# ICT as a factor of destination competitiveness: The case of the republics of former Yugoslavia

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**Abstract.** *The purpose of this paper is to analyze the impact of the Information and communication technology (ICT) on the competitiveness of the republics of former Yugoslavia (Serbia, North Macedonia, Montenegro, Bosnia and Herzegovina, Croatia and Slovenia) as tourism destinations. This paper relies on the correlation analysis and panel regression method. Regression analysis has examined the impact of the ICT on the competitiveness of the republics of Former Yugoslavia (Serbia, North Macedonia, Montenegro, Bosnia and Herzegovina, Croatia and Slovenia) as tourism destinations. The destination competitiveness is measured by international tourist arrivals and international tourism receipts, while the ICT is measured by the ICT Development Index (IDI). The results indicate that the IDI use has a significant impact on the number of international tourist arrivals and an indirect positive impact on the international tourism receipts. The originality of the research lies in the fact there are no previous studies about the impact of ICT on the competitiveness of the republics of former Yugoslavia as tourism destinations. This study contributes to a better understanding of the impact of ICT on the competitiveness of a tourism destination by linking the IDI with tourist arrivals and tourism revenues.*

**Keywords**: ICT, competitiveness, tourist arrivals, tourism revenues, tourism destination, Yugoslavia.

## Introduction

Information and communication technology (ICT) has transformed business processes since the 1990s and continues to have a great influence on today's fast-paced world (Lee, 2016). In March 2000, 5% of the world population were Internet users, while in January

2020, 58,7% of the world population was Internet users, indicating that billions of people (4,574 million) are connected to the Internet over the globe (Internet World Statists, 2020). Owing to advances in technology some data became more available for researchers (Băncescu et al., 2019) which may lead to different types of human progress. Digital technology is now a ubiquitous business requirement, whilst the availability of mobile telephones has ensured on-going connectivity (Odendaal, 2011) or used in diverse planning activities as agile architecture (Dragičević and Bošnjak, 2019). "The World Wide Web, together with other ICT enabling technologies, offers a platform for organizations to arrange their business processes, address their marketplaces, and collaborate with other enterprises" (Mbatha, 2013, p. 10). ICT enables multiple distribution channels, especially to target niche markets that were once almost impossible to identify, reach, or serve (Buhalis, 2003; Petrović, 2020 ). In recent decades, the tourism and hospitality industry has been transformed by ICT applications available worldwide (Zaidan, 2017; Ukpabi & Karjaluoto, 2017; Kumar & Sharma, 2017). "Opportunities to search travel-related information, to reserve and book, evaluate and judge, as well as to receive travel advice and to communicate one's mobility patterns have all profoundly changed the practices of performing tourism, with concomitant repercussions for the management and marketing of destinations" (Gössling, 2017, p. 1024).

Lately, the concept of competitiveness has become an essential factor in the assessment of countries and regions, especially due to its ability to create welfare and prosperity (Dima et al., 2018). The business environment is reshaped by knowledge economy which has taken both competitiveness and doing business to a whole new level (Hadad, 2018). The global competition and the rapid growth of the knowledge economy in a highly changeable environment have encouraged the different forms of organizations to develop a paradigm to understand how to sustain their competitiveness and achieve superior organizational effectiveness (Kareem & Alameer, 2019). Therefore, the organizations must adapt to the new strategic, economic, social, and environmental challenges imposed by the global economic transformations (Drăgoi et al., 2018). To strengthen competitiveness many competitive advantage factors may be improved such as human recourse marketing (Bejtkovský & Copca, 2020), the development, access, and use of ICT, and many other different factors.

Tourism may generate economic benefits for host communities, organizations and authorities (Milićević et al., 2020), and therefore for the whole country. Since tourism is one of the most important economic sectors, and one of the fastest-growing industries in the world, more and more countries in the world recognize the value of tourism revenue (Andrei et al., 2014; Navickas & Malakauskaite, 2009; Cucculelli & Goffi, 2016). Tourism is one of the main sources of foreign income for a significant number of developed and transition countries (Petrović & Milićević, 2017a). There is a widely held view that competitiveness for tourism destinatinons is linked to high visitor numbers and increasing destination income. Also, when ranking the world`s top tourism destinations, UNWTO took into consideration both international tourist arrivals and international tourism receipts (Ana, 2018). Therefore, tourism destinations are constantly in competition with one another to acquire their share of the foreign exchange that international tourists bring into a country. Because of the competition and economic welfare that international tourism creates, more destinations are focusing their attention on improving their competitive position (Plessis & Saayman, 2018). Also, the new developments imposed by diversification

of the perspectives and challenges in financing the new Common Agricultural Policy had determined as it can be noted by (Andrei & Darvasi, 2012) new and determinant effects on adjoining economic sectors.

Competitiveness has attracted considerable attention in the tourism literature, since it is regarded as a crucial factor for the success of tourism destinations (Dwyer & Kim, 2003; Ritchie & Crouch, 2010; Crouch, 2011; Mazanec & Ring, 2011). Although the competitiveness of a tourism destination is an important research subject explored by a large number of authors, the impact of ICT on the destination competitiveness has not been given special attention (Petrović et al., 2017). According to Adeola and Evans (2020, p. 2), "tourism destinations are able to increase online presence via the Internet and become competitive in the global tourism market through off-line connectivity that offers the requisite tools and applications to undertake effective tourism management through collaboration, clustering, and links with private and public tourism and tourism-related actors".

