increasingly demanding more individualized and authentic forms of tourist experiences, and losing interest in standardized mass tourism products, which coastal mass tourism destination can find it difficult to provide for (Gale, 2005; Viken & Aarsaether, 2013; Đeri et al., 2017). Sedmak and Mihalic (2008) show that, despite the perception that coastal tourists are content with a limited range of traditional 3S tourism products, that these tourists do actually express an interest in heritage tourism products. Draper et al., (2012) explain that heritage tourism involves a combination of educational activities and exhibits, tours, artifacts, reenactments, audiovisuals, interactive displays and other resources. Lacher et al. (2013, p. 536) explain how the bringing together of a network of diversified tourism products and services including cultural and heritage resources, can “provide the foundation for building sustained competitive advantage.” In addition, diversification through the integration of cultural tourism products can help destinations to reduce the impacts of seasonality, a particularly pressing concern for single-asset destinations (Erkuş-Öztürka & Terhorst 2018) such as coastal destinations whose primary product is based on sea and sand tourism (Hall 2003, Cisneros-Martínez & Fernández-Morales, 2015; Zahari et al., 2017). As well as being a traditional coastal destination, Phuket is also one of a kind of mass tourism destination, that has reached maturity in terms of its development, and cultural tourism is often considered to be a “viable

policy option to implement when a mass tourism destination reaches its maturity stage”, as Figini and Vici (2011, p.285) point out in their study of another mass coastal tourism destination, Rimini, in Italy.

The application of AHP for decision making in tourism

Everybody employed at tourism management positions faces new conditions and is involved in the problem-solving process to embrace new opportunities. Decision making means determining and choosing appropriate options in a short period of time (Hwang & Yoon, 1981). The first step in decision making is to accept the existence of a problem and then to choose the best solution if there are several of them. Here, the alternatives are evaluated against certain criteria.

The Analytic Hierarchy Process (AHP) is a Multi-Criteria Decision Making (MCDM) methodology that is noteworthy for its acceptance of the subjective nature of the information used in many decision-making contexts (Hsu, Lan & Tsi, 2009). Through its operations, the subjectivities and biases given in individual responses can be factored into the model, allowing for the gradual refinement of decision making-criteria, which means that is particularly relevant in a tourism development and planning context, where decisions about (for example) resource allocation and promotion can be contested and problematic. In addition, this approach offers a number of advantages in situations where the researcher is interested in assessing a large number of decision factors, measuring the importance of each factor influencing the decision, dealing with factors that vary in terms of their subjectivity and objectivity, and engaging large groups of decision participants to optimize a decision or to evaluate how subgroups of participants vary in their choice behavior (Crouch & Ritchie, 2005). By using AHP, experts and decision makers are only required to give verbal, qualitative statements regarding the relative importance of one criterion over another. For this reason, the AHP approach can be more accurate than other MCDM methods, which require respondents to express themselves in more complex, pre-determined ways.

Since its introduction, AHP has been applied to tourism in a variety of contexts, where complex decision-making takes place. Mardani et al., (2016), present a systematic review of MCDM techniques and their applications in tourism and hospitality. This study reviewed in total 106 papers published from 1994 to 2014 in 53 peer-reviewed journals. The results of this review indicate that AHP is one of the most frequently used MCDM in tourism and hospitality (in 30.36% of analyzed papers), where the most researched areas are:

marketing and tourist destinations. This indicates the potential importance of MCDM in problem-solving and decision making in the tourism field. Moreover, the majority of papers using AHP rely on experts' opinion (Tsaur & Wang, 2007; Göksu & Kaya, 2014; Chen, 2014; Jordan, 2013), which indicates the suitability of the approach taken in this study.

AHP can assist decision-making in tourism, especially where this involves assessing a large number of decision factors (i.e. factors influencing the choice of destination, motives of destination visit, hotel location selection, tourism indicators), and can measure the importance of each factor influencing the decision. AHP, in so doing, provides a hierarchy of factors according to their importance, which helps managers and other stakeholders to make decisions. The wide applicability of AHP in tourism decision making is shown in the prevalence of this methodology within the tourism literature. For instance, Fabac and Zver (2011) use AHP for making decisions about the future tourist orientation of a region. Huang, Yu, Lou and Zou (2012) propose an evaluation index system of e-tourism supply chains based on AHP. Papic-Blagojevic et al., (2011) select AHP as a tool for defining tourists' preferences. Božić et al., (2017) applied AHP for assessing urban tourism motivation in Ljubljana, Slovenia. Wickramasinghe and Takano (2010) apply a combination of SWOT and AHP in tourism strategic marketing planning. Park and Yoon (2011) use a combination of Delphi and AHP for the development of sustainable rural tourism evaluation indicators. Chen (2006) implemented the AHP method for convention site selection, while Chou et al., (2008) apply AHP in international tourist hotels location selection. Lai and Vinh (2013) apply AHP in an investigation of tourism promotional effectiveness. Tsaur and Wang (2007) propose an evaluation of sustainable tourism development by using a combination of AHP and fuzzy set theory. Curry and Moutinho (1992) use it when dealing with environmental issues in tourism management. Deng, King and Bauer (2002) also introduce the AHP method in the evaluation of natural attractions for tourism. The use of AHP is also evident in decision-making in cultural tourism. For instance, Ngamsomsuke et al., (2011) use AHP for the development of sustainable cultural heritage tourism indicators. This method helped the authors to rank sustainable cultural heritage tourism indicators according to their importance. Yaolin (2006) use AHP to establish a comprehensive conservation strategy for China's cultural heritage, while Chen and Shi (2009) propose an evaluation on exploitation potential of cultural tourism resources based on AHP. Also, the study of Jordan (2013) applies AHP to identify the built heritage resources of Trinidad and Tobago.

Within the literature, the AHP method has been combined with several other methods such as SWOT, Delphi, fuzzy set theory and GIS. However, the combination of AHP and the quantitative-qualitative method has not been previously applied in tourism, as a way of involving local experts (stakeholders) in appraising local tourism products, an element of tourism planning that is recommended by Butler et al., (2012) as likely to improve the sustainability of destination development.

The application of AHP and a case study approach

It is evident that majority of reviewed papers base their research on case studies, as in that way their results can be applied to “real life” situations and problems that occur in tourist destinations and which require complex decision making. A case study approach was chosen for this research because, as Creswell (2007, p.74) claims, a case study approach is appropriate when the “inquirer has clearly identifiable cases with boundaries and seeks to provide an in-depth understanding of the cases or comparison of several cases”. Yin (2003, p.1) also indicates that a case study methodology is appropriate when exploratory questions are being posed, when the investigator has little control over events, and when the focus is one a contemporary phenomenon within some real-life context.” Botterill and Platenkamp (2012, p.19) describe case studies as „a tried and tested concept in tourism studies”, which is supported by Xiao and Smith (2006) who studied research published in highly ranked tourism journals over a five year period and found that not only were articles based on case studies methods frequently published, that they were not found to be deficient in terms of generalisability or analytical rigor, as they have often been criticised as being. Although single-case study designs such as the one employed in this paper have been criticised for their lack of generalizability, this has been challenged by many researchers, including Flyvbjerg (2006) who explores how case studies can provide an alternative method of advancing knowledge to standard scientific studies and as a context within which theories can be tested, which is an appropriate description of the approach taken in this paper, which applies a specific MCDM method in a case study. Xiao and Smith (2006, p.747) show that the small-scale, single-case design is most common in tourism research published in the highest ranked journals in the field, concluding that, despite the limitations of case-study design, “case study is not only a frequently used but also a highly useful and much needed approach in tourism research”. Papers from the tourism field often apply AHP with a case study approach. For instance, Hsu et al., (2009) apply AHP in exploring the preferences for tourist destina-

tion choice in a case study of Taiwan. Wickramasinghe and Takano (2009) apply a combined SWOT and AHP methodology to investigate strategic tourism marketing planning in the case Sri Lanka tourism. Yaolin (2006) uses AHP to establish a comprehensive conservation strategy in the case of China’s cultural heritage. In addition, Nekooee, Karami and Fakhari (2011) assess the prioritization of urban tourist attractions using AHP in Iran. They examine the various tourist attractions of Birjand in cultural-historical, man-made and natural dimensions through a multi-criteria assessment method, using the analytic hierarchy process (AHP).

This paper provides a case study of the assessment of potential cultural heritage sites for inclusion in a diversified cultural heritage tourism product on the Thai island of Phuket. The AHP method is considered as the most suitable method for this study, to access the opinion of local stakeholders in cultural tourism on the relative attractiveness of six key cultural heritage sites to cultural tourists. The primary aim is to produce a ranking of these sites according to their attractiveness to tourists, and to indicate the factors that need to be improved in terms of each individual site. Based on this, the authors propose recommendations for sites which should be developed as part of the island’s attempts to diversify their core tourism product. In such way, the paper will help local stakeholders and decision-makers to make decisions about which sites to promote as tourism products, in which segments to invest, and to identify priority sites for cultural tourism development in the island of Phuket.

Methodology

The analytical-hierarchy process (AHP) is a systematic approach developed by Saaty (1980). It provides solutions to complex problems and employs hierarchical structures through developing priorities for different alternatives determined by the decision makers (Brushan & Rai 2004, p. 15). The AHP approach is used to construct an evaluation model for decision making, using weighted criteria. It integrates different measures into a single overall score for ranking decision alternatives (Hsu, Tsai and Wu, 2009). It is usually applied to simplify multiple criterion problems by decomposing it into a multilevel hierarchical structure (Harker & Vargas, 1987). The goal is placed at the top of the hierarchy, while the criteria, sub-criteria and alternatives are on successive levels and sub-levels of the hierarchy (Figure 2). In this paper the potential cultural heritage sites in Phuket represent alternatives in the hierarchy, and indicators of the quantitative-qualitative method of assessment of cultural heritage sites are used as criteria. In the application of this method, the selection of indicators for the as-

assessment is equally important as the evaluation itself. This study used indicators from the quantitative-qualitative method of assessment of cultural assets developed by Ahmetović (1994), who proposed six main indicators:

1. *Microlocation and accessibility* – vicinity to tourist areas, vicinity to main communication factors (road, airport, river etc.) and accessibility.
2. *Artistic value* – Historical importance, rarity, monumentality etc.
3. *Scenic/Aesthetic* – Proximity to nature, ambient, integration in to the surrounding area etc.
4. *Tourist Infrastructure* – functional and additional tourism objects (parking space, toilets, interpretive panels etc.)
5. *Tourist Appeal* – the number of visitors, appeal to tourists etc.
6. *Fitting in with other tourist assets in the vicinity* – Evaluation of other natural and cultural assets in the vicinity.

This model was chosen as it encompasses many important elements for assessing the attractiveness of cultural heritage sites to tourists. Although the model is comprehensive, it is also straightforward (it does not have too many indicators), which make the procedure of evaluating the answers of stakeholders more straightforward and shortens the time required to collect data through interviews. When n criteria exist, the traditional AHP method must conduct $n(n-1)/2$ pair-wise comparisons between criteria, which might cause confusion to experts due to the many questions that would arise. Consequently, the structured interviews would fail to meet the consistency requirement and would become invalid (Wang & Chen, 2008). Pairwise comparison of a too large number of indicators makes it difficult for respondents to stay focused and give the well-considered answers, which is why this study has added the indicators developed Ahmetović to the AHP model.

The AHP model gradually compares alternatives and measures their impact on the final decision-making

goal, which helps decision makers to choose between competing alternatives (Saaty, 1980). Given a pairwise comparison, the analysis involves three tasks: (1) developing a comparison matrix at each level of the hierarchy starting from the second level and working down, (2) computing the relative weights for each element of the hierarchy, and (3) estimating the consistency ratio to check the consistency of the judgment.

Once the hierarchical model of the problem is established, decision makers can compare the elements in pairs at each level of the hierarchy with the element in the higher level of the hierarchy. This means that all alternatives are compared to each other according to defined criteria in the higher level of the hierarchy. The criteria are also weighted, representing a measure of the relative importance of the elements given to them by expert decision makers (Jandrić & Srđević, 2000). This means that not all criteria have the same importance, but they have different weights. To calculate the weights of n elements, by the comparison of the two elements (i, y), the Saaty's scale (the scale is described in table 3).

The result of the comparison of the element i and y is placed in matrix A in the position a :

$$A = \begin{matrix} & \begin{matrix} a_{11} & a_{12} & \cdot & \cdot & a_{1n} \end{matrix} \\ \begin{matrix} a_{21} & a_{22} & \cdot & \cdot & a_{2n} \end{matrix} & \\ \begin{matrix} \cdot & & & & \cdot \end{matrix} & \\ & \cdot & & & \cdot \\ & & & & \\ \begin{matrix} a_{n1} & a_{n2} & \cdot & \cdot & a_{nn} \end{matrix} & \end{matrix}$$

The reciprocal value of the results of the comparison is placed on the position a_{yi} to preserve the consistency of the judgment. The decision maker compares n elements using Saaty's scale (Table 2) and places the results in matrix A (Jandrić & Srđević, 2000). After all pairwise comparison matrices are formed, the vec-

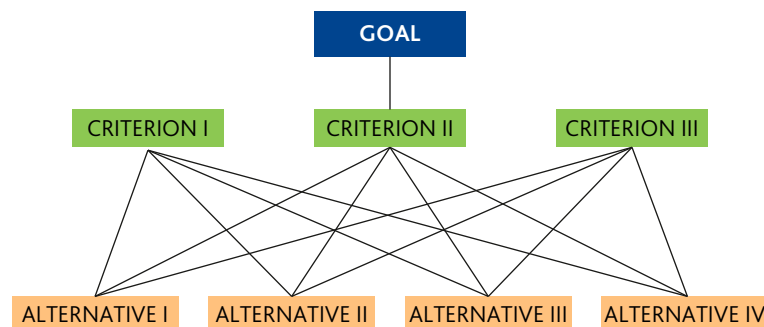


Figure 2. AHP Hierarchical Structure

tor of weights, $w = [w_1, w_2, \dots, w_n]$, is computed on the basis of Saaty's eigenvector procedure. The computation of the weights involves two steps. First, the pairwise comparison matrix, $A = [a_{ij}]_{n \times n}$, is normalized by equation (1), and then the weights are computed by equation (2).

Normalization:

$$a_{ij}^* = \frac{a_{ij}}{\sum_{i=1}^n a_{ij}} \quad (1)$$

Weights calculation:

$$w_i = \frac{\sum_{j=1}^n a_{ij}^*}{n} \quad (2)$$

for all $i = 1, 2, \dots, n$.

Saaty (1980) showed that there is a relationship between the vector weights, w , and the pairwise comparison matrix, A , as shown in equation (3).

$$A_w = \lambda_{\max} w \quad (3)$$

The λ_{\max} value is an important validating parameter in AHP and is used as a reference index to screen information by calculating the consistency ratio (CR) of the estimated vector.

It should also be noted that the normalized geometric mean of the rows of the matrix also provides a vector of relative criterion weights, $\{w_i\}$. The vector of criterion weights is then multiplied by criterion weight of the element from the higher level, which was used as a criterion for comparison. This procedure is repeated

from the beginning as we go down to the lower levels of the hierarchy. The weight factors are calculated for each element at the given level, and they are then used to determine the so-called composite relative criterion weights of the elements at the lower levels. In the end, the alternative with the highest composite criterion weight is chosen.

From the data, a clear picture of the utility of Ahmetović's (1994) hierarchy of goals, criteria and alternatives was obtained, shown in figure 3. On this basis, it was possible to develop results from this approach.

The next phase is the establishment of the consistency of the decision-making process in order to check the reliability of the research. If it were possible to accurately determine the value of criterion weights of all the elements that are compared to each other at the given level of the hierarchy, the eigenvalues of the matrix would be completely consistent. Redundancy of the pairwise comparison makes AHP less sensitive to judgment errors. This model also provides an opportunity to measure the errors in judgment by calculating the index of consistency for the obtained matrix of comparison, after which the ratio of the consistency itself can be measured.

First the consistency index (CI) is calculated according to the formula:

$$CI = \frac{\lambda_{\max} - n}{n - 1} \quad (4)$$

where λ_{\max} is the maximum eigenvalue of the matrix of comparison. The closer λ_{\max} is to the number n , the smaller the inconsistency will be. At the end the ratio of consistency (CR) can be calculated from the ratio of the consistency index (CI) and the random index (RI):

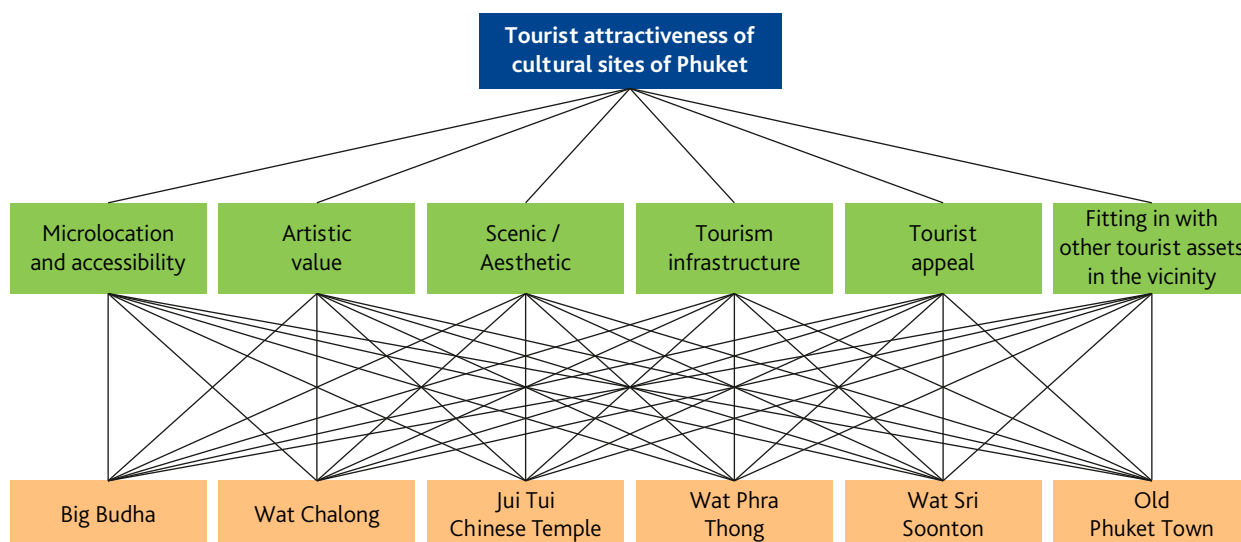


Figure 3. The AHP hierarchy of the current study

$$CR = \frac{CI}{RI} \quad (5)$$

The random index (RI) depends on the row of the matrix (Table 2), where the first row represents the row of the matrix, and the other one represents the random index (details on how to generate random indexes are given in Saaty (1980)).

Table 2. Random index

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0.0	0.0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

Source: Saaty (1980)

If the consistency ratio (CR) is less than 0.10, the result is sufficiently accurate and there is no need for adjustments in comparison or for repeating the calculation. If the ratio of consistency is greater than 0.10, the results should be re-analyzed to determine the reasons for inconsistencies, to remove them by partial repetition of the pairwise comparison, and if repeating the procedure in several steps do not lead to the reduction of the consistency to the tolerable limit of 0.10, all results should be discarded and the whole procedure should be repeated from the beginning (Jandrić & Srđević, 2000).

The study sample

The study was based on the answers of the total of 20 tourism experts in the island of Phuket. The study was conducted in the period from September to January 2013, in the island of Phuket, Thailand. The respondents were approached personally at their workplace (Office of the Tourism Authority of Thailand, Phuket Cultural Centre, Thalang National Museum, Prince Songkla University and Rajabhat University). The sampling strategy for the AHP method can be based on a suitably chosen purposive sample that is appropriate for generating qualitative data, which is useful for research focusing on a specific issue where a large sample is not necessary, especially in tightly bound case studies (Cheng & Li, 2002; Lam & Zhao, 1998). A purposive sampling strategy was deemed appropriate for this research because of the limited need for generalization from the case study (Creswell, 2007). Cheng and Li (2002) argue that AHP method, is in fact, made impractical in surveys with a large sample size as “cold-called”, non-expert, respondents may have a great tendency to provide arbitrary answers, resulting in a very high degree of inconsistency, which invalidates the approach (Wong & Li, 2008).

As Butler et al., (2012) explain, the involvement of local experts in the appraisal of a destination’s poten-

tial tourism product can help to improve the quality of the decision making process and the sustainability of its tourism industry. Many stakeholders’ views should be taken into account when developing heritage tourism in a destination to ensure that this is developed in a sustainable way (Ghanem & Sadd, 2015). This study has made use of expert opinion using the AHP method, a common sampling strategy when using MCDM approaches (Michailidou et al., 2016) that

has been applied in tourism destination development contexts (Richins 2000; Onder et al., 2013; Emir et al., 2016; Do & Shih 2016). As explained above, the majority of papers using AHP in a variety of fields rely on experts’ opinion (Tsaur & Wang, 2007; Göksu & Kaya, 2014; Chen, 2014; Jordan, 2013). The major criteria for interviewees selection were education (finished bachelor degree in tourism or cultural management), the work experience (at least 10 years of experience in the tourism industry), job position related to cultural tourism development (including their expert knowledge of the analyzed sites and their specific knowledge about tourism in Phuket). We have now better emphasized this in the paper.

Thus, this research included experts who are employed in different institutions related to the field of cultural tourism, as their diverse knowledge was considered important for making a decision about the relative priority of indicators for tourism assessment, as well as the priority of developing different cultural sites for cultural tourism development. In accordance with this, respondents were selected for this research based on their expert knowledge of the analyzed sites and their specific knowledge about tourism in Phuket. Also, all respondents were important cultural tourism stakeholders in Phuket and included representatives of the Tourism Authority of Thailand, Phuket Cultural Centre, Thalang National Museum, Prince Songkla University and Rajabhat University. The expertise of the respondents was primarily assessed based on their education and work experience. All selected respondents have at least bachelor degree in tourism and their position and place of work are tightly connected with the development of cultural tourism in the island. Correspondingly, all of them have at least 10 years of experience in the tourism industry. The research field and expertise of professors included in this study is cultural tourism and heritage tourism. By providing an expert assessment of these potential tourism sites,

according to defined criteria, these experts contribute to decision-making about which sites should be the core of cultural tourism diversification in the island of Phuket, as well as to identifying areas needing improvement at individual sites. This is of paramount importance as this analysis could be a basis for developing the strategy of cultural tourism diversification in the island.

At first, 32 key respondents were chosen to participate in this research, but some of them refused to take part in the survey, thus the final sample size included 20 respondents. A sample of this size is consistent with previous studies that have applied the AHP model such as Hsu et al. (2009) who included the views of 32 respondents in the application of AHP for preference analysis for tourist choice of eight destination in Taiwan, while Göksu and Kaya (2014) based research on ranking of tourist destinations in Bosnia and Herzegovina on 12 experts. Chen (2014) used a similar expert questionnaire methodology with sample size of 23 to evaluate the suitability of festivals for inclusion in Taiwan's Tourism and Nation Branding programme, and Tsaor and Wang (2007) carried out research on the evaluation of sustainable tourism development in Green Island in Taiwan, using the view of 16 experts. In an assessment of the suitability of various sites for inclusion in the development of a cultural heritage tourism product in Trinidad and Tobago, with a similar aim to this paper, Jordan (2013) used a similar purposive sample of ten respondents, in order to gather expert opinion. Also, according to Teng (2002) between five and fifteen experts represent a suitable cohort for group decision-making.

Procedure

The survey was carried out in the form of face-to-face structured interviews. Firstly, respondents were asked to express their preferences, using Saaty's (1980) scale, for Ahmetovics's (1994) criteria, in terms of how important they felt each criterion should be in the evaluation of the attractiveness of a cultural heritage site to potential tourists. The brief explanation of each criterion was provided during the structured interview. We have added the data about time and place where the data were collected. We have also provided an explanation of the problem we have encountered during data collection (see the Procedure chapter): "The major problem the authors encountered during the data collection was the fact that respondents were not familiar with AHP method and the procedure of providing answers in this type of the questionnaire. However, as it was a face-to-face interview, the interviewer explained the method and procedure and clarified the questions. In this way, the interviewer was sure that respondents understand what is expected from them.

Respondents were asked to assign corresponding numerical values based on the relative importance of the attribute (quantitative element), but also to elaborate the reasons why they have given a preference to certain attributes (qualitative element). The qualitative elaboration of the answers was used in order to explain the meaning behind numerical rankings. Afterwards, respondents were asked to express their preferences, using Saaty's (1980) scale, between cultural sites, comparing each site listed in table 1 with another one, thus constructing a pairwise comparison matrix. A small pilot project was carried out before the survey to ensure the reliability of the survey instrument. Due to the fact that the feedback from all of the respondents was satisfactory, the survey was considered to be appropriate and valid for this research.

Questionnaire design and research phases

The questionnaire was composed of two parts. Part one, consisting of the six criteria, was designed to measure the attributes of the cultural heritage sites. The criteria used for the comparison consists of the basic elements of quantitative-qualitative analysis given by Ahmetović (1994) and described above. Part two consisted of the six alternatives cultural heritage sites, presented in Table 1.

Firstly, respondents compared all of the criteria, according to their importance for the evaluation of tourist attractiveness, giving numerical values to each criterion based on their relevance for each site. Afterwards, the respondents compared all of the cultural sites separately for each criterion, in the same manner previously demonstrated. The answers were measured on Saaty's (1980) scale (from 1 – the same importance, to 9 – the absolute dominance of the element. Reciprocal values were used if the other element has the higher importance, see Table 3).

Table 3. Saaty's scale for pair wise comparisons in AHP

Judgment term	Numerical term
Absolute preference (element A over element B)	9
Very strong preference (A over B)	7
Strong preference (A over B)	5
Weak preference (A over B)	3
Indifference of A and B	1
Weak preference (A over B)	1/3
Strong preference (A over B)	1/5
Very strong preference (A over B)	1/7
Absolute preference (A over B)	1/9

An intermediate numerical values 2,4,6,8 and 1/2,1/4,1/6,1/8 can be used as well

Source: Saaty (1980)

Table 4. Sample answers (Alternatives compared according to microlocation and accessibility)

	Big Buddha monument (A)	Wat Chalong temple (B)	Jui Tui Chinese temple (C)	Wat Phra Thong temple (D)	Wat Sri Soonton (with Reclining Buddha) (E)	Old Phuket town (F)
Big Buddha monument (A)	1	3	1/9	5	7	1/3
Wat Chalong temple (B)		1	1/9	3	5	1/5
Jui Tui Chinese temple (C)			1	9	9	7
Wat Phra Thong temple (D)				1	3	1/3
Wat Sri Soonton (with Reclining Buddha) (E)					1	7
Old Phuket town (F)						1

A sample answer is shown in Table 4. For example, if alternative **A** (Big Buddha monument) has absolute dominance compared to alternative **B** (i.e. according to micro location and accessibility) we will write 9, but if **C** (Jui Tui Chinese temple) has the absolute dominance compared to **A** (Big Buddha monument), we would write 1/9 (Table 4). In this way, alternatives are compared according to each of the seven criterion (microlocation and accessibility, artistic value, scenic/

aesthetic, tourist infrastructure, tourist appeal, fitting with the other tourist assets in the vicinity).

Data from the structured interviews was entered into the “Expert Choice 2000” statistical software. Expert Choice is decision-making software that is based on multi-criteria decision making and it implements the Analytic Hierarchy Process. Created by Thomas Saaty and Ernest Forman in 1983, the software is supplied by Expert Choice Inc.

Results

Criterion weighting results

In Figure 4 the evaluation of the criterion weights by the local experts, giving their ranking according to their assigned importance to tourists, is shown.

The results show that consistency ratio (CR) is 0.08 ($CR < 0.1$), indicating that the study is reliable and accurate and that therefore there is no need for adjustments in the comparison between criteria. The ranking of the criterion weights (Figure 4) clearly shows that the microlocation and accessibility of the cultural heritage sites included in this study were given the

highest criterion weight (0.463) when evaluated by experts, which indicates the great importance of the location, signage and accessibility of cultural sites, in terms of their attractiveness to tourists.

Site ranking results

Figure 5 shows the expert’s relative ranking of each cultural heritage site. From the results of the assessment of the potential cultural tourism sites of Phuket, the Chalong Temple is ranked as the most attractive site in (criterion weight = 0.257). Then, in second place

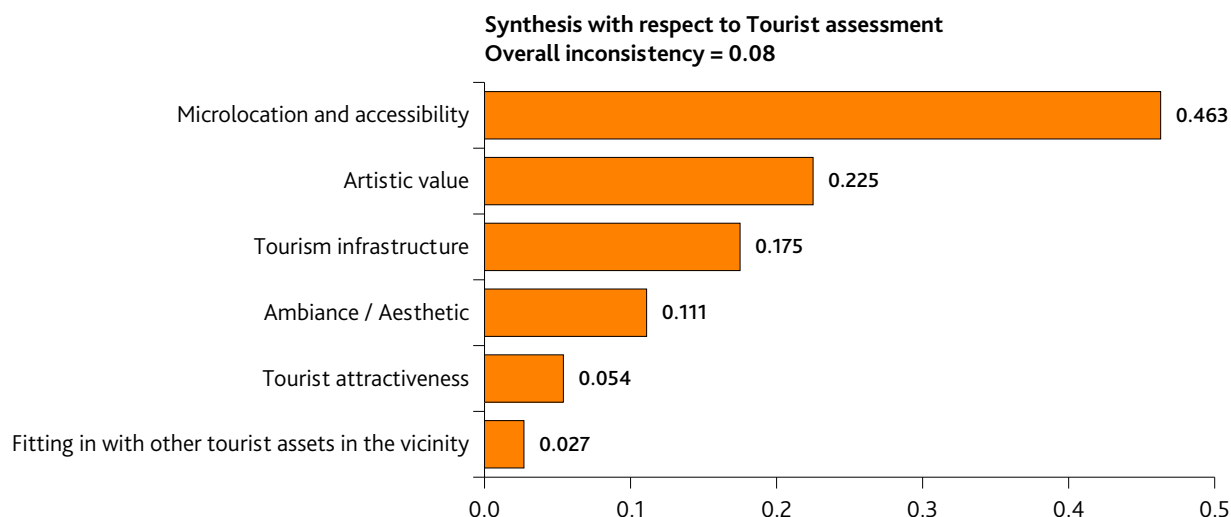


Figure 4. Evaluation of Criteria Weightings

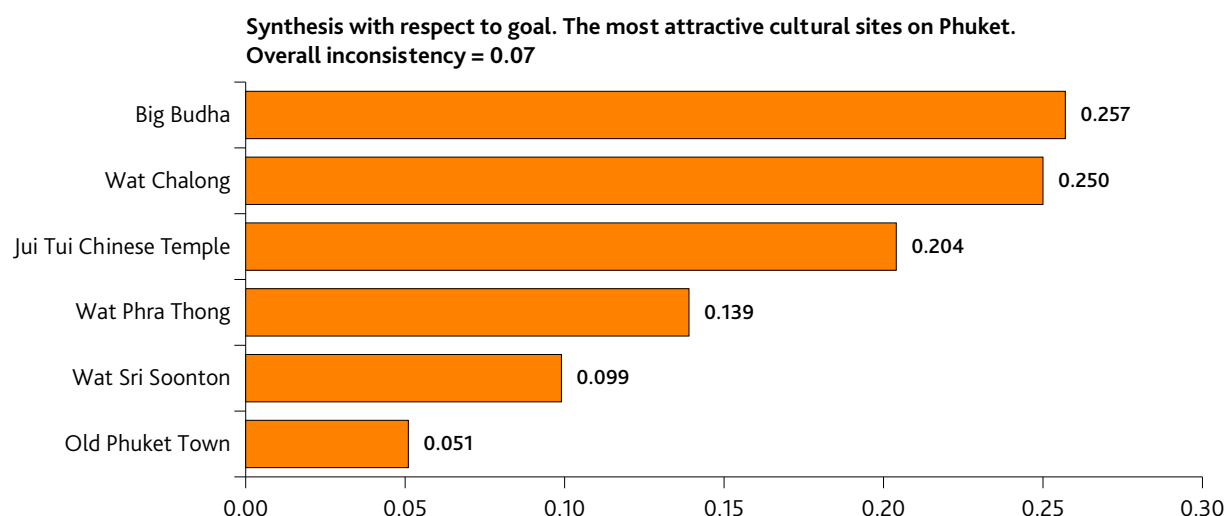


Figure 5. Expert Ranking of Sites

is the Old Phuket Town (0.250), followed by the Big Buddha statue (0.204), JuiTui Chinese Temple (0.139), Phra Thong Temple (0.099), and the cultural site with the lowest ranking is the Sri Soonton Temple (0.051), which is therefore considered to be the least attractive site to potential tourists. The consistency ratio for this section is 0.07, indicating the reliability of the questionnaire and the results.

The interview responses of the experts who participated in this study add supporting detail to the reasons why the evaluation method has produced these results. There were a lot of reasons given that can explain why the Chalong temple was ranked as the most attractive potential cultural tourism attraction among the numerous cultural heritage sites in Phuket. This temple is reputed to be the most visited among all temples in Phuket (Evans, 2010) as well as the largest Buddhist temple in Phuket (Warren, 2009). Moreover, the temple contains a significant attraction - a relic which is thought to be a piece of Buddha's bone and this makes it a popular destination for visitors (Evans, 2010). The second-ranked potential cultural tourism attraction was the Old Phuket Town, which consists of a number of old streets with interesting buildings (such as Soi Romani), many Chinese and Buddhist temples, as well as numerous parks. The accessibility of the Old Phuket town is very good, as most roads on the island lead to this place, and the signage is excellent as well. The artistic value of the Old Phuket Town is remarkable mainly due to the notable sino-portuguese architectural style, with some of the buildings up to 100 years old (Evans, 2010). Third-ranking belongs to the Big Buddha statue and temple. Due to the fact that it is situated on a hill, it is not so easily accessible to tourists. Only one long winding road leads to this statue, but due to the good signage which indi-

cates the direction that leads to the site, it can easily be found. This statue has a great artistic value which lies in the fact that it is made of slabs of white high-quality marble which are arranged in a mosaic pattern. According to experts, the ambiance of Big Buddha is breathtaking. The hill on which it is located is also an amazing viewpoint with a stunning view of the three bays of Phuket (Skolnich & Bush, 2010). Jui Tui Chinese Temple is located in Phuket town, which indicates its very favorable location. Unfortunately, the adequate signage that would indicate the direction to the temple does not exist. The temple is of great importance to Chinese tourists as it is dedicated to the vegetarian god Ku Wong (Warren, 2009). The Phra Thong Temple, which is the first attraction most visitors encounter when they get to the island, is located next to the main road leading from the airport. There is only one board, indicating the way to the temple, so it is difficult to find. The artistic value lies in the statue of "half-buried" Buddha which is connected with numerous legends, one of which says that anyone who tries to dig it out will die (Evans, 2010). Unfortunately, the complex is neglected and it requires significant investment in reparations and investments to bring it up to the standard required to meet the needs of international tourists, primarily in terms of ambiance and infrastructure. The results indicate that the temple of Sri Soonton was the least attractive potential cultural tourism site among the analyzed cultural heritage sites of Phuket. It is located quite close to the Phra Thong temple, on the main road to the airport. The signage showing the way to this temple hardly even exists, and it is extremely hard to find it even though it is right next to the road. Consequently, there are only a small number of people who have heard of this temple or who have visited it.

Conclusion

The main contribution of this study is the application of a combined AHP and quantitative-qualitative method for the assessment of cultural heritage sites, in a destination development context. This methodology provides the answers to important managerial questions: what are the most important criteria for assessing the attractiveness of cultural tourist sites and what are the most attractive cultural sites in the analyzed area, which should be the key sites for cultural tourism development? Firstly, knowing the priority factors in assessing the attractiveness of cultural sites helps decision-makers to focus their investments and develop strategies to support future improvements. Secondly, the comparison of analyzed sites according to defined criteria provides managers with a clear picture of the sites' potential contribution to cultural tourism development in Phuket. Finally, the assessment of the individual sites in this manner represents a possible basis for future development plans for each site, in relation to the criteria that have been identified as the most important by experts.

This paper has considered the role that previously under-used cultural heritage sites could play in a more developed cultural tourism product in the Thai island of Phuket, as part of a product diversification strategy. Since Phuket's tourism development has primarily focused on the development of 3S tourism, visiting temples and other cultural sites could represent an additional, complementary tourist offer, described by Benur and Bramwell (2015, p.222) as a strategy of "diversified parallel /integrative mass and niche tourism", appropriate for destinations that have the capacity to support by traditional mass tourism products alongside niche products such as cultural tourism.

The results of this research give a clear picture of the potential of key cultural heritage sites in Phuket for integration into an enhanced cultural tourism product in the island. They provide decision-makers with information on which cultural heritage sites should receive the most attention and be the primary focus of future cultural tourism development in Phuket. Through ranking the weighted selection criteria in terms of their importance, it has been possible to identify the most significant of Ahmetovic's (1994) criteria for the evaluation of the cultural heritage sites in this case study. According to the results, the most important criteria for the evaluation of cultural heritage sites in this case, are shown to be the microlocation and accessibility, followed by the artistic value of these cultural heritage sites. In addition, the results of the assessment show that most of these sites have a favorable location and very signif-

icant artistic value which indicates their potential for inclusion in the development of cultural tourism. However, they have not become assets in local tourism development, because there are other factors affecting the sites which have hindered cultural tourism development. These include low levels of investment in infrastructure and signage as well as a lack of restoration and conservation of the objects which have reduced their attractiveness over time. This is in the line with findings of Jordan (2013), who intended to identify the built heritage resources of Trinidad and Tobago. In his study, heritage tourism stakeholders indicate that inadequate legal, institutional and financial frameworks are among the main obstacles hindering the development and growth of this niche market. Moreover, the study of Draper et al., (2012) also emphasized that the financial constraints of heritage tourism sites inhibit the ability to improve programs and services, which is also the case with the analyzed cultural sites in Phuket.

The results of this study should certainly be the basis for planning future improvements in the field of Phuket's cultural tourism, especially because infrastructure and ambiance were also identified as important criteria in this study. As Bravi and Gasca (2014) have shown, the assessment of the suitability of sites for tourism is an under-developed aspect of the literature on destination development, and this paper provides a case study of how the complex decisions involved in selecting sites can be supported using the AHP method. By combining the AHP method (Saaty, 1980) with the quantitative-qualitative method of evaluation for cultural heritage (Ahmetovic, 1994) this study has identified three cultural heritage sites in Phuket with the greatest cultural tourism potential – Phuket Old Town, Wat Chalong and the Big Buddha. The other three sites – JuiTui temple, Wat Phra Thong, Wat Sri Soonton are not currently as attractive for integration into a diversified tourism product offer for Phuket, and this paper also indicates potential areas where this situation can be improved. The results of this study could inform decision making in Thai Destination Management Organizations concerned with developing the Thai tourism product and with diversifying the offer of Phuket, in particular. The combination of the AHP and quantitative-qualitative method of evaluation models for decision making suggest that DSS and MCDM methods have utility for involving local experts in supporting sustainable tourism destination development, although the model will need to apply in a variety of destinations to ensure its reliability.

This study also has some limitations which should be addressed in the future research. Although the majority of studies using AHP rely only on expert opinion, it is important to also consider demand-side issues in the development of tourist destinations, and the opinion of tourists visiting those sites should also be considered in developing the strategy of cultur-

al tourism diversification. Future studies could compare the importance that tourism stakeholders give to certain factors of assessment and those provided by tourists. It is possible that different assessment of factors by those two groups would result in different sites ranking, and this potential gap suggests a fruitful area for future research.

References

- Agarwal, S. (2002). Restructuring seaside tourism. *Annals of Tourism Research*, 29(1), 25-55. doi:10.1016/S0160-7383(01)00002-0
- Ahmetović, T. (1994). Tourism assessment of cultural and historical monuments - Case study Monasteries of Fruška Gora Mountain. *Researches Review of the Institute for Geography, Belgrade*, 24, 159-172. (In Serbian).
- Alberti, F.G., & Giusti, J.D. (2012). Cultural heritage, tourism and regional competitiveness: The Motor Valley cluster. *City, Culture and Society*, 3(4), 261-273. doi:10.1016/j.ccs.2012.11.003
- Alphonse, C.B. (1997). Application of the analytic hierarchy process in agriculture in developing countries. *Agricultural Systems*, 53(1), 97-112. doi:10.1016/S0308-521X(96)00035-2
- Benur, A.M., & Bramwell, B. (2015). Tourism product development and product diversification in destinations. *Tourism Management*, 50, 213-224. doi:10.1016/j.tourman.2015.02.005
- Bessière, J. (2013). 'Heritagisation', a challenge for tourism promotion and regional development: an example of food heritage. *Journal of Heritage Tourism*, 8(4), 275-291. doi:10.1080/1743873X.2013.770861
- Biggs, D., Hall, C.M., & Stoeckl, N. (2012). The resilience of formal and informal tourism enterprises to disasters: reef tourism in Phuket, Thailand. *Journal of Sustainable Tourism*, 20(5), 645-665. doi:10.1080/09669582.2011.630080
- Boonchai, C., & Beeton, R.J.S. (2015). Sustainable Development in the Asian Century: An Inquiry of Its Understanding in Phuket, Thailand. *Sustainable Development*, 24(2), 109-123. doi:10.1002/sd.1612
- Botterill, D., & Platenkamp, V. (2012). *Key Concepts in Tourism Research*. London: SAGE Publications. doi:10.4135/9781473914674
- Boukas, N., & Ziakas, V. (2012). Impacts of the Global Economic Crisis on Cyprus Tourism and Policy Responses. *International Journal of Tourism Research*, 15(4), 329-345. doi:10.1002/jtr.1878
- Bramwell, B. (2004). *Coastal Mass Tourism: Diversification and Sustainable Development in Southern Europe*. Clevedon: Channel View Publications.
- Bush, A., & Skolnich, A. (2010). *Phuket encounter*. Oakland: Lonely Planet.
- Bravi, M., & Gasca, E. (2014). Preferences Evaluation With a Choice Experiment on Cultural Heritage Tourism. *Journal of Hospitality Marketing & Management*, 23(4), 406-423. doi:10.1080/19368623.2013.822339
- Brushan, N., & Rai, K. (2004). *The Analytic Hierarchy Process. Strategic Decision Making Applying the Analytic Hierarchy Process*. Springer.
- Butler, R., O'Gorman, K.D., & Prentice, R. (2011). Destination Appraisal for European Cultural Tourism to Iran. *International Journal of Tourism Research*, 14(4), 323-338. doi:10.1002/jtr.862
- Chen, C. (2006). Applying the Analytical Hierarchy Process (AHP) Approach to Convention Site Selection. *Journal of Travel Research*, 45(2), 167-174. doi:10.1177/0047287506291593
- Chen, C. (2014). Suitable Festival Activities for Taiwan's Tourism and Nation Branding with the Application of the PR AHP Program. *Asia Pacific Journal of Tourism Research*, 19(12), 1381-1398. doi:10.1080/10941665.2013.866579
- Chen, M., & Shi, P. (2009). Evaluation on exploitation potential of cultural tourism resources based on AHP - A case of Nanyang jade cultural tourism resources. *Journal of Arid Land Resources and Environment*, 6, 196-200.
- Cheng, E.W.L., & Li, H. (2002). Construction Partnering Process and Associated Critical Success Factors: Quantitative Investigation. *Journal of Management in Engineering*, 18(4), 194-202. doi:10.1061/(asce)0742-597X(2002)18:4(194)
- Cisneros-Martínez, J.D., & Fernández-Morales, A. (2015). Cultural tourism as tourist segment for reducing seasonality in a coastal area: the case study of Andalusia. *Current Issues in Tourism*, 18(8), 765-784. doi:10.1080/13683500.2013.861810
- Cohen, E. (1996). *Thai tourism: Hill tribes, islands and open-ended prostitution*. Bangkok: White Lotus.
- Cohen, E. (2008). The Tsunami Waves and the Paradise Cycle: The Changing Image of the Andaman Coastal Region of Thailand. *Tourism Analysis*, 13(3), 221-232. doi:10.3727/108354208786094898