Bearing in mind that internet and e-commerce strategies are critical importance for tourism destinations to remain competitive (Buhalis & Deimezi, 2004), this paper special attention aims to analyze the impact of ICT (measured by the IDI) on competitiveness of the republics of former Yugoslavia (Serbia, North Macedonia, Montenegro, Bosnia and Herzegovina, Croatia and Slovenia) as a tourism destinations (measured by international tourist arrivals and international tourism receipts). Research data base has included the ITU reports for the period from 2008 to 2017 as well as the data of the World Bank. As the UN specialized agency for ICTs, International Telecommunication Union (ITU) is the official source for global ICT statistics. The Measuring the Information Society Report features key ICT data and benchmarking tools to measure the information society, including the ICT Development Index (IDI). The IDI is a unique benchmark of the level of ICT development in countries across the world and it combines 11 indicators grouped by the three subindexes: IDI access, IDI use, and IDI skills (ITU, 2019).

## Literature review

Tourism is an important wealth creator at both global and local levels. Although the biggest part of international tourist flows is still generated by and between developed countries, there is a strong relationship between developed and developing countries as many emerging destinations are located in less developed areas. The evolution of tourism demand, the emergence of a more skilled and demanding traveler who wishes to explore new destinations and live new experiences, supported by transport developments and the Internet, make all these destinations close to their potential markets (Minghetti & Buhalis, 2010). In recent years, tourism has become a highly competitive market. For this reason, it is important that destinations are able to measure their competitiveness in order to identify their strengths and weaknesses and thereby develop their future strategies (Kozak, 1999). As Kicová (2019) reviles it is more than necessary to know, optimize and innovate the ongoing processes in the enterprise, including in our case the tourism industry, in order to enhance the enterprise's efficiency by adopting ITC.

The rapid development of ICT has created numerous opportunities for the tourism sector (Savić & Pavlović, 2018) and contributed significantly to increase the digital economy development as Dincă et al. (2019) argues in their study. Over the last two

decades, the combination of tourism and ICT has led to considerable changes in tourists' behavior (Ramos & Rodrigues, 2013), and changes in tourism businesses (Benckendorffet et al., 2014). ICT has also radically changed the efficiency and effectiveness of destination tourism organizations (Buhalis, 2003). The IT industry is a high value-added sector. The possibility of selling products online further decreases 'export' costs and the time to market a product, and revolutionizes the possibilities of and approaches to PR and marketing (Beblavý & Kureková, 2014). The ICT has provided both tourists and destinations new channels through which to empower their communication process while reducing search and distribution costs. They increase the opportunities to build direct relationships between tourists and destinations and to bypass external intermediaries (Buhalis 2003). According to Pastor et al., (2014), a key element of competitiveness in the tourism industry is the use of new ICT.

The digital empowerment and the proliferation of smartphones have effectively merged tourists' network at home with the network at the destination (Fan et al., 2019). Generally, tourists use ICT and the Internet to speed up and enhance their travel-related information search and travel planning (Buhalis 2003; Pan & Fesenmaier, 2006; Kah et al., 2008), to compare prices and quality of tourism products and services at the destination, as well as to book and purchase tourism products and services (Ramos & Rodrigues, 2013; Liu et al., 2015). While latest generation websites provide tourists with an easy access and booking of services, the use of augmented and virtual reality, mobile apps supported by ubiquitous connectivity through Wi-Fi or 3/4G network, destination smart cards and wearables enable to construct a new personalized experience (Gajdošik, 2019). The ICT and the Internet make the search of destinations easier than do traditional marketing channels and allows tourists to build personalized itineraries (Minghetti & Buhalis, 2010). For tourists, technology represents an opportunity to actively participate in destination activities and to take part in the construction of its own experience (Prebensen et al., 2013).

On the destination side, ICT is driving force for local growth and cooperation between different stakeholders (Manente & Minghetti, 2006). The digital era presents new challenges and opportunities in destination marketing and management (Gretzel et al., 2000; Minghetti & Buhalis, 2010; Pike & Page, 2014), as well as new sources of competitive advantage (Singer et al., 2010). Managers in tourism began to realize that the Internet enabled them to communicate easily and effectively with their existing and potential customers (Xiang & Fesenmaier, 2017). Almost all developed nations use different ICT applications in order to facilitate international tourists and create synergies (Rehman et al., 2019). The application of ICT makes a tourism destination complementary, more attractive, and more competitive, because it satisfies the variable and sophisticated needs of contemporary tourists (Petrović et al., 2017). As it is shown by Dima and Vasilache (2016), new technology developments were used to modeling the credit risk and create default prediction.

As a result of advances in ICT services, transportation and local development, among others, more destinations are competing to attract both national and international visitors. Globalization requires destinations to increase their competitiveness or risk losing out on tourist revenues. While the research into destination competitiveness is well founded, recent progress in ICT has opened up new opportunities for attracting visitors (Neuts et al., 2013).