- Cohen, E., & Neal, M. (2010). Coinciding crises and tourism in contemporary Thailand. *Current Issues in Tourism*, 13(5), 455-475. doi:10.1080/13683500.2010.491898
- Creswell, J. (2007). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. London: Sage.
- Crouch, G.I., & Ritchie, B.J.R. (2005). Application Of The Analytic Hierarchy Process To Tourism Choice And Decision Making: A Review And Illustration Applied To Destination Competitiveness. *Tourism Analysis*, 10(1), 17-25. doi:10.3727/1083542054547930
- Curry, B., & Moutinho, L. (1992). Environmental Issues in Tourism Management: Computer Modeling for Judgmental Decisions. *International Journal of Service Industry Management*, 3(1), 57-69. doi:10.1108/eum00000000002811
- Man, A.D. (2016). Archaeological heritage and regional development in Portugal. In M.D. Alvarez, F.M. Go, & A. Yüksel (Eds.), *Heritage tourism destinations: Preservation, communication and development*. (pp. 142-153). Wallingford: CABI Publishing. doi:10.1079/9781780646770.0142
- Deng, J., King, B., & Bauer, T. (2002). Evaluating natural attractions for tourism. *Annals of Tourism Research*, 29(2), 422-438. doi:10.1016/S0160-7383(01)00068-8
- Do, T.H.N., & Shih, W. (2016). Destination Decision-Making Process Based on a Hybrid MCDM Model Combining DEMATEL and ANP: The Case of Vietnam as a Destination. *Modern Economy*, 7(9), 966-983. doi:10.4236/me.2016.79099
- Draper, J., OH, C., & Harrill, R. (2012). Preferences for Heritage Tourism Development Using a Choice Modeling Approach. *Tourism Analysis*, 17(6), 747-759. doi:10.3727/108354212X13531051127267
- Du Cros, H. (2001). A new model to assist in planning for sustainable cultural heritage tourism. *International Journal of Tourism Research*, 3(2), 165-170. doi:10.1002/jtr.297
- Cros, D.H., & McKercher, B. (2015). *Cultural Tourism*. Abingdon: Routledge.
- Evans, C. (2010). *Phuket Thailand and Beyond*. Montreal: Hunter Publishing Inc.
- Emir, O., Bayer, U., Erdoğan, K., & Karamaşa, Ç. (2016). Evaluating the destination attractions from the point of experts' view: An application in eşişehir. *Turizam*, 20(2), 92-104. doi:10.5937/turizam1602092e
- Erkuş-Öztürk, H., & Terhorst, P. (2018). Economic diversification of a single-asset tourism city: evidence from Antalya. *Current Issues in Tourism*, 21(4), 422-439. doi:10.1080/13683500.2015.1091806
- Fabac, B., & Zver, I. (2011). Applying the modified SWOT-AHP method of the tourism of Gornje Medjimurje. *Tourism and Hospitality Management*, 17(2), 201-215.
- Farmaki, A. (2012). A Supply-Side Evaluation of Coastal Tourism Diversification: The Case of Cyprus. *Tourism Planning & Development*, 9(2), 183-203. doi:10.1080/21568316.2011.634431
- Figini, P., & Vici, L. (2012). Off-season tourists and the cultural offer of a mass-tourism destination: The case of Rimini. *Tourism Management*, 33(4), 825-839. doi:10.1016/j.tourman.2011.09.005
- Flyvbjerg, B. (2006). Five Misunderstandings About Case-Study Research. *Qualitative Inquiry*, 12(2), 219-245. doi:10.1177/1077800405284363
- Gale, T. (2005). Modernism, Post-Modernism and the Decline of British Seaside Resorts as Long Holiday Destinations: A Case Study of Rhyl, North Wales. *Tourism Geographies*, 7(1), 86-112. doi:10.1080/1461668042000324076
- Garau-Vadell, J.B., & de Borja-Solé, L. (2008). Golf in mass tourism destinations facing seasonality: a longitudinal study. *Tourism Review*, 63(2), 16-24. doi:10.1108/16605370810883914
- Ghanem, M.M., & Saad, S.K. (2015). Enhancing sustainable heritage tourism in Egypt: challenges and framework of action. *Journal of Heritage Tourism*, 10(4), 357-377. doi:10.1080/1743873X.2015.1029489
- Göksu, A., & Kaya, S.E. (2014). Ranking Of Tourist Destinations With Multi-Criteria Decision Making Methods In Bosnia And Herzegovina. *Economic Review*, 12(2), 91-103.
- Hall, D. (2003). Rejuvenation, Diversification and Imagery: Sustainability Conflicts for Tourism Policy in the Eastern Adriatic. *Journal of Sustainable Tourism*, 11(2-3), 280-294. doi:10.1080/09669580308667207
- Harker, P.T., & Vargas, L.G. (1987). The Theory of Ratio Scale Estimation: Saaty's Analytic Hierarchy Process. *Management Science*, 33(11), 1383-1403. doi:10.1287/mnsc.33.11.1383
- Horayangkura, V. (2005). The Future of Cultural Heritage Conservation amid Urbanization in Asia: Constraints and Prospects. *Journal of Architectural Research and Studies*, 3, 71-82.
- Hsu, P., Lan, K., & Tsai, C. (2013). Selecting the Optimal Vendor of Customer Relationship Management System for Medical Tourism Industry Using Delphi and AHP. *International Journal of Enterprise Information Systems*, 9(1), 62-75. doi:10.4018/jeis.2013010104
- Hsu, T., Tsai, Y., & Wu, H. (2009). The preference analysis for tourist choice of destination: A case study of Taiwan. *Tourism Management*, 30(2), 288-297. doi:10.1016/j.tourman.2008.07.011

- Huang, L., Yu, P., Luo, Q., & Zou, C.H. (2012). E-tourism supply chain evaluation based on AHP and FCE method. *Journal of Theoretical and Applied Information Technology*, 45, 702-709.
- Hwang, C.L., & Yoon, K. (1981). *Multiple Attribute Decision Making Methods and Applications*. Berlin: Springer-Verlag.
- Ingram, H., Tabari, S., & Watthanakhomprathip, W. (2013). The impact of political instability on tourism: case of Thailand. *Worldwide Hospitality and Tourism Themes*, 5(1), 92-103. doi:10.1108/17554211311292475
- Jandrić, Z., & Srđević, B. (2000). *Analytic hierarchy process in selecting best groundwater pond*. 31st International Geological Congress, Rio de Janeiro, Brazil.
- Jordan, L. (2013). Managing built heritage for tourism in Trinidad and Tobago: challenges and opportunities. *Journal of Heritage Tourism*, 8(1), 49-62. doi:10.1080/1743873x.2013.765748
- Kaminski, J., Benson, A.M., & Arnold, D. (2014). *Contemporary Issues in Cultural Heritage Tourism*, Routledge: Abingdon. (pp. 3-18).
- Kontogergopoulos, N. (1998). Tourism in Thailand: Patterns, Trends and Limitations. *Pacific Tourism Review*, 2, 225-238.
- Kontogergopoulos, N. (2004). Conventional Tourism and Ecotourism in Phuket, Thailand: Conflicting Paradigms or Symbiotic Partners. *Journal of Ecotourism*, 3(2), 87-108. doi:10.1080/14724040408668152
- Lacher, R.G., Oh, C., Jodice, L.W., & Norman, W.C. (2013). The Role of Heritage and Cultural Elements in Coastal Tourism Destination Preferences: A Choice Modeling- Based Analysis. *Journal of Travel Research*, 52(4), 534-546. doi:10.1177/0047287512475215
- Lai, W.H., & Vinh, N.Q. (2013). An application of AHP approach to investigate tourism. *Tourism and Hospitality Management*, 19, 1-22.
- Lam, K., & Zhao, X. (1998). An application of quality function deployment to improve the quality of teaching. *International Journal of Quality & Reliability Management*, 15(4), 389-413. doi:10.1108/02656719810196351
- Li, S., & Li, J.Z. (2009). Hybridising human judgment, AHP, simulation and a fuzzy expert system for strategy formulation under uncertainty. *Expert Systems with Applications*, 36(3), 5557-5564. doi:10.1016/j.eswa.2008.06.095
- Maneenetr, T., & Tran, T.T. (2014). Developing Cultural Tourism in Border Province: A Case Study on Bueng Kan Province, Thailand. *Mediterranean Journal of Social Sciences*, doi:10.5901/mjss.2014.v5n23p55
- Mardani, A., Jusoh, A., Zavadskas, E.K., Khalifah, Z., & Nor, K.M. (2015). Application of multiple-criteria decision-making techniques and approaches to evaluating of service quality: a systematic review of the literature. *Journal of Business Economics and Management*, 16(5), 1034-1068. doi:10.3846/16111699.2015.1095233
- Martin, S.A., & Assenov, I. (2013). Measuring the Conservation Aptitude of Surf Beaches in Phuket, Thailand: An Application of the Surf Resource Sustainability Index. *International Journal of Tourism Research*, 17(2), 105-117. doi:10.1002/jtr.1961
- Michailidou, A.V., Vlachokostas, C., & Moussiopoulos, N. (2016). Interactions between climate change and the tourism sector: Multiple-criteria decision analysis to assess mitigation and adaptation options in tourism areas. *Tourism Management*, 55, 1-12. doi:10.1016/j.tourman.2016.01.010
- McKercher, B. (2016). Towards a taxonomy of tourism products. *Tourism Management*, 54, 196-208. doi:10.1016/j.tourman.2015.11.008
- McKercher, B., Ho, P.S.Y., & du Cros, H. (2005). Relationship between tourism and cultural heritage management: evidence from Hong Kong. *Tourism Management*, 26(4), 539-548. doi:10.1016/j.tourman.2004.02.018
- Nara, P., Mao, G.G., & Yen, T.B. (2014). Applying Environmental Management Policy for Sustainable Development of Coastal Tourism in Thailand. *International Journal of Environmental Protection and Policy*, 2(1), 19. doi:10.11648/j.ijepp.20140201.13
- Ngamsomsuke, W., Hwang, T.C., & Huang, C.J. (2011). Sustainable Cultural Heritage Tourism Indicators. Paper presented at the International Conference on Social Science and Humani, Singapore.
- Onder, E., Yildirim, B., & Ozdemir, M. (2013). Multi Criteria Decision Making Approach for Evaluating Tourism Destinations in Turkey. *Academic Journal of Tourism and Management Research*, 1, 1-15.
- Papic-Blagojevic, N., Gajic, T., & Djokic, N. (2012). Using Bayesian network and AHP method as a marketing approach tools in defining tourists' preferences. *Turizam*, 16(1), 8-19. doi:10.5937/turizam1201008p
- Park, D., & Yoon, Y. (2010). Developing sustainable rural tourism evaluation indicators. *International Journal of Tourism Research*, 13(5), 401-415. doi:10.1002/jtr.804
- Panich, W., Maneenetr, T., Taksina, T., & Sakolnakorn, T.P.N. (2014). The Management Strategy of Cultural Tourism: A Case Study of Sakon Nakhon Province, Thailand. *Asian Social Science*, 10(15), doi:10.5539/ass.v10n15p48
- Phuket Municipality. (2002). Old Phuket: Our Heritage, The Development and Conservation of Old Commercial Quarter in Phuket Town. Commemoration of the 5th Old Phuket Town Festival, 21-22, December 2002.

- Poria, Y., Butler, R., & Airey, D. (2003). The core of heritage tourism. *Annals of Tourism Research*, 30(1), 238-254. doi:10.1016/S0160-7383(02)00064-6
- Prideaux, B., Timothy, D., & Chon, K. (2008). Themes in Cultural and Heritage Tourism in Asia and the Pacific. In B. Prideaux, D. Timothy, & K. Chon (Eds.), *Cultural and Heritage Tourism in Asia and the Pacific*. Abingdon: Routledge.
- Quattrone, G. (2015). Combined management strategies for the valorisation and reuse of defence cultural heritage and the promotion of sustainable cultural tourism. In O. Ozcevik, C.A. Brebbia, & S.M. Sener (Eds.) *WIT Transactions on Ecology and the Environment* (pp. 953-962). Southampton, UK: Witpress LTD. doi:10.2495/sdp150801
- Richards, G. (2001). The development of cultural tourism in Europe. In G. Richards (Ed.), *Cultural attractions and European tourism*. (pp. 3-29). Wallingford: CABI Publishing. doi:10.1079/9780851994406.0003
- Richards, G. (2007). Global Trends in Cultural Tourism. In G. Richards (Ed.), *Cultural Tourism: Global and Local Perspectives*. Abingdon: Routledge.
- Richins, H. (2000). Local Government Tourism Decision-Making: A study of authoritative opinion. *Journal of Tourism Studies*, 11(2), 2-14.
- Saipradist, A., & Staiff, R. (2008). Crossing the Cultural Divide: Western Visitors and Interpretation at Ayutthaya World Heritage Site, Thailand. *Journal of Heritage Tourism*, 2(3), 211-224. doi:10.2167/jhto61.0
- Saareninen, J., Moswete, N., & Monare, M.J. (2014). Cultural tourism: new opportunities for diversifying the tourism industry in Botswana. *Bulletin of Geography. Socio-economic Series*, 26(26), doi:10.2478/bog-2014-0041
- Saaty, T.L. (1977). A scaling method for priorities in hierarchical structures. *Journal of Mathematical Psychology*, 15(3), 234-281. doi:10.1016/0022-2496(77)90033-5
- Saaty, T.L. (1992). Presidential Elections, the Superconducting Supercollider, and Organ Transplant Decisions. In A. Goicoechea, S. Zionts, & L. Duckstein (Eds.), *Multiple Criteria Decision Making*. (pp. 345-358). New York, NY: Springer Nature. doi:10.1007/978-1-4612-2918-6_27
- Sakolnakorn, T.P.N., Naipinit, A., & Kroeksakul, P. (2013). Sustainable Tourism Development and Management in the Phuket Province, Thailand. *Asian Social Science*, 9(7), doi:10.5539/ass.v9n7p75
- Saleh, A.S., Verma, R., & Ihalanayake, R. (2011). Do External Shocks Have a Permanent or a Transitory Effect on Thailand's Tourism Industry. *Tourism Analysis*, 16(4), 483-491. doi:10.3727/108354211X13149079789098
- Santos, M.C., Ferreria, A.M., & Cosat, C. (2014). Influential factors in the competitiveness of mature tourism destinations. *Tourism and Management Studies*, 10(1), 73-81.
- Saaty, T.L., & Kearns, K.P. (1980). The Analytical Hierarchy Process: Planning, Priority Setting, Resource Allocation. In *Analytical Planning*. (pp. 19-62). New York: McGraw-Hill.
- Schmallegger, D., Taylor, A., & Carson, D. (2011). Rejuvenating Outback Tourism through Market Diversification: the Case of the Flinders Ranges in South Australia. *International Journal of Tourism Research*, 13(4), 384-399. doi:10.1002/jtr.851
- Sedmak, G., & Mihalić, T. (2008). Authenticity in mature seaside resorts. *Annals of Tourism Research*, 35(4), 1007-1031. doi:10.1016/j.annals.2008.07.004
- Sharpley, R. (2002). Rural tourism and the challenge of tourism diversification: the case of Cyprus. *Tourism Management*, 23(3), 233-244. doi:10.1016/S0261-5177(01)00078-4
- Smith, R.A., & Henderson, J.C. (2008). Integrated beach resorts, informal tourism commerce and the 2004 tsunami: Laguna Phuket in Thailand. *International Journal of Tourism Research*, 10(3), 271-282. doi:10.1002/jtr.659
- Song, H., Witt, S.F., & Li, G. (2003). Modeling and Forecasting the Demand for Thai Tourism. *Tourism Economics*, 9(4), 363-387. doi:10.5367/00000000322663186
- Su, S., Yu, J., & Zhang, J. (2010). Measurements study on sustainability of China's mining cities. *Expert Systems with Applications*, 37(8), 6028-6035. doi:10.1016/j.eswa.2010.02.140
- Tavitiyaman, P., & Qu, H. (2013). Destination Image and Behavior Intention of Travelers to Thailand: the Moderating Effect of Perceived Risk. *Journal of Travel & Tourism Marketing*, 30(3), 169-185. doi:10.1080/10548408.2013.774911
- Teng, J.Y. (2002). *Project evaluation: Methods and applications*. Keelung, Taiwan: National Taiwan Ocean University.
- Timothy, D.J., & Boyd, S.W. (2006). Heritage Tourism in the 21st Century: Valued Traditions and New Perspectives. *Journal of Heritage Tourism*, 1(1), 1-16. doi:10.1080/17438730608668462
- Tourism Authority of Thailand. (2015). Media Release 24th June 2015: Thailand Visitor Arrivals Surge 25% in Jan-May. Thailand. Available at: <http://www.tat-news.org/thailand-visitor-arrivals-surge-25-in-jan-may-2015/> (Accessed 29th March 2016).
- Tsaur, S., & Wang, C. (2007). The Evaluation of Sustainable Tourism Development by Analytic Hierarchy Process and Fuzzy Set Theory: An Empirical Study on the Green Island in Taiwan. *Asia Pacific Journal of Tourism Research*, 12(2), 127-145. doi:10.1080/10941660701243356

- Untong, A., Ramos, V., Kaosa-Ard, M., & Rey-Maqueira, J. (2014). Thailand's Long-Run Tourism Demand Elasticities. *Tourism Economics*, 20(3), 595-610. doi:10.5367/te.2013.0280
- Viken, A., & Aarsaether, N. (2013). Transforming an Iconic Attraction into a Diversified Destination: The Case of North Cape Tourism. *Scandinavian Journal of Hospitality and Tourism*, 13(1), 38-54. doi: 10.1080/15022250.2013.771994
- Wallace, G., & Russell, A. (2004). Eco-cultural tourism as a means for the sustainable development of culturally marginal and environmentally sensitive regions. *Tourist Studies*, 4(3), 235-254. doi:10.1177/1468797604057326
- Wang, T., & Chen, Y. (2008). Applying fuzzy linguistic preference relations to the improvement of consistency of fuzzy AHP. *Information Sciences*, 178(19), 3755-3765. doi:10.1016/j.ins.2008.05.028
- Wang, S., Yamada, N., & Brothers, L. (2010). A Case study: discussion of factors and challenges for urban cultural tourism development. *International Journal of Tourism Research*, 13(6), 553-569. doi:10.1002/jtr.826
- Warren, W. (2009). *Phuket: Pearl of the Orient*. Singapore: Periplus Editions.
- Wattanacharoensil, W., & Schuckert, M. (2016). Re-viewing Thailand's master plans and policies: implications for creative tourism. *Current Issues in Tourism*, 19(10), 1045-1070. doi:10.1080/13683500.2014.882295
- Wickramasinghe, V., & Takano, S. (2010). Application of Combined SWOT and Analytic Hierarchy Process (AHP) for Tourism Revival Strategic Marketing Planning: A Case of Sri Lanka Tourism. *Journal of the Eastern Asia Society for Transportation Studies*, 8, 954-969.
- World Bank. (2017). *International Tourism, Number of Arrivals*. Available at: <http://data.worldbank.org/indicator/ST.INT.ARVL?locations=TH> (Accessed 17th May 2017).
- Wong, J.K.W., & Li, H. (2008). Application of the analytic hierarchy process (AHP) in multi-criteria analysis of the selection of intelligent building systems. *Building and Environment*, 43(1), 108-125. doi:10.1016/j.buildenv.2006.11.019
- WTTC. (2017). *Travel and Tourism Economic Impact: Thailand*. London: World Travel and Tourism Council.
- Xiao, H., & Smith, S.L.J. (2006). Case studies in tourism research: A state-of-the-art analysis. *Tourism Management*, 27(5), 738-749. doi:10.1016/j.tourman.2005.11.002
- Yaolin, Z. (2006). An application of the AHP in cultural heritage conservation strategy for China. *Canadian Social Science*, 2, 16-20.

Pilgrimage Sites in Slovakia as the Base for the Formation of Ecomuseums – Case Study of Ľutina Pilgrimage Site

Tomáš Pasternák^{A*}, Viktor Verba^A

Received: January 8, 2018 | Revised: May 17, 2018 | Accepted: May 20, 2018

DOI: 10.5937/22-16619

Abstract

Religious tourism is one of the oldest types of tourism and is connected with visiting various sacred places of religious significance. In Slovakia, the tradition of pilgrimage has rich history, as evidenced by a large number of pilgrimage sites that attract many pilgrims from Slovakia and abroad and still have their irreplaceable significance. However, these religious centres are not separated from other natural and cultural-historical attractions, as they together form the genius loci of a particular territory. The aim of this paper is to link the pilgrimage site with individual natural and cultural-historical interests in its surrounding in the context of the ecomuseum phenomena, which are now becoming more and more aware of the inhabitants and local communities in individual regions. Linking these locations should improve people's awareness of the territory they live in while making these places more attractive for visitors/pilgrims. Part of the paper is a case study on the example of the largest pilgrimage site of Greek Catholics in Slovakia – Ľutina, which has the largest potential to become a leader within a religious tourism and within a formation of ecomuseum in the region of eastern Slovakia in the context of implementation of projects and realization of activities directly in this pilgrimage site and surrounding attractive places.

Key words: pilgrimage sites, ecomuseum, territory inheritance, Slovakia, Ľutina

Introduction

The issue of religious tourism is primarily connected to sacred places/pilgrimage sites of religious significance and has been studied by many authors. Among the most important are works of Rinschede (1992), Cohen (1992), Stoddard (1997), Jackowski (2000), Liszewski (2000), Matlovič (2001), Vukonic (2006), Krogmann (2007), Collins-Kreiner (2010), Stausberg (2011), Soljan (2012), Matlovičová et al. (2015), etc. In Slovakia, pilgrimage sites are a very important part of the religious life of the country's inhabitants. Most of the pilgrimage sites in this area arose during the 16th and 17th century, that is, during the period of recatholiza-

tion processes. The tradition of pilgrimage and the oldest pilgrimage sites, however, date back to the Middle Ages. These pilgrimage sites include Svätý Beňadík (11th century), Levoča (13th century), Košice (13th century) and Spišský Štvrtok (14th century). In the 16th century, more than 30 significant pilgrimage sites were established in Slovakia, including Obišovce (16th century), Marianka (17th century), Šaštín (17th century), Staré Hory (17th century), Nitra (18th century), Trnava (18th century), Ľutina (19th century), Gaboltov (20th century) and Litmanová (20th century) (Fekete, 1947; Lenčíš, 2000).

^A Department of Geography and Applied Geoinformatics, University of Prešov, Ul. 17. novembra 1, 081 16 Prešov, Slovakia; tomi.paster@gmail.com, verba.viktor@gmail.com

* Corresponding author: Tomáš Pasternák, e-mail: tomi.paster@gmail.com

Pavicic et al. (2007) claim that pilgrimage sites are sometimes located far from the people who come to these places, so sometimes the length and difficulty of the journey itself is spiritually significant. Similarly, pilgrimage sites are perceived by anthropologists Victor Turner and Edith Turner (1973 in Pavicic et al., 2007). In their view, pilgrimage sites are usually located “out there”. This peripheral location is geographic and cultural; these sites are on the brink of human centres and the socio-political centres of society.

According to Tirpák et al. (2015), the impact of pilgrimage sites today extends beyond the regional and national borders, and participation in the pilgrimage is an expression of Christian existence because it demonstrates living faith and expresses great trust at the same time.

In the context of pilgrimage sites, Catholicism has a strong tradition of so-called Marian pilgrimage sites. They were set up in the places of the Virgin Mary apparitions, which are often accompanied by miraculous healings and events, as well as messages for visionaries. The most prominent examples of such pilgrimage sites are Lourdes, Fatima, Medjugorje, Loreto, Czestochowa and others (Vukonič, 2006).

The aim of the paper is to point to pilgrimage sites as part of the territory, its history and present. A very interesting concept highlighting the richness of the area (natural and cultural-historical) is an ecomuseum, managed by the local community of inhabitants for the purpose of protecting, raising and presenting the local heritage. The very idea of connecting the pilgrimage site with significant natural and cultural-historical uniqueness in its surroundings into a single unit in the form of an ecomuseum is a new idea that authors have not yet met within a study of a large number of papers.

The concept of ecomuseums itself is not at present a novelty; their history dates back to the 1970s in France. In many countries, ecomuseums had their predecessors, but they brought new ideas and practices to museums and inheritance of the territory *in-situ*, in particular the involvement of the inhabitants of the region themselves in activities and management of this protection. In the 21st century, ecomuseums have become a global phenomenon aimed at protecting the natural and cultural heritage in a particular territory and focusing primarily on local communities that should be the main actors in this protection and presentation.

Corsane and Holleman (1993, in Davis 2011, p. 80) present an ecomuseum as “*much larger territory in a fairly open-ended manner. Here the territory is not simply defined in geographical or administrative terms, but rather as any whole unit where the inhabitants share a common way of life, culture, occupation or traditional custom. Run from a central headquarters the ecomuseum has a series of ‘antennae’ within the territory of the museum. These antennae form a network through which the activities of information-gathering, research, display and education can be performed.*”

Establishing an ecomuseum is a dynamic process through which communities are able to identify, preserve, interpret and manage their natural and cultural heritage resources within the framework of sustainable development. The ecomuseum is based on social consent and is defined by geographical environment that can cross political boundaries (Borrelli & Davis, 2012).

Slovakia is still only at the beginning of the initiative of ecomuseums, and it can use already existing projects from other countries, whether it is Poland or other countries with a well established eco-politics policy. Nowadays, we can consider the ecomuseum in Slovakia only the Hont Ecomuseum, which is a project of cooperation of the local action groups of the MAS Zlatá cesta and the MAS Partnership of Krtíš Poiplie, realized in 2011-2012. In the East Carpathian region, three ecomuseums are being developed: “In the Footsteps of the Smugglers” Ecomuseum (Chodníkom pašerákov), “In the Footsteps of Duchnovič” Ecomuseum (Po stopách Duchnoviča) and the “Shape of fire” (Podoby ohňa) Ecomuseum. Representatives of these ecomuseums (municipalities, local entrepreneurs, regional development agencies) actively cooperate with representatives of the Polish ecomuseums in the Bieszczady Region with the support of the Bieszczady Foundation and the Association for the Development and Promotion of the Sub-Carpathian Region (Klamár, 2012).

Pointing to the phenomenon of the ecomuseum and to the pilgrimage site as its central point of interest is the main goal of this paper, which is outlined not only in the theoretical phase, but also applied in a case study at the most important pilgrimage site of the Greek Catholic Church in Slovakia in Ľutina (Sabinov, Prešov Region) and at the same time authors created a model of the ecomuseum, which includes other important natural and cultural-historical sites and monuments in its immediate vicinity.

Methods and data

There are several models and types of ecomuseums proposed by several authors within the framework of the current existing ecomuseums in the world (Rivard, 1985; Mayrand, 2000; Maggi & Faletti, 2000; Davis, 2005, 2011). In the case of the area authors have studied, they applied the model proposed by Davis (2005), who compares an ecomuseum to a necklace, combining selected elements of the heritage, where the ecomuseum presents fiber and individual elements of the heritage present beads or pearls. Thus, if we understand an ecomuseum as a fiber, then it can be perceived as a mechanism that holds the various elements (pearls, special places, cultural prints) that make the places *unique* (Figure 1).

While identifying and selecting places of natural and historical interest near the pilgrimage site of Lutina, authors mainly took into account its road accessibility. According to Michniak (2014), in addition to the necessary natural or cultural-historical presumptions, transport availability is considered to be one of the most important factors in the development of short-term tourism. For this reason, researchers created a circle of distances up to 35 km from the pilgrimage site (Lutina), which helped us to generate a list of interesting places. After final summary, a careful selection of attractive places followed. The selection also included the search and study of litera-

ture focusing on issues of ecomuseums, pilgrimage sites, tourism and the characteristics of the studied area. This has, in many cases, helped authors to identify places or attractions that are not generally known and have only regional value, but they can appeal to a potential visitor.

A substantial part of the whole research was the realization of field observations, which consisted of a visit to the pilgrimage site of Lutina and some natural and historical attractions in its surroundings. This field research mainly served for mapping and evaluating the studied area and for collecting the necessary photographic material. An important part of the research was the creation of cartographic outputs made in the specialized geographic information system QGIS.

From a methodological point of view, our research consisted of individual partial methods and techniques. The most important ones were:

- Analysis and synthesis of texts
- Generalization of texts
- Evaluation
- Field research
- Observations
- Collection of photographic material
- Methods of cartographic interpretation
- Case study application

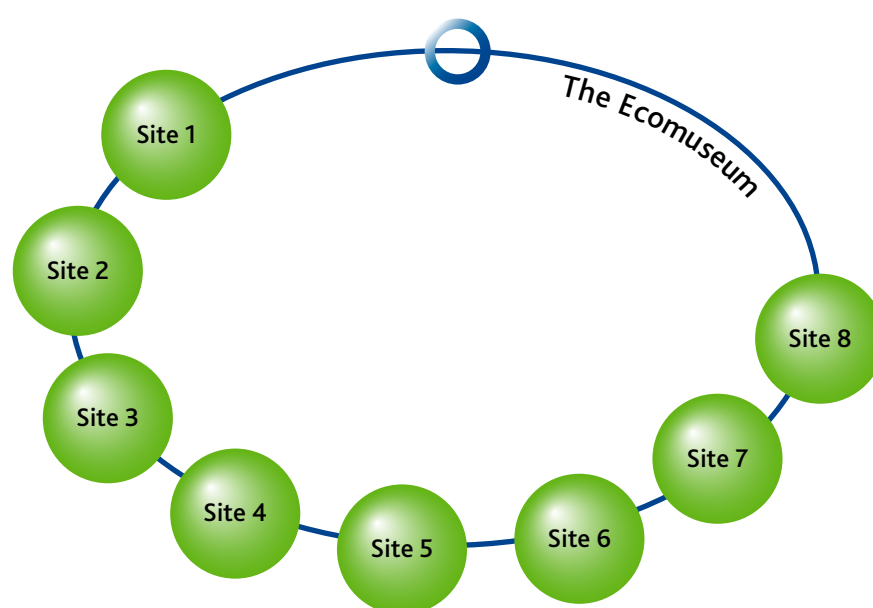


Figure 1. The necklace model for the ecomuseum

Source: adapted from Davis, 2005

Pilgrimage sites in Slovakia

As the research itself is carried out at the pilgrimage site of Ľutina, it is necessary briefly point out some general information about the pilgrimage sites in Slovakia. From the point of view of pilgrimage sites localization in Slovakia, Fekete (1947) follows two main concentrations. The first is the area in the southwestern part of Slovakia in the Danubian Lowland; the second is the region of eastern Slovakia with the historical regions of Spiš, Šariš and Zemplín, crossing the border between Catholics of Western Rite (Roman Catholics) and Eastern Rite (Greek Catholics). In other parts of Slovakia, the number of pilgrimage sites is low. Among such examples is the Central Slovakia Region (Banská Štiavnica, Staré Hory), southern Slovakia (Biňa) or Orava and Kysuce Region (Turzovka) (Fekete, 1947; Verba & Pasternák, 2016b).

In a Fekete view (1947), such an irregularity in the distribution of pilgrimage sites caused several factors, among the most important are:

- a) The surface of Slovakia - most of the pilgrimage sites are located at the outskirts of mountains, which was not a coincidence, as they depended on a sufficient number of pilgrims coming from densely populated areas, such as lowlands,
- b) Geographical location - pilgrimage sites were established along the important roads. Such examples are pilgrimage sites in eastern Slovakia, which were concentrated along a trade route of the Torysa River (Obišovce, Bertotovce, Prešov, Veľký Šariš, Ľutina, Čirč),

- c) Historical (human) factors - the direct factor of the birth of a pilgrimage site is a man himself, the moment he began to wander there. Donations by donors for the development and maintenance of pilgrimage sites were also important.

In terms of dedication, Matlovič (2001) distributes pilgrimage sites in Slovakia into following two categories:

1. Pilgrimage sites connected to the worship of the Lord's Crucifixion (the crucifixion of Jesus Christ, the Son of God, on the cross in Jerusalem) - calvarias; built from the 16th century to simulate the conditions in Jerusalem,
2. Pilgrimage sites connected to the cult of Our Lady (the cult of Mary, the Mother of Jesus Christ, who is worshiped by believers within Christianity) - the most numerous group of pilgrimage sites.

An important position within Slovak pilgrimage sites have the pilgrimage sites of the Greek Catholics, located exclusively in the eastern part of the country. The eight most important ones are Ľutina, Litmanová, Čirč, Šašová, Buková Hôrka, Rafajovce, Krásny Brod and Klokočov (Figure 2), which became religious centres for incoming pilgrims and places of special religious belief of this specific religious group (Verba & Pasternák 2016b). Its spirituality has its roots in Eastern Christianity, brought to Slovakia by the Byzantine mission of Sts. Cyril and Method, whose traces were most marked in eastern Slovakia (Petřík et al., 2012).

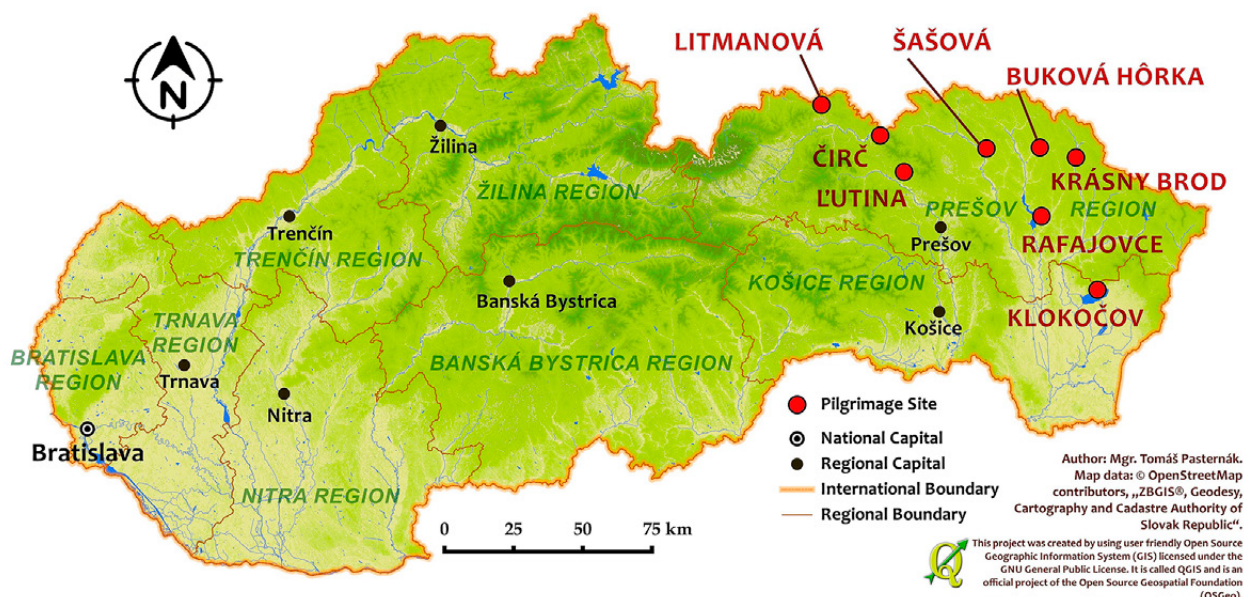


Figure 2. The most important Greek Catholic pilgrimage sites in Slovakia

Studied area - the pilgrimage site of Ľutina and its surrounding

History and present of Ľutina pilgrimage site

Ľutina is located in the northeastern part of Slovakia, Sabinov District, Prešov Self-Governing region. From the capital, Ľutina is 420 km away. From the county town of Prešov (the 3rd largest city of Slovakia) is 30 km away and Košice (2nd largest city of Slovakia) is 65 km away. From the transport point of view, Ľutina is directly accessible by car and bus and indirectly by rail (Pečovská Nová Ves village - 5 km). The nearest Slovak airports with an international character are located in the cities of Košice (74 km) and Poprad (109 km). Ľutina is also accessible by hiking trails through the Čergov Mountains.

The history of Ľutina as a pilgrimage site began to be written in 1851 when a sequence of miraculous events took place here. On the morning of August 19, at the feast of the Lord's Transfiguration, Zuzana Fekete and her three children went to the woods called Havranka. Upon returning home, she saw a great glow at its rim, and a solemnly dressed bishop who resembled St. Nicholas from the icon of local iconostasis. After other miraculous events, when the saint asked for the construction of the chapel dedicated to the Assumption of the Blessed Virgin Mary, he gave Zuzana the icon of the Mother of God, which, after being locked in the treasury, reappeared with this woman on the second day. Based on this miracle, all villagers believed. After the time of the investigation, Pope Pius IX awarded (1855) the opportunity to obtain plentiful indulgences for believers travelling to Ľutina. There appeared several miraculous healings that were documented. After the prohibition of the Greek-Catholic Church in 1950, the pilgrimage to Ľutina was stopped. The reconstruction took place after 1968. An important event for Ľutina was the promotion of the local church and

adjacent buildings at the Basilica Minor, which was awarded by Pope John Paul II in 1988 (Dancák, 2010; Verba & Pasternák, 2016a).

Ľutina is today a Marian pilgrimage site (the cult of the Virgin Mary) and the largest and most visited Greek-Catholic pilgrimage site in Slovakia (Figure 3). Over the last decade, it has been given special attention by various actors, not only at the religious (spiritual) level, but also at the material and technical level related to the complex architectural and dispositional transformation of the infrastructure, which brought a significant movement of religious tourism in this region (Figure 4). The most important events of the current period include (Figure 5):

- Affiliation of the pilgrimage site with the Pontifical Basilica of Santa Maria Maggiore in Rome with the privilege of indulgences (2010),
- Deposition and permanent exhibition of the rare relics of several saints: St. John Paul II, St. Nicholas, St. Faustina, blessed Pavol Peter Gojdič, blessed Vasil Hopko and others,
- Extension of the basilica and the reconstruction of the whole complex in its surroundings,
- Opening of the open air museum of wooden churches (2011),
- Interior decoration of the basilica with oversized mosaics (2013),
- Restoration of the liturgical space on the Marian hill,
- Establishment of permanent spiritual care for incoming pilgrims throughout the year,
- Organizing the pilgrimage of various groups of believers in the course of the year (pilgrimage of Roma people, pilgrimage of priests, pilgrimage of families, pilgrimage of catholic schools, etc.),



Figure 3. Marian hill in Ľutina during the pilgrimage in August 2017

Photo: Viktor Verba



Figure 4. Basilica minor and chapels in Ľutina during the pilgrimage in August 2017

Photo: Viktor Verba



Figure 5. Ľutina pilgrimage site at present

- Establishment of a tourist information centre,
- Internet coverage of the pilgrimage site with regular online broadcasting via the camera system (2016),
- Building a pilgrimage house and new social facilities,
- Construction of the Holy Family wooden church (with a view-tower) according to the drawings of the original wooden church from the 18th century (2015),
- Construction of the Virgin Mary Garden with chapels and copies of Greek-Catholic Marian icons from the pilgrimage sites in Slovakia and abroad (2017),
- Connection of Ľutina to the network of hiking trails (Čergov Mountains),
- Involvement of Ľutina in the international project “St. Mary’s Pilgrimage - Light of the East” in order to complete the pilgrim’s infrastructure and to cre-

ate an international pilgrimage/tourist route linking selected pilgrimage sites in eastern Slovakia and Poland (2017).

Identified and selected interesting places of natural and historical interest near the pilgrimage site of Ľutina are in most cases attractive even in a particular view, but their connection with the pilgrimage site of Ľutina changes their essence and gives them different, spiritual dimension (Figure 6). Most interestingly, all these places are connected in the conception of the ecomuseum, where they also receive the protection and enhancement of this local heritage, and, last but not least, the local community of the inhabitants in individual places also acquires an important role or function as it is important for the establishment and functioning of the ecomuseum. The following chart presents the basic information of these interesting places:

Significant locations near Ľutina pilgrimage site

Čergov Mountains

A visited site of significant natural value. Within the mountain range, several protected small-scale areas have been allocated. These areas include national nature reserves Čergovský Minčol, Čergovská javorina, Hradová hora, Pramenisko Tople, etc. From the point of view of tourism, Čergov is an important region with a tourist value and ski traditions.

Sabinov

In the past, the town was a member of the five eastern Slovak royal towns of Pentapolitana (Košice, Prešov, Sabinov, Bardejov, Levoča). There lived a large Jewish community in the past. Jewish wartime issues were also portrayed in the famous Oscar-winning film *The Shop on Main Street* (1966), which was filmed in Sabinov.

Pečovská Nová Ves

The local landowners left 4 mansions and a classicist manor-house. The oldest monument of the village is the Renaissance Roman Catholic Church of St. Andrew. The village was also connected to significant Jewish community. The remains of Jewish population include the Jewish cemetery and the synagogue.

Hanigovce

This village is known due to the presence of Hanigovce Castle, which was located on the important trade route to Poland. The castle was built between 1322 and 1342 on the site of the original wooden castle. Reconstruction and archaeological research have been carried out at the castle recently.

Kamenica

This village is known thanks to the presence of Kamenica Castle, which was located on the important trade route to Poland. Reconstruction and archaeological research have been carried out at the castle recently.

Krivany

This village is known due to the preserved folklore traditions and the presence of the preserved water mill from the 17th century. In 1984, the water mill was included in the list of technical monuments.

Prešov

Prešov was an important centre of culture and education with the nickname "Athens on the Torysa River". The historical centre was declared a town reservation in 1995 with the whole complex of valuable building monuments. Prešov is also a significant religious centre of the Greek-Catholic, Orthodox and Evangelical believers.

Sources: Verba & Pasternák 2016a; Fogaš et al., 2015; Kónya et al., 2000; Ďurček et al., 1991; Wiedermannová et al., 2008; Lokaj, 2000; Švorc, 2003, 2006; Harčár et al., 1998; Hochmuth et al., 1994; own field research

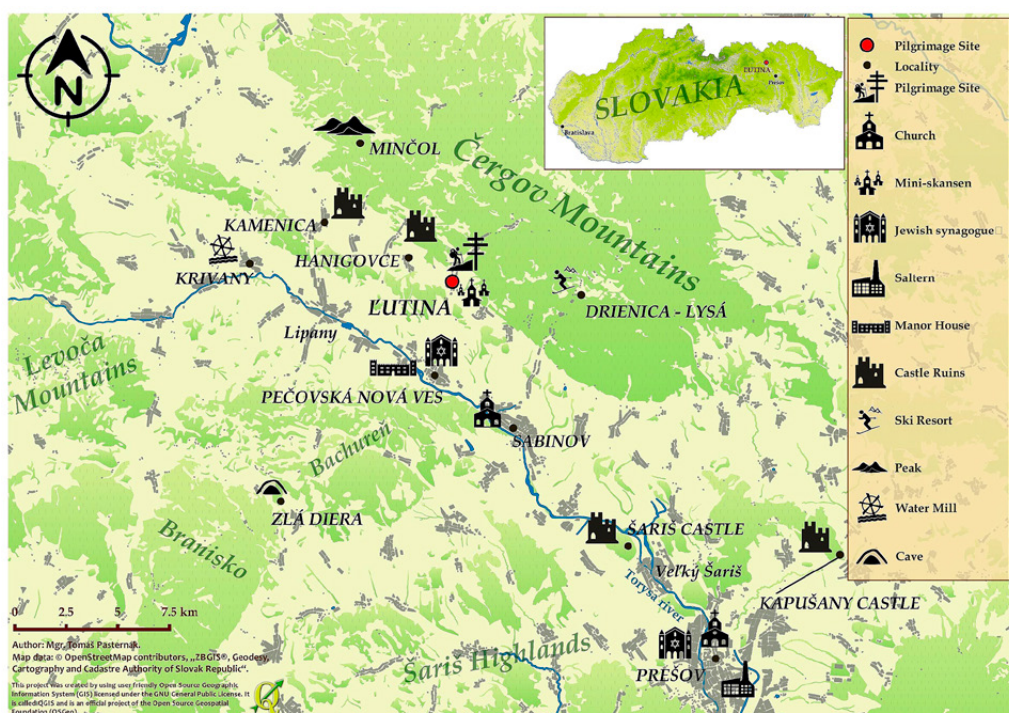


Figure 6. Ľutina pilgrimage site and interesting places around within the ecomuseum model

Basic geographic characteristics and history of the village of Ľutina

The village is located at the southern foot of the Čergov Mountains at an altitude of about 425 m above sea level. The centre of the village is crossed by the Ľutinka River. From the administrative division point of view, the municipality belongs to the Prešov Region and the Sabinov district, whose centre is the town of Sabinov, which is 10 km away from Ľutina. According to the latest data available in 2016, 497 inhabitants live there. During the last census in 2011, most of inhabitants considered themselves in terms of ethnic structure as Slovaks (93.18%) and Ruthenians (1.28%). In terms of religious structure, 77.4% were Greek Catholics, 10.7 % Roman Catholics and 3.6% Orthodox believers (SODB, 2011).

For the first time, Ľutina is mentioned in 1330. The village was located in the Šariš County, the centre of which was the Old Castle (Veľký Šariš). It originated in the colony of Pečovská Nová Ves as part of the New Castle (Hanigovce). One of the first written records of Ľutina dates back to 1341, where it is referred to as *Lethenya*. In the documents of the 14th - 16th century, the village is found in several Hungarian forms of the original name of Ľutina. In the Middle Ages, the village was located on the important trade road to Cracow, Poland. At the end of the 16th century, Ľutina was a medium-sized village with a vassal population. From the 14th to 16th century, a noble castle called Hrádok was located above the village. The inhabitants dealt with agriculture, livestock and fruit farming. In the 18th and 19th century, there was a paper mill. In the interwar period, inhabitants worked in agricul-

ture and forests. There were 3 saw factories in the village, and the forest railway crossed the village during this time (Uličný, 1990; Verba & Pasternák, 2016a; Internet 1).

Pilgrimage site as an impulse for the ecomuseum formation

The studied pilgrimage site of Ľutina with all existing spaces and localities was planted in the Davis model of ecomuseum, characterized in Methods and Data section. It is its main component and centre. While selecting other interesting sites and places in the vicinity from the natural and historical-cultural heritage point of view, authors also applied the mechanism described in the previous Methods and data section. On the basis of their application, authors have created a list of important places that were put into the Davis model perceiving an ecomuseum as a necklace (Figure 7).

Widawski (2011) argues that the concept of the ecomuseum best expresses the interactions between the three pillars: territory, society (community) and historical heritage.

In spite of the prefix of “eco”, most of the surveys focus not only on the natural environment but also on human relationships and efforts within particular specific environment. Here we can understand the environment as a combination of natural landscape (landscape mosaic of meadows and forests) and environment created or transformed by a man. Therefore, in the ecomuseum, environment encompasses material elements such as settlement and people living there, individual buildings, cultural artifacts, models

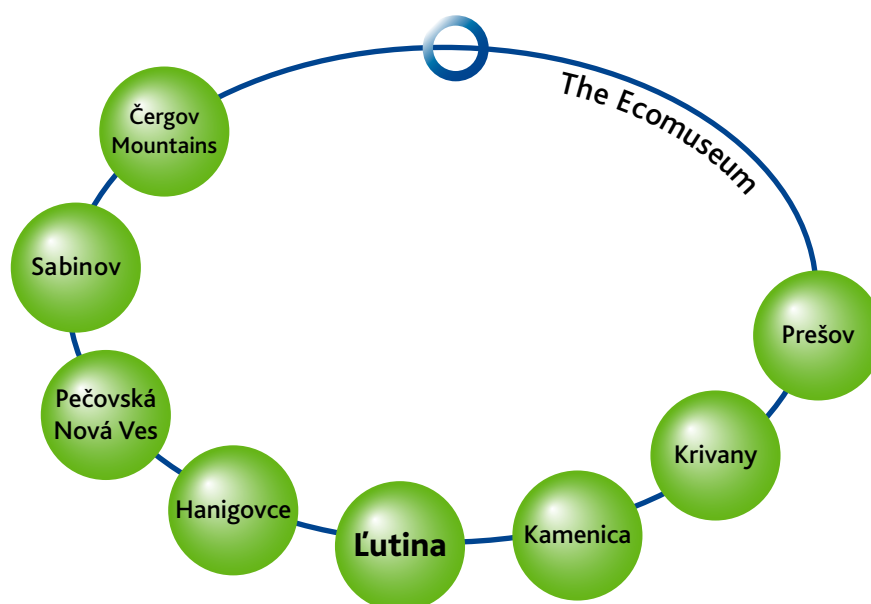


Figure 7. The necklace model for the ecomuseum applied for Ľutina pilgrimage site and interesting sites in its surrounding

Source: adapted from Davis, 2005

of land use or animals as well as intangible elements such as traditions, memories, various festivals (Davis, 2011).

Corsane, Davis and Murtas (2009) also emphasize the importance of local inhabitants who should be motivated to perceive the need to protect their heritage and cultural resources as manifestations of their local identity.

Identity is, according to Davis (2011), a concept firmly linked to a place and time, and the heritage of the territory is significant in that it is one of the factors (e.g. ethnicity, religion, language, behaviour) that are used to create community stories. Ecomuseums should have particular interest as local people are responsible for using their inheritance to build the local identity of individuals or communities.

In the Czech Republic, we meet the term cultural historical heritage. This cultural heritage consists of three components which overlap each other, thus

creating three thematic circles covering a wide range of disciplines (Figure 8). *Landscape heritage* refers to the intersection of natural and cultural influences at a particular site, the historical transformations of cultural landscape, the creation of aesthetic value of landscape, the protection and active care of landscape.

Tangible cultural heritage refers to immovable monuments, including documents of folk architecture or industrial architecture, historical and artistic subjects, movable documents on changes in lifestyle. *The intangible cultural heritage* includes the preservation of historical memories, knowledge and abilities including language and literature, music, dance, customs, traditions, culinary specialties or local names (Foltýn et al., 2008; in Havlůjová et al., 2012).

Therefore, authors have selected sites based on these three components, some of which are in the penetration of two or even in the penetration of all three components.

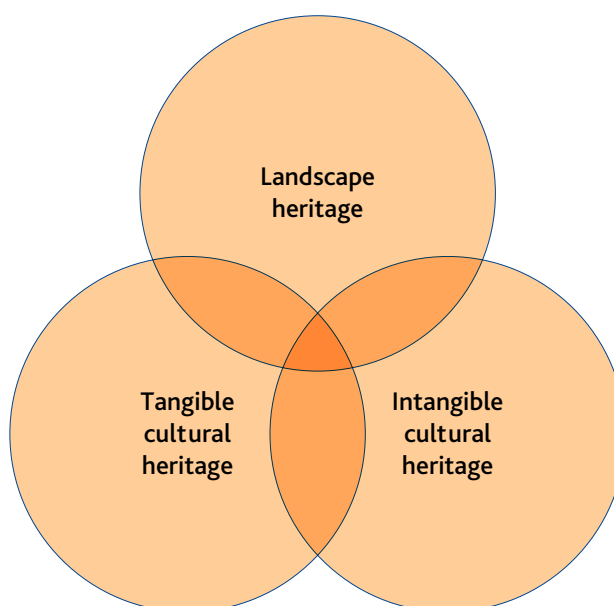


Figure 8. The cultural-historical heritage

Source: Adapted from Foltýn et al., 2008, in Havlůjová, 2012

Conclusion

Research on the Greek-Catholic pilgrimage site of Lutina and its surroundings brought several conclusions. First of all, it should be noted that visits to this pilgrimage site during the main pilgrimage or normal working days confirmed our assumptions that this pilgrimage site belongs to the important religious centres and is the destination for many pilgrims from Slovakia and abroad, as evidenced by the numerous crowds of pilgrims coming to this place. Our assumption has also been confirmed that in Lutina, there are several natural or historical attractions within the 35

km radius of the road, forming together with the pilgrimage site the genius loci of the studied area.

Studying the literature and visiting both the pilgrimage site and interesting places in its surrounding revealed interesting findings about the real wealth of this region. The very location and position of interesting places around the pilgrimage site of Lutina is conditioned by the natural factors as well as the historical development and inhabitants. Most of the natural and cultural-historical attractions that authors have identified in its reach are mainly concentrated south

and west of Ľutina, almost all of which are located in the Torysa valley. In this case, the surface played an important role here: physical-geographical barriers (Čergov Mountains, Bachureň, Levoča Mountains). Some natural or historical attractions identified near the pilgrimage site of Ľutina are well known to the general public and many of them belong to interesting places of national or supra-regional importance (e.g. the complex of the historical Salt Refinery in Prešov, etc.). However, many locations are little or not publicly available, but despite their regional significance, many of them are valuable from a natural or historical-cultural point of view.

The link between the pilgrimage site and the concept of an ecomuseum is a concept that can bring, on the one hand, instructions how to protect and enhance this heritage for the local community that should be the main bearer of this idea and, on the other hand, to present this heritage not only to pilgrims,

who visit these places, but also to visitors arriving for other than spiritual reasons. The richness and diversity of the territory of Slovakia, however, does not orient these pilgrimage sites out of other important elements of the landscape and the tangible or intangible culture of the territory; so authors decided to place a pilgrimage site into the centre of the ecomuseum, but also to add natural and cultural-historical attractions in its surroundings to offer a more comprehensive view of the studied area.

Ecomuseums are a very varied form of protection and presentation of the territory's heritage; the creation of ecomuseum based on a pilgrimage site is an interesting option that can also get real contours. In this paper, however, authors wanted to point out first of all this opportunity and introduce such a model that can be applied in the future in pilgrimage sites not only within Slovakia, but also in other geographic areas that are significant in terms of religiosity.

Acknowledgement

This paper is realized as part of the project GaPU 32/2017 of the Grant Agency for PhD students and young scientific and pedagogical staff of the Prešov University in Prešov, Slovakia.

References

- Borrelli, N., & Davis, P. (2012). How Culture Shapes Nature: Reflections on Ecomuseum Practices. *Nature and Culture*, 7(1), doi:10.3167/nc.2012.070103
- Cohen, E. (1992). Pilgrimage and Tourism: Convergence and Divergence 'pp. 47-61 in A. Morinis (Ed.) *Sacred Journeys: The Anthropology of Pilgrimage*. Westport: Greenwood Press, 47-67 pp.
- Collins-Kreiner, N. (2010). Researching pilgrimage: Continuity and transformations. *Annals of tourism research*, 37(2), 440-456.
- Corsane, G., Davis, P., & Murtas, D. (2009). Place, local distinctiveness and local identity: Ecomuseum approaches in Europe and Asia. In M. Anico & E. Peralta (Eds.), *Heritage and Identity. Engagement and Demission in the Contemporary World*. (pp. 47-62). Abingdon: Routledge.
- Dancák, F. (2010). *Ľutina. Basilica and hill*. Prešov: Petra. 127 pp. (in Slovak).
- Davis, P. (2005). Places, 'cultural touchstones' and the ecomuseum. In G. Corsane (Ed.), *Heritage, Museums and Galleries. An introductory reader*. (pp. 402-415). London - New York: Routledge.
- Davis, P. (2011). *Ecomuseums. A Sense of Place*. London: Continuum. 298 pp; 2nd edition.
- Đurček, J., & et al., (1991). *Čergov - Branisko. Tourist guide of CSFR*. Bratislava: Šport. 223 pp. (in Slovak).
- Fekete, Š. (1947). The origin, distribution and importance of Slovak pilgrimage places. *Ethnographic Yearbook*, 8, 125-144. (in Slovak).
- Fogaš, A., Rosič, M., & Matlovič, R. (2015). *Selected routes through eastern Slovakia*. Excursion guidebook. Prešov: Vydavateľstvo Prešovskej univerzity, 156 pp.
- Harčár, J., Kandráčová, V., Matlovič, R., & Michaeli, E. (1998). *Prešov, Prešov District and Prešov Region. Geographic excursions*. Prešov: Department of Geography and Geoecology FHNS PU, Východoslovenská pobočka SGS, Okresný úrad Prešov. 195 pp. (in Slovak).
- Havlůjová, H. (2012). Heritage, Education and Sustainability. In D. Fotlín & H. Havlůjová (Eds.), *Cultural Heritage and Sustainable Development of Local Communities*. (pp. 10-27). Praha: Brontosauři ekocentrum Zelený klub. (in Czech).
- Havlůjová, H., Foltýn, D., & Charvátová, K. (2012). Education for relation to cultural heritage and education for sustainable development in the Czech Republic. *Envigogika*, 7(3), <https://www.envigogika.cuni.cz/index.php/Envigogika/article/view/78/82> (23.10.2017) (in Czech). doi:10.14712/18023061.78
- Hochmuth, Z., Lacová, A., & Matlovič, R. (1994). *Geography of Prešov*. Prešov: PdF UPJŠ. 83 pp. (in Slovak).

- Jackowski, A. (2000). Religious Tourism – Problems with Terminology. *Peregrinus Cracoviensis*, 10, 63-74.
- Klamár, R. (2012). Ecomuseums as a new phenomenon in the region development on the example of „Podoby ohňa“ ecomuseum. *Folia Geographica*, 20, 54, 111-127. (in Slovak with English summary).
- Kónya, P. (2000). *The history of Sabinov*. Sabinov: Mestský úrad Sabinov, 533 pp. (in Slovak)
- Krogmann, A. (2007). *Religious tourism in the world*. Nitra: UKF, 67 pp. (in Slovak)
- Lenčíš, Š. (2000). *Pilgrimage in the life of a believer*. Prešov: Club of Christian Teachers in Prešov. 16 pp. (in Slovak).
- Liszewski, S. (2000). Pilgrimages or Religious Tourism? *Peregrinus Cracoviensis*, 10, 47-52.
- Lokaj, A. (2000). *Hanigovce: Past and present*. Hanigovce: Municipal office in Hanigovce. 104 pp. (in Slovak).
- Maggi, M., & Falletti, V. (2000). *Ecomuseums in Europe. What they are and what they can be: Working paper*. Torino: Istituto Ricerche Economico-sociali del Piemonte.
- Matlovič, R. (2001). *Geography of Religions*. Prešov: FHNS. 375 pp. (in Slovak).
- Matlovičová, K., Klamár, R., & Mika, M. (2015). *Tourism and its forms*. Prešov: Prešovská univerzita v Prešove, 550 pp. (in Slovak)
- Mayrand, P. (1985). The new museology proclaimed. *Museum International*, 37(4), 200-201. doi:10.1111/j.1468-0033.1985.tb00588.x
- Michniak, D. (2014). Selected approaches to assessing transport accessibility in relation to tourism development. *The Geographic Journal*, 66(1), 21-38. (in Slovak).
- Pavicic, J., Alfirevic, N., & Batarelo, V.J. (2007). The management and marketing of religious sites, pilgrimage and religious events: challenges for Roman Catholic pilgrimages in Croatia. In R. Raj & N.D. Morpeth (Eds.), *Religious tourism and pilgrimage festivals management: An international perspective*. (pp. 48-63). Wallingford: CABI Publishing. doi:10.1079/9781845932251.0048
- Petrík, L. (2012). Greek-Catholic church in Slovakia. In *Heritage of Sts. Cyril and Method*. PETRA. Prešov: Petra. 379 pp. (in Slovak).
- Rinschede, G. (1992). Forms of religious tourism. *Annals of Tourism Research* 19, 51-62.
- Rivard, R. (2001). Ecomuseums in Quebec. *Museum International*, 53(4), 19-22.
- SODB. (2011). *The 2011 Population and Housing Census*. <https://census2011.statistics.sk/tabulky.html> (visited 6.6.2017). (in Slovak).
- Soljan, I. (2000). *Sanctuaries and their effect on the organization of urban space based on the example of largest Catholic sanctuaries in Europe*. Krakow: IG-iGP UJ, 364 pp. (in Polish)
- Stausberg, M. (2011). *Religion and Tourism: Crossroads, destinations and encounters*. London & New York: Routledge, 279 pp.
- Stoddard, R. (1997). Defining and Classifying Pilgrimages. *Geoscience and Man* 34, 41-60.
- Švorc, P., & et al., (2003). *Stories of Old Prešov*. Prešov: Universum. 221 pp. (in Slovak).
- Švorc, P., & et al., (2006). *Guide through historical Prešov*. Universum. 173 pp. (in Slovak).
- Tirpák, P., Dancák, F., & Ostrowski, M. (2015). *Homo viator et homo peregrinus: Basics of tourism and pilgrimage*. Prešov: Vydavateľstvo Prešovskej univerzity. 207 pp. (in Slovak).
- Turner, V., & Turner, E. (1973). The center out there: Pilgrim's goal. *History of Religions*, 12(3), 191-230.
- Uličný, F. (1990). *History of the settlement of Šariš Region*. Košice: Východoslovenské vydavateľstvo. 513 pp. (in Slovak).
- Verba, V., & Pasternák, T. (2016). *Greek-Catholic pilgrimage sites in Slovakia and attractions in their surroundings + hiking trails*. Prešov: Petra. 158 pp. (in Slovak).
- Verba, V., & Pasternák, T. (2016). Greek Catholic Pilgrim Sites in Eastern Slovakia as a Tool for Raising Awareness of Local Wealth. In S. Paschrová & M. Doležalová (Eds.), *Current Tourism Issues: Local Wealth and Tourism (A Yearbook of the International Conference)*. (pp. 451-461). Jihlava: Vysoká škola polytechnická Jihlava. <https://kcr.vspj.cz/historie-konferenci-kcr/konference-aktualni-problemy-cestovniho-ruchu-2016> (18.7.2017) (in Slovak).
- Vukonic, B. (2006). Sacred places and tourism in the Roman Catholic tradition. In D.J. Timothy & D. Olsen (Eds.), *Tourism, Religion and Spiritual Journeys*. (pp. 237-253). London - New York: Routledge. http://shora.tabriz.ir/Uploads/83/cms/user/File/657/E_Book/Tourism/Tourism%20Religion%20and%20Spiritual%20Journeys.pdf (9.7.2017).
- Widawski, K. (2011). *Selected elements of the cultural heritage of the rural environment – their use in tourism on the example of Spain and Poland*. Wrocław: Uniwersytet Wrocławski. 266 pp. (in Polish).
- Wiedermannová, O., Frohmann, W., & Bazlerová, S. (2008). *Sabinov city and its Jews*. Prešov: DAH. 200 pp.



Internet 1. <https://www.lutina.sk/historia-obce.html>

Ethnic Inter-marriage in Croatia with Special Emphasis on the Czech Minority

Snježana Mrdjen^{A*}, Maja Bahnik^B

Received: March 20, 2018 | Revised: June 8, 2018 | Accepted: June 11, 2018

DOI: 10.5937/22-16884

Abstract

This article analyzes interethnic marriage in Croatia in terms of nationality throughout a forty-five year period (1970-2015) on the basis of vital statistics with special consideration of the Czech minority. The usual method of endogamy/exogamy percentage and the odds ratio method were applied. The results show that the percentage of endogamous marriages in Croatia has significantly risen after 1991. Different ethnic groups display various attitudes towards endogamy, ranging from 15 to over 90 percent. Along with Italians, Hungarians and Slovaks, Czechs are less endogamous than other national minorities. Gender differences, contrary to the conclusions in the literature, show that Czech men enter into marriage outside their group less often than Czech women. The change of political climate in Croatia during the 1990s resulted not only in the increase of endogamy, but also affected the structure of mixed marriages among Czechs.

Keywords: Inter-marriage, endogamy, ethnicity, gender differentials, Czechs, Croatia

Introduction

Ever since the early 20th century numerous sociologists have studied marriage in terms of ethnic origin, analyzing spouse choice and looking into the reasons for marrying within the same ethnic group or choosing a spouse from a different group (Kalmijn, 1998; Van Tubergen & Mass 2007). Ethnic inter-marriages are the best indicator of the frequency of direct social interaction between various ethnic groups in society and are indicative of social acceptance of diversity (Rodríguez-García, 2015; Smits, 2010; Qian et al., 2012). They demonstrate the level of integration and socio-cultural homogenization, or in contrast, the segregation between groups (Botev, 1994; Lachance, 1982). The term endogamy/homogamy designates marriage between two people from the same ethnic community or some other category, whereas exogamy/heterogamy refers to marriage outside one's own community (Rosenfeld, 2008).

Interethnic marriages (marriage between the members of different ethnicities/ethnic groups) in the territory of former Yugoslavia and newly formed states, the analysis of marriage procedure and structure, the nationality of children from mixed marriages - these topics were mostly covered by the authors from the region (Petrović, 1966, 1985, 1989; Mrdjen, 1996, 2000a, 2000b; Mrđen, 2010; Morokvašić-Müller, 2004; Petrović, M., 1997) and also by some Western European authors (Botev, 1994; Bromlei & Kashuba, 1982; Le Goff & Giudici, 2009, 2014; Smits, 2010). This paper provides, for the first time, an analysis of mixed marriages among Czechs in Croatia and a comparative overview including other nationalities over a period spanning more than four decades.

Former Yugoslavia emerged in a region populated for centuries by over 20 ethnicities with different

^A Department of Geographie, University of Zadar, Ul. Franje Tuđmana 24i, 23 000 Zadar, Croatia, e-mail: smrdjen@unizd.hr

^B Department of Tourism and Communication Studies, University of Zadar, Ul. Franje Tuđmana 24i, 23 000 Zadar, Croatia, e-mail: majabahnik@gmail.com

* Corresponding author: Snježana Mrdjen, e-mail: smrdjen@unizd.hr

historical, linguistic, religious and socio-economic characteristics. Except in Slovenia (where the majority nationality was represented with over 90% in the total population) and in Serbia without autonomous provinces (80% in the total population), the ethnic structure in other republics and provinces was bimodal (Montenegro, Croatia¹, Macedonia, Kosovo), trimodal (Bosnia-Herzegovina) or plurimodal (Vojvodina). All nationalities, regardless of which republic they lived in and regardless of their percentage in the total population, had the same rights (individually, politically, socially and economically) that were guaranteed by the Constitution². Every citizen of the Socialist Federal Republic of Yugoslavia was free to state which nationality or national minority they belong to, but was under no obligation to make any declaration on this matter, nor did they have to, under the Article 170 of the Constitution, to choose to belong to one of the nationality or national minorities. Nationality could be declared freely (self-declaration) and it did not go on record in identity documents as, for example, in the Soviet Union or Russia before 1997 (Gorenburg, 2006). This means that the same person was able to declare different nationality in a census or when they entered into marriage or filed for divorce (Mrđen, 2002). In this case we are dealing with “ethnic transfer”, which is more typical of smaller rather than larger ethnic groups (Mrdjen, 2000a, p. 109). As far as lan-

guage is concerned, proficiency in Serbian-Croatian/Croatian-Serbian (that was not the only official language, but was spoken by the majority of population), was mandatory in elementary education, but spoken and written languages of all the nationalities were official in the Yugoslav territory and defined in the constitutions of each respective republic (Klopčič, 1992).

After sovereign states were constituted in the territory of former Yugoslavia, the position of minority ethnic groups was no longer the same: differences appeared between the majority nationality and all other nationalities, which were now granted national minority status. According to the Constitutional Act on the Rights of National Minorities in Croatia, a change, or rather, a reduction of certain rights occurred in comparison to the rights that national minorities had in Yugoslavia. In addition to this, Yugoslav nationalities, such as Serbians, Montenegrins, Slovenians, Macedonians and Bosniaks in Croatia became national minorities, or, Djurdjev et al. (2009) use the term “new” minorities.

These new circumstances after 1991, which resulted in reduced rights for certain nationalities, combined with aggravated interethnic relations after the war in the 1990s (Morokvašić-Müller, 2004), especially between Croats and Serbs, had a definite impact on mutual relationships between majority nationality groups with all others, which was also reflected in the number of interethnic marriages. And so in all the states that emerged in the territory of former Yugoslavia homogamy became the prevalent characteristic of interethnic relations (Mrđen, 2010). This became particularly obvious in Croatia as early as 1990, where the political climate affected the frequency of interethnic marriages and partner choice more than in other former Yugoslav republics.

¹ It was only after the 2001 census that the number of Croats as the majority nationality rose above 80% in the total population.

² The basic principle of the Article 154 of the Constitution of the Socialist Federal Republic of Yugoslavia from 1974 was: “Citizens shall be equal in their rights and duties regardless of nationality, race, sex, language, religion, education or social status”.

Historical and political background - Czech minority in Croatia

Members of the Czech minority in the territory of what is now Croatia are descendants of the colonists who were settling there in various periods from the end of 18th century to 1920 (Dugački, 2013; Horina, 2013). Still, it was not until late 1870s that we could speak of any large-scaled organized Czech colonization (Pepeonik, 1967; Matušek, 1996). That was when colonization, very significant at the time, took part. It was primarily spurred on by agricultural crisis and great disparity in population density between the regions in Croatia and those in Moravia and the Czech lands, which is where most of the colonists emigrated from (Pepeonik, 1967; Herout, 2008). The colonization was facilitated by the fact that both Czechs and Croats lived in the common state Austria-Hungary/the Habsburg

Monarchy at the time. Auerhan, the greatest expert on Czech and Slovak settlements outside of Czechoslovakia, according to Pepeonik (1967, p. 56), “says that the earliest Czech settlements emerged in the last years of the 19th and early years of the 20th century, when several Czech families immigrated from Russia after refusing the request of imperial authorities to convert to Orthodox Christianity.”

According to official census data from the late 19th century (1880), there were 14,584 people living in Croatia whose mother tongue was Czech³, and their num-

³ This number did not take into account children under two years of age because the criterion for the census was mother tongue and not ethnic origin.

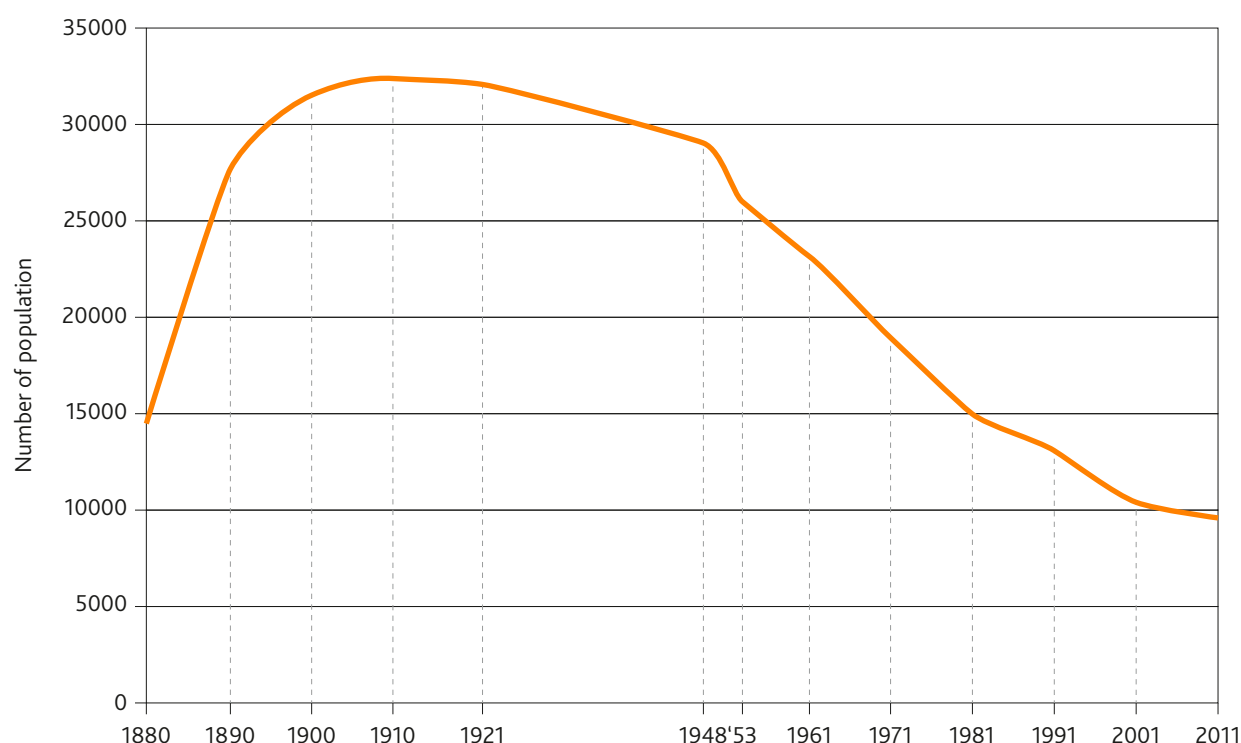


Figure 1. Number of Czechs population according to the censuses in Croatia, 1880-2011

Note: Data for the population census from 1931 is missing because Czechs and the Slovaks were represented jointly.

Source: Vodvarka, 1993 (from 1880 to 1991); *Census of Population, Household and Dwellings 2001 and 2011*. Croatian Bureau of Statistics, Zagreb.

ber reached its peak in 1921 with 32,376 inhabitants (Agičić, 2000) (Figure 1). After that there was a continuous decline in the Czech population. According to Pepeonik (1967), this was partly due to the fact that people moved back to Czechoslovakia after the First and Second World War, and some emigrated to America, but the main reason for a drastic drop in numbers of the Czech population after the World War II was assimilation with the Croatian population, precipitated by mixed marriages.

In the last population census from 2011 only 9,641 Czechs in Croatia were registered. This means that from 1948 until 2011 their share decreased by 67%, from almost 29,000 to less than 10,000. In those 63 years their numbers in the total population in Croatia dwindled down from 0.7% to mere 0.2%. There are various causes for such regression among Czechs. According to Nejašmić (1990), this can be attributed to rural exodus and depopulation in Croatia, which also affected villages with larger or smaller Czech popula-

tions. Natural change in the Czech population from the mid-1960s until today has been negative, deaths outnumbering live births. Population ageing, pronounced among Czechs, has also contributed to their declining numbers. In the 2011 census the median age of the Czech population was 9.5 years higher than the Croatian average (42.0). Also, in view of the ethnic change in the “Czech villages” from 1971 until 1981, Nejašmić (1990, p. 36) claims that “the Czech population was reduced in part because a major percentage among them declared themselves as Yugoslavs”.

As far as territorial distribution of Czechs is concerned, according to the latest census 2011, over 90% of them live in continental Croatia. Their greatest concentration is in central Slavonia (between the Sava and Danube rivers), in the outlying areas of four Croatian counties (Požeško-slavonska, Bjelovarsko-bilogorska, Sisačko-moslavačka, Virovitičko-podravska), where over two thirds of all Czechs in Croatia are concentrated.

Theoretical framework and previous research

The level of interethnic marriages in a country is contingent on a number of factors. Kalmijn (1998) stated that marriage patterns result from both preference and opportunity. “Opportunity to marry within the group depends on many factors, such as residential segregation,

the composition of local marriage markets, group size and so on” (Kalmijn, 1998, p. 397). In the preferences of marriage candidates, several kinds of resources play a role, “but sociologists have mostly focused on socio-economic and cultural resources” (Kalmijn, 1998, p. 398).

Ethnic composition of the territory is the first factor that affects the number and percentage of interethnic marriages, especially those within a settlement. The greater the number of nationalities/ethnic groups that live in the same space, the greater the possibility that the number of interethnic marriages will be higher (Garrido & Checa Olmos, 2014; Hwang et al. 1997; Lievens 1998). *Size of ethnic groups* is an important factor that defines ethnic marriages (Kalmijn & van Tubergen, 2006). This means that the percentage of interethnic marriages is mathematically predetermined by group size (Besanceney, 1965; Rosenfeld, 2002; Lanzieri, 2011). Or, according to Blau (1977) and Rodriguez-Garcia (2012), the proportion of group members intermarried is an inverse function of group size. It can thus be concluded that majority groups are “forced” to be more endogamous than minority groups. *Regional distribution of groups* is also important because “continuous settlement, border settlement or for example an enclave have a different impact on heterogamy” (Petrović, R., 1985, p. 10). “Continuous settlement, especially if in case of monolithic ethnic structure, reduces heterogamy, whereas border settlement, for example, is conducive to mixed marriages” (Petrović, R., 1985, p. 11). *Duration of contact period* or group authenticity shows how new immigrants differ from groups who have been living together for centuries in their attitude towards heterogamy. Their cultural similarities and differences should be taken into account here. Furtado and Trejo (2012, p. 3) stated that “new immigrants enter into marriages with domicile population more often than the groups who have been in the host country for several generations.” The “domination” factor of the majority group can have a psychological effect. The majority group can be more tolerant and open when it comes to partner choice than the minority group since they do not suffer from “assimilation fear” (Mrđen, 2000a).

Sex ratio is another factor that has an impact on marriage patterns. This biological framework is important for marriages in general, including those ethnically heterogeneous as well. It also implies supply and demand for men and women, which necessarily affects the like-

lihood of marriage for each sex. Numerous authors (Qian 1997; Kalmijn 1998; Jacobs & Labov 2002; Kalmijn & van Tubergen 2006; Rodriguez-Garcia 2012) emphasize that men are in general more exogamous than women as a result of a clearly patriarchal social order. Soroko (2014) also notes an important gender aspect of interethnic marriages in the Russian Federation. In all ethnic groups he has studied, women are less likely than men to marry outside their nationality. In the territory of former Yugoslavia it has also been observed that women are generally more endogamous than men (Mrđen, 2010). Apart from gender structure, *age structure* is also important and may also affect intermarriage. Both of those structural factors follow from the size of a group. This is especially important in smaller communities that are demographically old, which bears upon reproduction and a skewed sex ratio. As far as the Czech population in Croatia is concerned, according to the 2011 census, their median age was 51.5 years, which means that Czechs are demographically younger than Serbs, Hungarians and Slovenes and older than Croats and Slovaks. A quarter of the Czech population was aged 65 or more. The percentage of old population is higher among women than among men: the ratio is 30% to 20%.

As far as *cultural characteristics* are concerned, “preferences for cultural similarity have been addressed most extensively in the social psychological literature on personal attraction” (Kalmijn, 1998, p. 399). In the territory of former Yugoslavia the most important cultural characteristics cover language, religion and historical background, and these are especially significant in terms of heterogamy and ethnic relations in general (Petrović, R., 1985; Botev, 1994; Smits, 2010). Socio-economic characteristics, many sociologists believe, play an important role in choosing a spouse. Partners are often similar in terms of age, level of education and social status (Smits, 1996). Furtado and Trejo (2012) also suggest that people with similar economic status are likely to be attracted to each other. Petrović, R. (1967) states, that most exogamous marriages take part in the same social group/category, with significantly greater frequency among men than among women.

Data source and applied methods

This article will provide a quantitative analysis of interethnic marriages in Croatia according to nationality, with special consideration of interethnic marriages among Czechs. The analysis is based on annual vital statistics for the period of 45 years (1970–2015) published by the Yugoslav Federal Statistical Office up until 1990, and after that according to the data provided by the Croatian Bureau of Statistics. This data is limited only

to cross-classifications of the marriages by ethnicity of the spouses. The data on ethnic marriages according to age, education, occupation and rural and urban population were not published in the national statistics in former Yugoslavia nor are they being published in newly formed states and will be excluded from this article. As far as the data are concerned, it is important to note that, no data were published for Albanians, Roma and

Bosniaks for 1970 either, nor for the period 1997-2000, and for Yugoslavs do no records exist since 1992⁴.

The article also tackles the analysis of interethnic marriage according to sex in order to establish whether there are gender differences between nationalities. For the purposes of this analysis only those nationalities were taken into consideration whose share in the total population in Croatia for 2011 was over 0.1% (Croats, Albanians, Bosniaks, Czechs, Hungarians, Italians, Serbs, Slovaks and Yugoslavs) (Table 1). When interethnic marriage structure for the Czech population was considered, in order to establish which nationalities were dominant in those marriages into which Czechs entered outside their group, the nationalities chosen were those with which Czechs entered into over 100 marriages in the period between 1970 and 2015 (Croats, Serbs, Hungarians and people who declared themselves as Yugoslavs⁵) and Slovaks.⁶ The goal was to see whether the change to the status and rights of national minorities, brought about by the political climate after 1990, affected their direct relations with the majority group, and also to explore whether there was an increase in endogamy and any change in the ethnic structure of mixed marriages.

The article contains the most general measure (proportion/rate), which allows description of interethnic marriages, in general and according to sex, as well as interethnic marriage composition. The percentage of intermarrying couples is derived from the following table format:

Males	Females		Total married
	Nationality A	Nationality B	
Nationality A	C_{AA}	C_{BA}	MA
Nationality B	C_{AB}	C_{BB}	MB
Total married	F_A	F_B	N

Where C_{AA} is a marriage between wife and husband of the same nationality (A); C_{BA} is a marriage between wife of nationality B and husband of nationality A; C_{AB} is a marriage between wife of nationality A and husband of nationality B; C_{BB} is a marriage between husband and wife of the same nationality (B); M_A and M_B are the total marriages among men of nationality A and nationality B; F_A and F_B are the total marriages among women of nationality A and nationality B; N is the total of all marriages. Source: According to Kalmijn (1998) and Lanzieri (2011).

The percentage of A-type couples intermarrying is calculated from this formula:

$$(C_{BA}+C_{AB})/(C_{BA}+C_{AB}+C_{AA})$$

while the percentage of A-type persons intermarrying for males is C_{BA}/M_A and for females is C_{AB}/F_A (Kalmijn 1998, p. 405).

"This simple statistical method is easy to compute and interpret, but provides little information about the strength of endogamy/exogamy because it lacks a reference point and has many limitations" (Rosenfeld, 2002, 156). Its main drawback is that it does not take into consideration group size and it is less useful for comparison purposes because "when selection is random, small groups are less likely to marry within their group than large groups" (Kalmijn, 1998, p. 405). This is why the odds ratio method will be employed here.

The odds ratio (OR) for endogamy is a better measure of general assimilation than the percent exogamy (Rosenfeld, 2002; Kalmijn, 1998). Odds ratios are useful for comparing endogamy across groups because "they are independent of the relative sizes of the groups in the marriage table" (Kalmijn, 1998, p. 405). So the odds ratio will be employed to determine the level of endogamy for mentioned nationalities in Croatia and will also be applied in analyzing the structure of interethnic marriages between Czechs and other nationalities.

The odds ratio (OR) is calculated as follows (Kalmijn, 1998, p. 405):

$$OR = (C_{AA}/C_{BA})/(C_{AB}/C_{BB})$$

$$\text{or } (C_{AA} \cdot C_{BB})/(C_{BA} \cdot C_{AB})$$

The natural logarithm of the odds ratio is calculated as follows:

$$\ln(OR) = \sqrt{\frac{1}{C_{AA}} + \frac{1}{C_{BA}} + \frac{1}{C_{AB}} + \frac{1}{C_{BB}}}$$

Log-odds ratios greater than zero (which correspond to odds ratio greater than 1), represent positive associations. Negative log-odds ratios indicate negative associations (Rosenfeld, 2001).

⁴ In tables with endogamy findings for the five-year periods stated in the text, the data referring to Yugoslavs for the period 1990-1999 cover only two years, 1990 and 1991.

⁵ Yugoslav is the official name employed in the territory of former Yugoslavia to designate members of various ethnic groups who used this term in official population censuses and can be classified as ethnically uncommitted category.

⁶ Although Czechs entered into only 22 marriages with Slovaks during the period in question, their interethnic marriages will also be analyzed since these nationalities used to live in the same state and had settled in Croatia at the same time.

Results

The degree of intermarriage in Croatia

The frequency of endogamous marriages in Croatia declined substantially over the course of thirty years, from 85% in 1970 to 81% in 1990, when the endogamy rate was at its lowest (Figure 2). After 1990 the percentage of endogamous marriages increased significantly - in only three years it reached over 90% in 1993. The

level of endogamous marriages remained as high in the following years as well (around 92%).

The reason for the significant increase of endogamous marriages is the change in ethnic structure, brought about primarily by the war in the 1990s (Table 1). The share of Croats in the total population rose, whereas the share of the second largest ethnic group

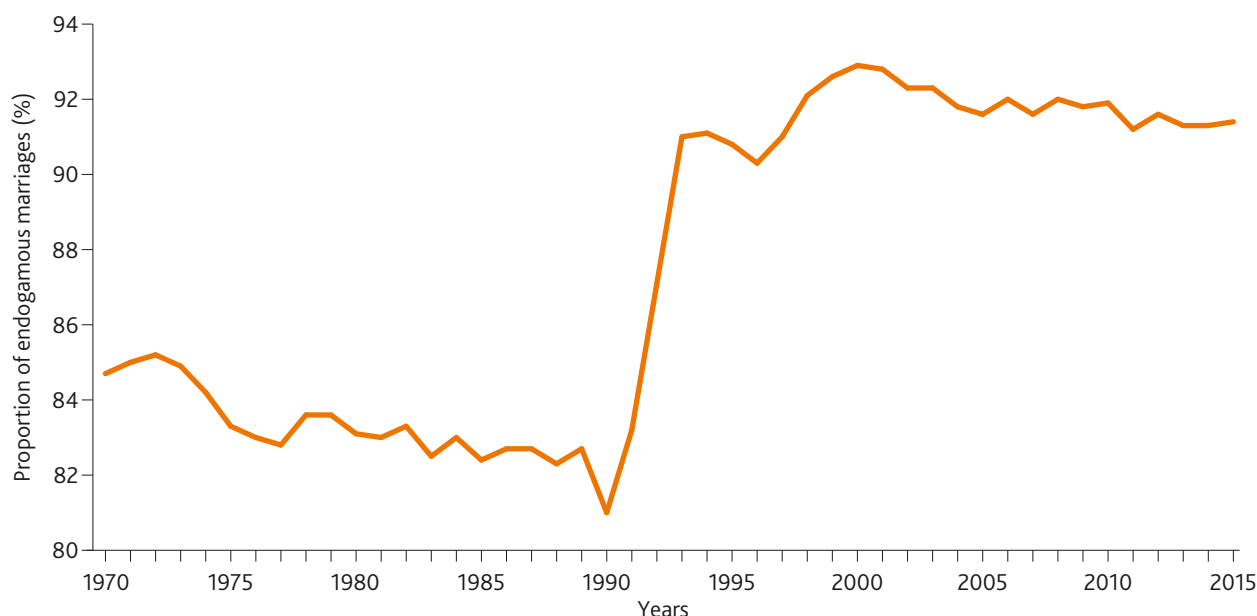


Figure 2. Proportion (%) of endogamous marriages in the total number of marriages in Croatia, 1970-2015

Source: Calculated by authors based on data published in *Demografska statistika* from 1970 to 1990, Tab. Marriages by nationality of women and brides, Federal Statistical Office, Belgrade, and on Data set 6-1-4 from 1991 to 2015, Croatian Bureau of Statistics, Zagreb.

Table 1. Population by ethnicity according to censuses in Croatia, 1971-2011

Nationality	Number of population					Percentage distribution				
	1971	1981	1991	2001	2011	1971	1981	1991	2001	2011
Albanians	4175	6006	12032	15082	17513	0.1	0.1	0.3	0.3	0.4
Bosniaks*	18457	23740	43469	20755	31479	0.4	0.5	0.9	0.5	0.7
Croats	3513647	3454661	3736356	3977171	3874321	79.4	75.1	78.1	89.6	90.4
Czech	19001	15061	13086	10510	9641	0.4	0.3	0.3	0.2	0.2
Hungarians	35488	25439	22355	16595	14048	0.8	0.6	0.5	0.4	0.3
Italians	17433	11661	21303	19636	17807	0.4	0.3	0.5	0.4	0.4
Roma	1257	3858	6695	9463	16975	0.0	0.1	0.1	0.2	0.4
Serbs	626789	531502	581663	201631	186633	14.2	11.6	12.2	4.5	4.4
Slovaks	6482	6533	5606	4712	4753	0.1	0.1	0.1	0.1	0.1
Yugoslavs	84118	379057	106041	-	-	1.9	8.2	2.2	-	-
Others**	99374	143951	235659	161905	111719	2.2	3.1	4.8	3.8	2.7
Total	4426221	4601469	4784265	4437460	4284889	100.0	100.0	100.0	100.0	100.0

Notes: *Before 2011 Bosniaks used to declare themselves as Muslims in terms of nationality; **Comprises other nationalities (Austrians, Bulgarians, Montenegrins, Macedonians, Germans, Poles, Romanians, Russians, Ruthenians, Slovenians, Turks, Ukrainians, Vlachs, Jews) and persons who declared regional affiliation, religion, ethnically uncommitted, and unknown ethnicity. Since 2001 Yugoslavs and Muslims have been included in this category.

Source: Statistical Yearbook of the Republic of Croatia 2001; Census of Population, Households and Dwellings, 2011. Croatian Bureau of Statistics, Zagreb.

(Serbs) and most other nationalities was reduced. In addition, deteriorated ethnic relations resulted in increasing the closure of the group.

If we consider the share of endogamous marriages across nationalities (Table 2), we can distinguish three groups. The highest level of endogamy was registered among Croats, the largest group: from 1970 until 1990 in a little over 80% of marriages were endogamous, rising to over 90% since the 1990s. A high level of endogamy was also registered among Roma, an ethnic group whose share in the total Croatian population is 0.4%. The percentage of endogamous marriages in this group varied between 65% and 75% with noticeable periodical oscillations.

Among Bosniaks the level of endogamy held at steady 30% throughout the entire observation period.

The third group, comprised of Czechs, Slovaks, Hungarians and Italians, typically displays the lowest level of endogamy. Until 1990 the percentage of endogamous marriages among the first three nationalities was 20%, sinking down to 15% after 1990. The lowest percentage of endogamy in this group was observed among the Italians: around 10% for the entire period.

The percentage-based results of endogamy analysis show that the highest level of endogamous marriages was registered among Croats. Also, very high endogamy is characteristic of the Roma population. With them we should mention the Albanians and Bosnians

Table 2. Proportion (%) of endogamous marriages in total number of marriages by ethnic groups and by gender in Croatia, 1970-2015

Period	Marriages	Albanians	Bosni.	Croats	Czechs	Hungar.	Italians	Roma	Serbs	Slovaks	Yugoslavs
1970-1979	Total	25.2	30.1	83.1	21.3	22.8	10.1	75.2	53.6	18.2	51.2
	Men	28.9	58.3	90.3	37.6	39.7	17.1	80.6	69.4	32.4	65.9
	Women	66.3	32.0	91.3	33.0	34.8	19.9	91.7	70.1	29.3	69.8
1980-1989	Total	34.4	32.2	82.1	17.7	21.9	9.3	74.5	49.8	27.0	53.6
	Men	45.4	45.8	89.5	33.7	39.2	15.2	85.2	65.0	24.0	72.7
	Women	68.0	51.4	90.7	27.2	33.2	19.1	85.5	68.1	28.9	67.0
1990-1999	Total	40.4	29.0	89.5	17.6	15.9	11.8	69.4	41.0	10.2	49.9
	Men	48.1	32.1	94.7	31.1	28.4	16.1	82.1	58.7	18.2	72.6
	Women	71.5	56.1	94.2	18.8	26.4	30.4	81.7	57.6	15.2	60.9
2000-2009	Total	48.6	33.9	92.4	11.1	16.0	8.2	70.8	38.9	12.6	-
	Men	63.2	27.8	95.0	22.2	32.0	15.9	80.5	56.7	30.7	-
	Women	67.8	68.1	97.1	18.1	24.3	14.6	85.5	55.3	17.7	-
2010-2015	Total	41.5	31.5	91.8	11.7	13.1	8.4	66.0	31.5	6.5	-
	Men	55.2	20.5	94.4	22.4	25.2	15.5	80.7	48.9	15.4	-
	Women	62.6	68.0	97.0	19.6	21.4	15.6	78.3	47.0	10.1	-
1970-2015	Total	40.5	31.1	86.8	17.8	20.4	9.8	70.6	49.6	16.8	52.7
	Men	50.5	42.0	92.4	32.7	36.7	16.2	81.9	65.8	26.8	71.0
	Women	67.2	52.5	93.5	28.1	31.5	20.1	83.6	66.9	22.4	67.1

Source: Calculated by authors based on data published in *Demografska statistika* from 1970 to 1990, Tab. Marriages by nationality of women and brides, Federal Statistical Office, Belgrade, and on Data set 6-1-4 from 1991 to 2015, Croatian Bureau of Statistics, Zagreb.

In the other group represented by Serbs, Yugoslavs, Albanians and Bosniaks the level of endogamy is between 25% and 50%. The highest percentage (around 50%) was characteristic of Serbs and Yugoslav until 1990. After that the ratio of endogamous marriages in these two groups suddenly plummeted, which is associated with their decrease in the total population in Croatia. Also, due to the deterioration of ethnic relations, especially Serbs and Yugoslavs with Croats. On the other hand, the level of endogamous marriages among Albanians has been increasing ever since the 1970s. With the exception of the last observation period, the increase was continuously: from 25% up to almost 50%.

characterized by higher endogamy in relation to other national minorities. It follows from the above that these high endogamy is contrary to the conclusions in the literature according to which the low proportion of endogamous marriages are characteristics of ethnic groups that are numerically small (Blau at al. 1982; Rosenfeld, 2002; Rodríguez-García, 2012).

Odds ratio analysis

Earlier on it was stated in this article that the downside of percent endogamy was that it does not take into account group size and is not precise enough to allow comparison of endogamy by nationality. So we

will apply another indicator for endogamy, the odds ratio, which has already been explained. The odds ratio results are not dependent on group size because the odds ratio considers not only the odds referring to marriage outside the origin group, but also marriage within the origin group, i. e. endogamous marriage.

The odds ratio results for the entire period show that, although the highest endogamy level is typical of Croats, their odds ratio for marrying within the origin group is the lowest (23.8) in comparison to other nationalities (Table 3) The odds that a Croatian man

Hungarians and Yugoslavs. Slovaks are also a part of this group, but only since 2010. In comparison to the listed nationalities, Italians are less endogamous, as in the percent endogamy. Despite significant increase in the odds ratio endogamy, especially in the 1990s and the first decade of the 21st century, Serbs however are less endogamous than other national minorities. This means that the endogamy odds ratios for Serbs rose from only 36.5 (in 1970-1979) to 86.3 (in 1990-1999) and declined to 58.9 in the last period (in 2010-2015). For Czechs and Hungarians, as well as Serbs, a log odds

Table 3. Odds ratios (OR) of ethnic endogamy for ethnic groups in Croatia, 1970-2015

Period	Odds Ratio	Alban.	Bosni.	Croats	Czechs	Hungar.	Ital.	Roma	Serbs	Slovaks	Yugo.
1970-1979	Endogamy OR	1942.5	300.1	18.4	190.1	122.3	108.6	126326.9	36.5	439.7	290.43
	Log (OR)	7.57	5.70	2.91	5.25	4.81	4.69	11.75	3.60	8.09	5.67
1980-1989	Endogamy OR	1549.1	161.9	18.5	198.4	158.5	148.9	26129.3	35.3	1151.2	102.4
	Log (OR)	7.35	5.09	2.92	5.29	5.07	5.00	10.17	3.56	7.05	4.63
1990-1999	Endogamy OR	1347.1	114.8	28.3	268.7	194.2	123.4	16311.5	86.3	362.5	109.6
	Log (OR)	7.17	4.71	3.06	5.57	5.25	4.79	9.70	4.44	5.87	4.89
2000-2009	Endogamy OR	1308.7	523.0	39.3	143.9	186.1	80.6	10871.5	84.7	340.0	-
	Log (OR)	7.18	6.26	3.67	4.97	5.23	4.39	9.29	4.44	5.83	-
2010-2015	Endogamy OR	783.1	290.8	32.9	198.7	150.6	82.8	5218.4	58.9	187.0	-
	Log (OR)	6.66	5.67	3.49	5.29	5.01	4.42	8.56	4.08	5.23	-
1970-2015	Endogamy OR	1389.6	214.2	23.8	208.1	162.5	108.0	16597.4	52.7	499.8	152.6
	Log (OR)	7.23	5.36	3.13	5.33	5.09	4.68	9.72	3.96	6.21	5.04

$p < 0.0001$ (for all nationalities)

Source: Calculated by authors based on data as for Table 2 by using the MedCalc statistical software, www.medcalc.org/calc/relative_risk.phpT

will marry a Croatian woman are 23.8 higher than for a non-Croatian man to marry a Croatian woman. These odds were less than 20.0 before 1990, but afterwards the odds value doubled⁷. Regardless of the increased odds value, it follows that Croats, contrary to the percent endogamy results, are the least endogamous in comparison to other nationalities. The highest odds ratios of endogamy across the entire period had Roma, despite the fact that the odds values decreased from the first to the last period, from over 126,000 (or log OR 11.75) to a little over 5,000 (log OR 8.56). I. e. in the 1970s the odds ratio for Roma men marrying Roma women was 126,000 times higher than for non-Roma men, as opposed to a little over 5,000 in the period 2010-2015. Albanians also display high odds ratio endogamy, although the odds values dropped down to 783.1 (2010-2015) from over 1,900 (1970-1979), but still remain higher than for other nationalities (with the exception of Roma).

The endogamy value of around 200.0 across the observed period was registered among Bosniaks, Czechs,

ratio was the highest in the period of the war (1990-1990).

Interethnic marriages among Czechs

From 1970 until 2015 the members of the Czech population in Croatia entered into a total of 6,625 marriages, and 1,001 of those were endogamous marriages (for couples), i. e. marriages within the Czech group, which makes for 17.8% of the total number of marriages. Remaining 4,623 marriages or 82.2% of the total number were with a member of some of the nationalities living in Croatia (Figure 3).

The total number of marriages among Czechs was steadily declining since 1970. Over the course of 45 years the number of marriages decreased by over four times, from 312 marriages in 1970 it dropped down to only 72 marriages in 2015. The decrease was continuous until the early 1990s, when the number of marriages dropped down to under 100 annually and remained at that level for the next ten years or so, after which a new decrease took place (Figure 3). In 2013 the number of marriages was only 46, the lowest since 1970. At the same time, the share of endogamous marriages among Czechs in the total number of marriages

⁷ From 1991 until 1999 endogamy increased significantly, from 18.4 odds ratio to 32.9.

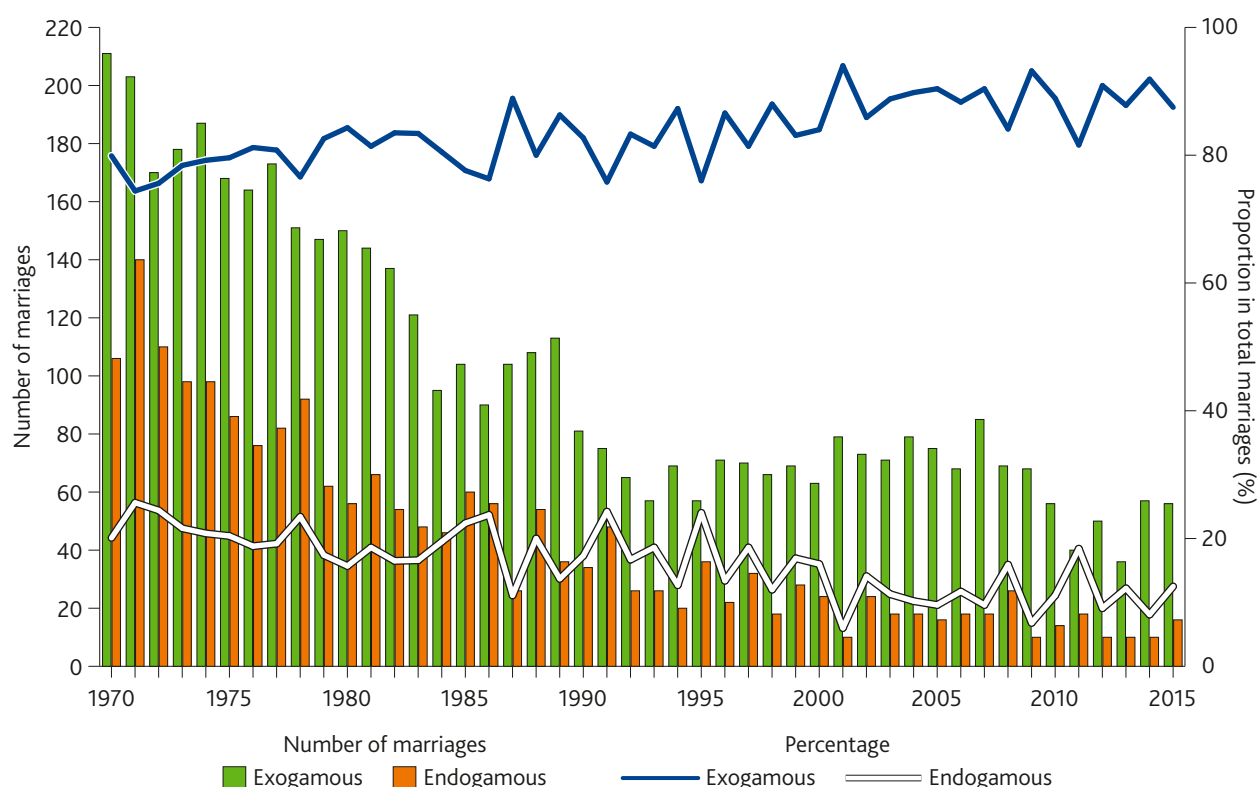


Figure 3. Number of endogamous and exogamous marriages among Czechs in Croatia, 1970-2015.

Source: Calculated by authors based on data published in *Demografska statistika* from 1970 to 1990, Tab. Marriages by nationality of women and brides, Federal Statistical Office, Belgrade, and on Data set 6-1-4 from 1991 to 2015, Croatian Bureau of Statistics, Zagreb.

was constantly dropping, from around 100 marriages in the early 1970s to only around 10 marriages by the end of the observed period.

Czech men more endogamous than Czech women

In the period 1970-2015 the total number of marriages among Czech men was 3,058. Of those, 2,057 (or 67%) marriages were outside the group and 1,001 with Czech women. In the same period the total number of marriages among Czech women was slightly higher (3,567). 2,566 (or 72%) of those were with a partner from another ethnic background, and 1,001 with a partner from the same ethnic group.

In the early 1970s the percentage of endogamous male and female marriages among Czechs was around 35% and after 2000 around 20% (Figure 4). Although temporal dynamics of marriage rates by gender is symmetrical, the exogamy rates are somewhat higher among women than among men. In the period of 45 years the exogamy rates for men were higher than those for women during only six years. The greatest differences in exogamy between men and women were manifest in the 1980s, early 1990s and in 2008, whereas the share of endogamous marriages among men reached its highest level of 48% in 1991.

Earlier in the text it was stated that in almost all communities exogamous marriages occurred more frequently among men than among women. In addition

to this, men who belong to ethnic minorities tend to enter into marriages outside their group more often than women (Kalmijn 2006, Rodriguez-Garcia 2012). The trend for interethnic marriages of Czech men and women in Croatia is in contrast to this conclusion. Although temporal dynamics of endogamous marriage rates by gender is symmetrical, the endogamy rates are somewhat higher among men than among women. If we compare gender differences in ethnic endogamy among Czechs with other national minorities in Croatia (Table 2), it follows that, just like Czech women, Hungarian, Slovak, Bosniak and Yugoslav women were entering into marriage outside their group more often than men across the entire observation period. Among Croats, Serbs, Albanians, Italians and Roma men are more exogamous than women. Albanians stand apart as the nationality group that has displayed the greatest difference between the rates of endogamy for men and women.

Croats the most frequent spouse in Czech marriages

Throughout the period from 1970 until 2015 Czechs mostly entered into marriages with Croats, which makes for 3,648 or 79% of all exogamous Czech marriages. This percentage was significantly lower for other nationalities: most other marriages were with Serbs (431 marriages or 9.3% of the total number of exogamous marriages among Czechs), and less with other

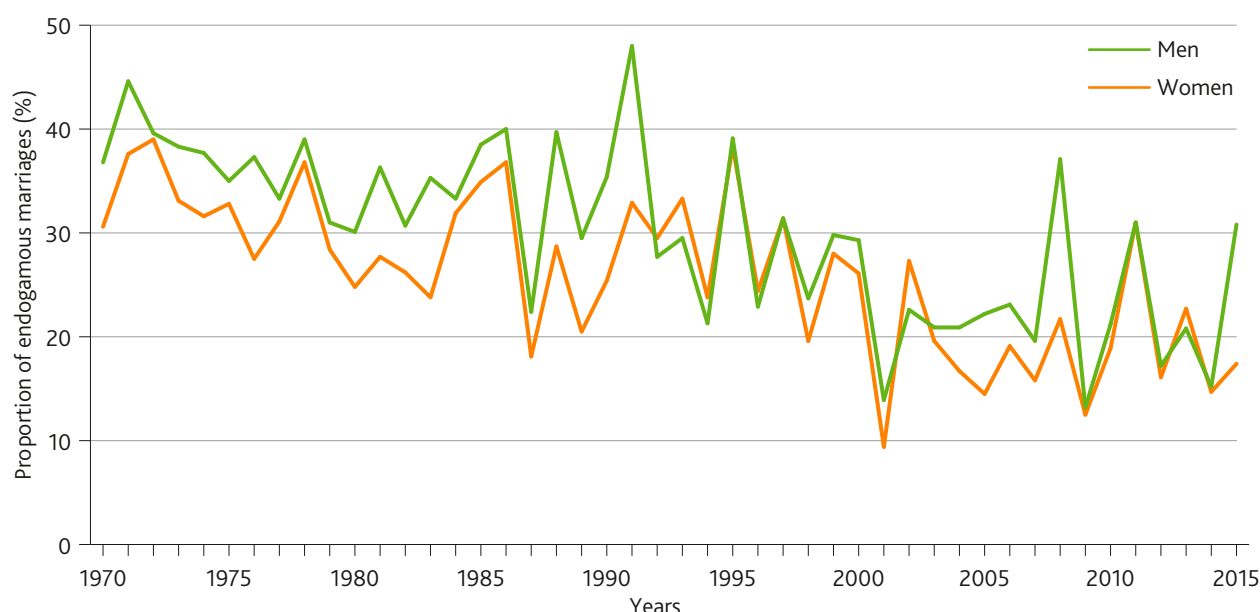


Figure 4. Proportion (%) of endogamous marriages among Czechs by sex in Croatia 1970-2015

Source: Calculated by authors based on data published in *Demografska statistika* from 1970 to 1990, Tab. Marriages by nationality of women and brides, Federal Statistical Office, Belgrade, and on Data set 6-1-4 from 1991 to 2015, Croatian Bureau of Statistics, Zagreb.

nationalities, where the especially low rate of marriages with Slovaks stands out (only 22 marriages across the entire observation period).⁸

Although the number of marriages between Czechs and Slovaks is very low, it follows that until 1990 Slovaks were the group most open to marriages with Czechs (Table 4, column 1). Out of the total num-

the 1990s Hungarians have been very open towards Czechs, more so than Slovaks. Across the entire observation period Czechs were a partner in 1.3% of exogamous Hungarian marriages. On the other hand, out of the total number of Czechs who entered into marriage, only 0.4% of them married a Slovak man or woman across the entire observation period (Table 4,

Table 4. Proportion (%) of mixed marriages of Czechs with other nationalities in Croatia, 1970-2015

Period	Croats		Hungarians		Serbs		Slovaks		Yougoslaves	
	1	2	1	2	1	2	1	2	1	2
1971-1979	0.4	59.2	1.6	2.8	0.3	9.7	1.6	0.6	0.5	2.1
1980-1989	0.3	58.6	1.2	2.1	0.2	8.6	2.1	0.5	0.4	7.1
1990-1999	0.3	69.7	1.5	1.8	0.5	4.9	0.3	0.1	0.2	1.9
2000-2009	0.3	80.2	0.5	0.6	0.4	4.8	0.4	0.3	-	-
2010-2015	0.3	79.6	1.0	1.5	0.3	4.2	0.5	0.3	-	-
1970-2015	0.3	64.9	1.3	2.1	0.3	7.7	1.1	0.4	0.4	3.7

Notes:

1=Proportion (%) of mixed marriages of Czechs with other nationalities in total marriage of other nationalities

2=Proportion (%) of mixed marriages of Czechs and other nationalities in total Czech marriage

Source: Calculated by authors based on data as for Table 2.

ber of Slovaks who entered into marriage in the period 1970-1979, 1.6% of them married a member of the Czech group, and in the period 1980-1989 it was 2.1% or 1.1% in the entire observation period. Also, since

column 2). At the same time, the rate of Czechs who entered into marriage with a Hungarian man or woman was significantly higher (2.1%).

In mixed Czech marriages Croats were the most common partner to Czechs across the entire observation period. In the first observation period Croats were a partner in 59.2% and after 2000 in about 80% of the total number of mixed Czech marriages (Table 4, column 2). But if we look at the percentage of Czechs in Croatian marriages, it follows that Croats are the

⁸ With other nationalities in Croatia (Montenegrins, Bosniaks, Slovenians, Albanians, Italians, Ruthenians and "others", including persons who declared regional affiliation, persons who remained ethnically uncommitted and persons whose ethnicity is unknown), Czechs entered into 246 marriages or 5.3% of the total number of Czech marriages.

Table 5. Odds ratio for Czechs with other nationalities in Croatia, 1970-2015

Period	Odds Ratio	Croats	Hungarians	Serbs	Slovaks	Yugoslavs	Others
1970-1979	Endogamy OR	284.7	450.2	1582.6	1853.8	4135.6	703.8
	Log (OR)	5.65	6.11	7.37	7.52	8.33	6.56
1980-1989	Endogamy OR	320.9	615.9	1855.6	2656.4	1306.3	1419.1
	Log (OR)	5.77	6.42	7.53	7.88	7.17	7.26
1990-1999	Endogamy OR	342.68	455.3	1814.2	6111.0	8617.8	4115.6
	Log (OR)	5.84	6.12	7.5	8.72	9.06	8.32
2000-2009	Endogamy OR	167.5	2548.0	964.4	4282.2	-	4937.4
	Log (OR)	5.12	7.84	6.87	8.36	-	8.50
2010-2015	Endogamy OR	230.23	435.5	1271.6	658.3	-	12675.0
	Log (OR)	5.44	6.08	7.15	6.49	-	9.45
1970-2015	Endogamy OR	294.76	551.5	1628.0	3137.1	2737.8	2224.5
	Log (OR)	5.69	6.31	7.40	8.05	7.91	7.71

$p < 0.0001$ (for all nationalities)

Source: Calculated by authors based on data published in *Demografska statistika* from 1970 to 1990, Tab. Marriages by nationality of women and brides, Federal Statistical Office, Belgrade, and on Data set 6-1-4 from 1991 to 2015, Croatian Bureau of Statistics, Zagreb.

most closed group towards Czechs. In the 1970s 0.4% of the Croats who entered into marriage did so with a Czech woman or man, with a downward trend that resulted in only 0.2% in the last observation period or 0.3% across the entire period (1970-2015).

As far as Czech-Serbian marriages are concerned, out of the total number of Czechs who entered into marriage between 1970 and 2015, 7.7% did so with a member of the Serbian nationality, Czech men slightly more often than Czech women. In the early 1970s this percentage was 9.7% and after 1990 less than 5%. On the other hand, Serbs were a relatively closed group towards Czechs in their mixed marriages. Out of the total number of members of the Serbian nationality who entered into marriage during the period 1970-2015, only 0.3% of them did so with a member of the Czech nationality (Table 4, column 1).

Persons who declared themselves as Yugoslavs were more represented in exogamous Czech marriages than Slovaks or Hungarians. In the 1980s 7.1% of Czechs entered into marriage with persons who declared themselves as Yugoslavs and only 0.5% did so with Slovaks or 1.2% with Hungarians. On the other hand, Yugoslavs were significantly less open towards marriages with Czechs than Slovaks or Hungarians.

Table 5 shows the the odds ratio results for endogamy between Czechs and other nationalities (Croats,

Serbs, Hungarians, Slovaks, Yugoslavs). The highest odds endogamy across the entire observation period was documented among Czechs and Slovaks. The odds ratio for the entire observation period was higher than 3,000. This means the odds that a Czech man will marry a Czech woman were 3,000 higher than for a Slovak man to marry a Czech woman. A high level of endogamy was also documented between Czechs and Serbs, Czechs and Yugoslavs or for some other nationalities living in Croatia.

On the other hand, the lowest level of endogamy was documented between Czechs and Croats. Across the entire observation period the odds that a Czech man will marry a Czech woman were 294.4 higher than for a Croat man to marry a Czech woman. It should be emphasized that the level of endogamy reached its peak during the 1990s (the odds were 342.7) and dropped afterwards. In addition to Croats, the endogamy in relation to other nationalities was also low for marriages between Czechs and Hungarians. Across the entire observation period the odds were 551.5, which is three times less than for Serb-Czech marriages or, for example, six times less than for Czech-Slovak or Czech-Yugoslav marriages. Czech marriages related to other nationalities in Croatia show a constant increase of endogamy, from a log odds ratio of 6.56 in the first period to 9.45 in the last.

Discussion

The main aim of this study was to analyze interethnic marriages in Croatia with special emphasis on interethnic marriages among Czechs. The analysis was carried out over a period of more than forty years

(1970-2015). In addition to descriptive analysis, based on interethnic marriage percentage, the odds ratio method was applied as well.

The share of endogamous marriages in Croatia was continuously dropping from 1970 until 1990, holding at about 80%. After 1990 there was a sudden surge of endogamy to over 90% of the total number of marriages. On one hand, the reason for this was the change in ethnic structure where the share of the majority nationality in the total population increased, whereas the share of national minorities in the total population declined. So Croats are, in terms of percentages, the most endogamous group. Because of their numbers, Croats have the least chance of finding a partner outside their group, which leads to a high level of endogamy. But if we take into account the results of the odds ratio method, it follows that Croats are the least endogamous in comparison to other nationalities. Also, Serbs display a lower level of the odds ratio endogamy in comparison to other national minorities. However, it should be pointed out that since 1990 the odds ratio endogamy among Serbs has doubled, despite the fact that the number of members of this nationality in the total Croatian population has dropped over three times since 1991. The reason for closing inside the group was not only its decreased share in the total population of Croatia, but also aggravated interethnic relations, mostly with the majority nationality (Croats).

Czechs, Hungarians, Italians and Yugoslavs are characterized by a higher level of the odds ratio endogamy in comparison to Croats and Serbs, but still significantly lower in comparison to Albanians and Roma. By cross-referencing the percentage endogamy with the odds ratio endogamy among national minorities, we can see that Roma, along with Albanians, are the most endogamous group in Croatia, despite their small numbers in the total population. These are closed communities in which traditional values as well as affiliation with the Islamic cultural sphere⁹ affect the endogamy level.

Czechs are, along with Hungarians, Slovaks and Italians, a small group in terms of numbers, but are territorially concentrated. Over two thirds of Czechs in Croatia are characterized by compact population density in the central area between the rivers Sava and Drava and it can be surmised that such geographical distribution has an impact on a higher level of endogamous marriages, as the literature suggests. I. e. the groups concentrated in a certain area have a greater chance of marrying endogamously than the groups that are not (Kalmijn, 1998). However, it can be inferred from the analysis that geographic distribution did not affect attitudes towards interethnic marriage

because the share of marriages Czechs entered into within their own group was less than 18% across the observation period.

Period of coexistence with domicile groups is also one of the factors that have an impact on endogamy levels. Czechs settled in Croatia over 150 years ago. Despite the large number of interethnic marriages, they have managed to preserve their own language and culture until this day. However, it is important to point out that it remains unknown whether persons who enter into marriage and who declare themselves as Czechs, come from a family that is ethnically Czech or whether their parents had already entered into an interethnic marriage. For example, according to the census from 1981, almost 13 thousand people stated that their mother tongue was Czech and a little over 400 among them declared themselves as Croats in the nationality category. On the other hand, slightly over 3 thousand persons who declared themselves as Czechs (or 24% of the total Czech population that numbered 15,061 in 1981) stated that their mother tongue was Croato-Serbian/Serbo-Croatian/Croatian/Serbian.¹⁰

As far as differences by gender and attitude towards exogamy are concerned, although the gap in intermarriage frequency is not as great, it follows that Czech men are more endogamous than Czech women. This runs contrary to many conclusions in the literature, according to which exogamy rates among men are higher than among women in almost all communities. Slovaks, Hungarians and Yugoslavs are characterized by the same marriage attitudes in terms of gender. In contrast, a higher level of endogamy has been documented among Serb, Italian and Bosniak and particularly Albanian and Roma women than among men. This is confirmed by an analysis from the literature according to which women are more endogamous than men because they are more frequently prevented from interreligious marriages (Kalmijn & van Tubergen, 2006).

From the structure of interethnic marriages among Czechs it follows that the largest number of such marriages was with Croats, the dominant group. The share of Czech-Croat marriages has been constantly rising, which has caused a decline in marriages with other nationalities. Croats were more frequent partners in exogamous marriages of Czech women than Croat women in exogamous marriages of Czech men. Czechs entered into marriages with Slovaks the least although they are culturally closest to them in all matters apart from religion. According to the 2011 census, around 30% of Slovaks declared themselves as Protes-

⁹ According to the latest Croatian census, 55% of Albanians and 30% of Roma declared themselves as Muslims in terms of religious affiliation.

¹⁰ This was a modality for answering the mother tongue question in the 1981 population census in Yugoslavia.

tants in terms of religion, and 88% Czechs as Catholics. The reason for very few Czech-Slovak intermarriages is probably territorial distribution, i. e. territorial distance, and not Slovak religious affiliation. Czechs are concentrated in the central part of the Pannonian Basin for the most part, whereas Slovaks are in the east part of Croatia. In addition to this, there are almost twice as many Czechs than Slovaks in Croatia.

The fact that religious affiliation was not decisive for Czech-Slovak marriages is also evident in the share of Czech-Serbian marriages that is significantly higher. Unlike Slovaks, most Serbs live in the same areas as Czechs, which has made the contact between these two ethnic groups possible, regardless of their different religious affiliations (Czechs are Catholic, Serbs Orthodox). Also, there is less endogamy between Czechs and Hungarians than between Czechs and Slovaks, although these groups speak different languages. Furthermore, in the 1980s the percentage of marriages with persons who declared themselves as Yugoslavs was significant, outnumbering marriages with Slovaks or Hungarians. However, it is uncertain how many of the Czech-Yugoslav marriages are "homogamous", since the original ethnicity of the persons who declared themselves as Yugoslavs remains unknown.

On the other hand, if we consider the share of Czechs as partners in the total number of marriages of

other nationalities, Croats emerge as the group most closed towards Czechs. Also, the number of Czechs who were partners in Serb exogamous marriages was small, smaller than in exogamous marriages among Hungarians and Slovaks.

From all points above, it can be concluded that cultural characteristics were not a decisive factor for Czechs in choosing a partner outside their group. More significant were the size and territorial distribution of other nationalities with which Czechs co-existed (Croats, Serbs, Hungarians, and Yugoslavs). The odds ratio results reveal that the ethnic distance between Czechs and Slovaks is greater than between Czechs and Croats, Czechs and Serbs or, for example, between Czechs and Yugoslavs. Furthermore, since the status of national minorities in Croatia changed after it became a sovereign state, there was a change in attitude of national minorities towards interethnic marriage. So from 1990 onwards the endogamy between Czechs and other nationalities has been higher than among Czechs and Croats. This can be explained by a reduced percentage of all nationalities (except the dominant Croat group) in the total population in Croatia, which affects supply and demand in the marriage market. The psychological factor of domination and, simultaneously, protection of the largest group from which a partner is chosen also plays an important role.

Conclusion

Since 1990 the share of endogamous marriages in Croatia has risen to over 90%. The reason for this is the change in ethnic structure in Croatia after it declared independence. The percentage of Croats as the largest group increased, whereas the share of national minorities in the total population dropped. War and aggravated ethnic relations caused a change in the status of national minorities as well, which affected attitude towards interethnic marriage. According to the odds ratio method that considers group size, Croats are the least endogamous in comparison to other ethnic groups, which is the opposite of what the percentage endogamy results show. Czechs, Hungarians, Slovaks and Italians, despite being territorially concentrated, display a significantly lower level of endogamy than, for example, Albanians and Roma, and higher than Serbs who are the largest ethnic group. Differences between interethnic marriages by gender show that male endogamy among Czechs, Slovaks, Hungarians, Bosniaks and persons who declare themselves as Yu-

goslavs is higher than female endogamy in the same group, which is not the case for other nationalities. As far as interethnic Czech marriages are concerned, Croats are the most frequent partner, although Croats represent the group that is most closed towards Czechs. The number of Czech-Slovak marriages has been very low across the entire observation period (only 22 marriages). These ethnic groups used to live together in the same states and settled in Croatia at almost the same time. Also, they have more cultural characteristics in common with each other than with other ethnic groups. So it follows that a small number of Czech-Slovak marriages can probably be attributed to geographic distribution. Both Czechs and Slovaks are territorially concentrated groups, but they are geographically distant, which leaves little opportunity for interethnic contacts. This indicates that territorial proximity and ethnic composition have a greater impact on ethnic structure of marriages than cultural characteristics of a nationality group.

References

- Agičić, D. (2000). Hrvatsko-češki odnosi na prijelazu iz 19. u 20. stoljeće [*Croatian-Czech relations in transition from 19th to 20th century*]. Zagreb: IBIS grafika. (in Croatian)
- Besanceney, P.H. (1965). On Reporting Rates of Inter-marriage. *American Journal of Sociology*, 70(6), 717-721. doi:10.1086/223966
- Blau, P. (1977). *Inequality and Heterogeneity: A Primitive Theory of Social Structure*. New York, NY: The Free Press.
- Blau, P., Blum, T.C., & Schwartz, J.E. (1982). Heterogeneity and intermarriage. *American Sociological Review*, 47(1), 45-62. doi:10.2307/2095041
- Botev, N. (1994). Where east meets west: Ethnic intermarriage in the former Yugoslavia, 1962 to 1989. *American Sociological Review*, 59(3), 461-480. doi: 10.2307/2095944
- Bromlei, Y., & Kashuba, M.S. (1982). *Marriage and Family in the Yugoslav Nations*. Moscow: Nauka. (in Russian)
- Croatian Bureau of Statistics. (2001). *Statistical Yearbook of the Republic of Croatia*. Available at: <http://www.dzs.hr/>.
- Croatian Bureau of Statistics. (2001). Population by ethnicity, by towns/municipalities. In *Census of Population, Households and Dwellings*. Available at: <http://www.dzs.hr/> (14. 11. 2017)
- Croatian Bureau of Statistics. (2011). Population by ethnicity, by towns/municipalities. In *Census of Population, Households and Dwellings*. Available at: <http://www.dzs.hr/> (14. 11. 2017)
- Croatian Bureau of Statistics. Data set, Table 6-1-4, *Marriages by nationality of women and brides, from 1991 to 2015*. Zagreb: Croatian Bureau of Statistics.
- Federal Bureau of Statistics. *Demographic statistics from 1970 to 1990, Marriages by nationality of women and brides*. Belgrade.
- Dugački, V. (2013). *Svoj svome. Češka i slovačka manjina u međuratnoj Jugoslaviji (1918-1941) [To your own. Czech and Slovak minorities in interwar Yugoslavia (1918-1941)]*. Zagreb : IBIS grafika. (in Croatian)
- Djurdjev, B., Bubalo-Živković, M., Ivkov-Džigurski, A., & Ivanović, Lj. (2009). Majorities and Minorities in Former Yugoslav Countries at Turn of the 21st Century. *Geographica Pannonica*, 13(4), 118-126.
- Furtado, D. & Trejo, S.J. (2012). Interethnic Marriages and their Economic Effects. IZA Discussion Papers 6399, Institute for the Study of Labor.
- Garrido, A.A. & Checa Olmos, J.C. (2014). The Marriage Market in Spain. Analysis of the Structure of Opportunity in Mixed Marriages. *Sociologia - Slovak Sociological Review* 46(3), 300-319.
- Gorenburg, D.P. (2006). Rethinking Interethnic Marriage in the Soviet Union. *Post-Soviet Affairs*, 22, 145-165. doi: 10.2747/1060-586X.22.2.145
- Herout, V. (2008). Kulturno-prosvjetni rad Čeha na prostoru Bjelovarsko-bilogorske županije [The Cultural and Educational Activity of the Czechs in the Area of the Bjelovar- Bilogora County]. *Radovi Zavoda za znanstvenoistraživački i umjetnički rad u Bjelovaru*, 2, 126-127. (in Croatian with English summary)
- Horina, I. (2013). Výsledky sčítání lidu, Přehled kulturních, literárních a školních otázek [The results of the census list of cultural, literary and educational issues]. *Jednota*, 31, 5-13. (in Czech).
- Hwang, S., Saenz, R., & Aquirre, E.B. (1997). Structural and assimilationist explanations of Asian American intermarriage. *Journal of Marriage and the Family* 59(3), 758-772. doi:10.2307/353959
- Jacobs, J. & Labov, T. (2002). Gender differentials in intermarriage among sixteen race and ethnic groups. *Sociological Forum* 17(4), 621-646. doi:10.1023/a:1021029507937
- Kalmijn, M. (1998). Intermarriage and homogamy: Causes, Patterns, Trends. *Annual Review of Sociology*, 24(1), 395-421. doi: 10.1146/annurev.soc.24.1.395
- Kalmijn, M. & Van Tubergen, F. (2006). Ethnic intermarriage in the Netherlands: confirmations and refutations of accepted insights. *European Journal of Population*, 22(4), 371-397. doi:10.1007/s10680-006-9105-3
- Klopčić, V. (1992). Le droit des langues dans l'ex Yougoslavie. In H. Giordan (Ed.) *Les minorités en Europe* (pp. 328-329). Paris: Ed. Kimé.
- Lachance, P. (1982). Intermarriage and French Cultural Persistence in Late Spanish and Early American New Orleans. *Histoire sociale-Social History* 15(28), 47-81.
- Lanzieri, G. (2011). A Comparaison of Recent Trends of International Marriages and Divorces in European Countries. Paper for the IUSSP Seminar on Global Perspectives on Marriage and International Migration, Seoul, South Korea, 20-21 October. Available at: http://www.academia.edu/2565606/A_comparison_of_recent_trends_of_international_marriages_and_divorces_in_european_countries
- Le Goff, J.M. & Giudici, F. (2009). Transition to marriage in former Yugoslavia. Interethnic differences across cohorts. Facing massive violence and social change: Collective experiences in former Yugoslavia, 1-21, Lausanne.
- Le Goff, J.M. & Giudici, F. (2014). The Demise of Mixed Marriage? Ethnic Boundaries Between Families in Changing Societies. In D. Spini, G. Elcherth, & D.

- Corkalo Biruski (Eds.): *War, Community and Social Change* (pp. 63-84). Peace Psychology Book Series 17, Springer Science/Business Media.
- Lievens, J. (1998). Interethnic marriage: bringing in the context through multilevel modeling. *European Journal of Population*, 14(2), 117-155. <http://www.jstor.org/stable/20164026>. doi: 10.1023/a:1006075325546
- Matušek, J. (1996). Česi u Hrvatskoj [Czechs in Croatia]. *Jednota*, 210 p. (in Croatian)
- Giles, W., Hyndman, J., & Morokvašić-Müller, M. (2004). From pillars of Yugoslavism to target of violence. Interethnic marriages in the former Yugoslavia and thereafter. In W. Giles, J. Hyndman (Eds.), *Sites of violence. Gender and conflict zones* (pp. 134-151). Berkeley: University of California Press. doi: 10.1525/california/9780520230729.003.0006
- Mrđen, S. (2002). Narodnost u popisima. Promjenljiva i nestalna kategorija [Ethnicity in Censuses. Changeable and Inconstant Category]. *Stanovništvo*, 40(1-4), 77-103. (in Croatian, with English summary), doi:10.2298/stnvo201077m
- Mrđen, S. (2010). Etnički miješani brakovi na prostoru bivše Jugoslavije, 1970-2005. godine [Ethnically Mixed Marriages in the Area of the Former Yugoslavia (1970-2005)]. *Zbornik Matice srpske za društvene nauke*, 131, 255-268. (in Serbian with English summary) doi:10.2298/zmsdn1031255m
- Mrdjen, S. (1996). La mixité en ex-Yougoslavie. Intégration ou ségrégation des nationalités? *Revue d'études comparatives Est-Ouest*, 27(3), 103-144. www.persee.fr/issue/receo_0338-0599_1996_num_27_3. doi:10.3406/receo.1996.2801
- Mrdjen, S. (2000a). *Structures démographiques, nationalités et territoires en ex-Yougoslavie, 1945-1990*. (Unpublished doctoral dissertation). Ecole des Hautes Etudes en Sciences Sociales, Paris.
- Mrdjen, S. (2000b). Les mariages inter-ethniques en ex-Yougoslavie (The inter-ethnic marriages in the former Yugoslavia). *Balkan Demographic Papers*, 1, 1-17. (in French)
- Nejašmić, I. (1990). Česi u Hrvatskoj: kratka analiza suvremenih demografskih procesa [Czechs in Croatia: a short analysis of contemporary demographic processes]. *Geografski horizont*, 37(2), 33-37. (in Croatian with English summary)
- Pepeonik, Z. (1967). Česi u Hrvatskoj. Prilog poznavanju kolonizacije dijela Savsko-dravskog međurječja [Czechs in Croatia. Contribution to the knowledge of colonization of the part of Savsko-Drava intercourse]. *Geografski glasnik*, 29, 43-59. (in Croatian with English summary)
- Petrović, R. (1966). Etnički mešoviti brakovi u Jugoslaviji [Ethnically mixed marriages in Yugoslavia]. *Sociologija*, 3, 185-200 (in Serbian)
- Petrović, R. (1985). *Etnički mešoviti brakovi u Jugoslaviji* [Ethnically mixed marriages in Yugoslavia]. Beograd: Institut za sociološka istraživanja Filozofskog fakulteta. (in Serbian)
- Petrović, R. (1989). Etnogenetski procesi u SR Srbiji [Ethnogenetically processes in SR Serbia]. *Gledišta*, 7-9, 164-175. (in Serbian with English summary)
- Petrović, M.Z. (1997). Etnički homogeni i etnički heterogeni brakovi u Srbiji [Ethnic homogeneous and ethnically heterogeneous marriages in Serbia]. *Teme*, 20(3-4), 265-276. (in Serbian with English summary)
- Qian, Z. (1997). Breaking the racial barriers: Variations in interracial marriage between 1980 and 1990. *Demography*, 34(2), 263-276. doi:10.2307/2061704
- Qian, Z., Glick, J.E., & Baston, C. (2012). Crossing Boundaries: Nativity, Ethnicity, and Mate Selection. *Demography*, 49(2), 651-675. doi:10.1007/s13524-012-0090-3
- Rodríguez-García, D. (2012). Considération théorico-méthodologiques autour de la mixité. *Enfance, Famille, Générations*, 17, 41-58. doi:10.7202/1013414ar
- Rodríguez-García, D. (2015). Intermarriage and Integration Revisited: International Experiences and Cross-Disciplinary Approaches. *The ANNALS of the American Academy of Political and Social Science*, 622 (1), 8-36. doi:10.1177/0002716215601397
- Rosenfeld, M.J. (2001). The salience of pan-national Hispanic and Asian identities in U.S. marriage markets. *Demography*, 38(2), 161-175. doi: 10.1353/dem.2001.0020
- Rosenfeld, M.J. (2002). Measures of Assimilation in the Marriage Market: Mexican Americans 1970-1990. *Journal of Marriage and Family*, 64(1), 152-162. doi:10.1111/j.1741-3737.2002.00152.x
- Rosenfeld, M.J. (2008). Racial, Educational, and Religious Endogamy in the United States: A comparative Historical Perspective. *Social Forces*, 8(1), 1-32. doi:10.1353/sof.0.0077
- Smits, J. (2010). Ethnic Intermarriage and Social Cohesion. What can We Learn from Yugoslavia? *Social Indicators Research*, 96(3), 417-432. doi: 10.1007/s11205-009-9485-y
- Soroko, E. (2014). Ethnically mixed families in the Russian Federation. *Demographic Review*, 1(4), 96-123.
- Tatalović, S. (2005). *National Minorities in Croatia*. Split: Stina. 170 pp. (in Croatian, with English summary).
- Van Tubergen, F., Maas, I. (2007). Ethnic intermarriage among immigrants in the Netherlands. *Social Science Research*, 36, 1065-1086. doi:10.1016/j.ssresearch.2006.09.003
- Vodvarka, A. (1993). Demografska situacija područja općine Daruvar od prvog popisa do 1991. godine [The demographic situation of the area of Daruvar municipality since the first census until 1991]. *Přehled kulturních, literárních a školních otázek*, 14, 3-20. (in Czech)