Intense competition and the dynamic environment of today's business world (Belás, et al., 2014) compel tourism enterprises and destinations to keep improving and maintaining their competitive advantages (Kim et al., 2012). According to Kozak (1999) destination competitiveness can be evaluated quantitatively and qualitatively. Quantitative performance of a destination can be measured by numbers such as annual numbers of tourist arrivals, amount of annual tourism receipts, level of expenditure per tourist and length of overnight stays. However, there is also a need to take into account the qualitative patterns of destination competitiveness, as these ultimately drive quantitative performance, e.g. socio-economic and socio-demographic profiles of tourists, access to tourist markets, level of tourist satisfaction, marketing by tour operators, prices, exchange rates, use of ICT, safety and security, product differentiation, quality of tourist facilities and services, quality of environmental resources, quality of human resources, government policies, etc. Destination tourism organizations have huge opportunities to apply ICT tools for communicating their offering, enhancing their visibility on the market and strengthening their competitiveness (Minghetti & Buhalis, 2010). This technological trend in tourism destinations contributes decreasing unnecessary expenditures of tourists which are causing their attractiveness (Rehman et al., 2019).

Many studies have focused on the competitive position of some regions, countries and continents as tourism destinations, such as: the Caribbean (De Keyser & Vanhove, 1994), South Africa (Kim et al., 2000), Australia (Dwyer et al., 2003), Asia Pacific (Enright & Newton, 2005), Cuba (Miller et al., 2008), Serbia (Dwyer et al., 2016), Spanish Mediterranean coast (Sánchez & López, 2015), Central and Eastern European Countries (Petrović & Milićević, 2017b). Although, in the literature special attention was paid the destination competitiveness, the ICT as a factor of destination competitiveness is research subject explored by only a few authors (Petrović & Milićević, 2015; Petrović et al., 2017).

## Research methodology and hypothesis

This paper relies on the correlation analysis and the panel regression method. Using the software STATA, regression analysis has examined the impact of the ICT on the competitiveness of the republics of former Yugoslavia (Serbia, North Macedonia, Montenegro, Bosnia and Herzegovina, Croatia and Slovenia) as tourism destinations. The destination competitiveness is measured by international tourist arrivals and international tourism receipts, while the ICT was measured by the IDI and their subindexes – IDI access, IDI use and IDI skills. In the paper special attention was not paid to the subindex IDI skills because this subindex included only the level education, but not the level of information literacy observed country. Therefore, the objective of the study is to analyze the impact of the ICT on the competitiveness of the republics of former Yugoslavia by analyzing the impact of IDI, IDI access and use on international tourist arrivals and international tourism receipts. According to the objective of the study secondary data were used. Research information base has included the ITU (2019), Measuring the Information Society Reports 2008-2017 (except 2014, because of the lack of the data), as the official source for global ICT statistics, as well as the data about international tourist arrivals and international tourism receipts from the World Bank Open Data 2008-2017 (The World Bank, 2019).

The hypotheses to be tested in this study are the following:
H1: There is a correlation between the competitiveness of the republics of former Yugoslavia as tourism destinations and the IDI.

H2: There is the impact of the IDI access on the number of the international tourist arrivals.
H3: There is the impact of the IDI use on the number of the international tourist arrivals.
H4: There is the impact of the IDI access on the international tourism receipts.
H5: There is the impact of the IDI use on the international tourism receipts.
The correlation analysis was used to test H1, while the H2, H3, H4, H5 are tested by using panel regression method.

## Research results and discussion

The results of correlation analysis indicate that exists a strong significant correlation between the IDI and international tourist arrivals because the correlation coefficient is 0.4990, as well as between the IDI and international tourism receipts given the fact that the correlation coefficient is 0.4691 (Table 1). Based on the results of correlation analysis, it can be concluded that the hypothesis H1 has been confirmed, ie. there is a correlation between the competitiveness of the republics of former Yugoslavia as tourism destinations and the IDI.

*Table 1: The correlation coefficient - the interdependence between the IDI and destination competitiveness of the republics of former Yugoslavia*

|  | IDI | International tourist arrivals | International tourism receipts |
|---|---|---|---|
| **IDI** | 1.0000 | | |
| **International tourist arrivals** | 0.4990* | 1.0000 | |
| **International tourism receipts** | 0.4691* | 0.9644* | 1.0000 |

Source: Prepared by the authors (STATA 13)

The results of regression analysis indicate that only IDI use has a significant positive impact on the number of international tourist arrivals of the republics of former Yugoslavia as tourism destinations in the period from 2008 to 2017 because of the probability value (P>|t|) is 0.000, which is less than 0.05. On the other side, probability value of IDI access is 0.055, and it is higher than 0.05, meaning it does not have a significant positive impact on the number of international tourist arrivals (Table 2). Based on the results of regression analysis, it can be concluded that the hypothesis H2: There is the impact of the IDI access on the number of the international tourist arrivals, has not been confirmed, while the hypothesis H3: There is the impact of the IDI use on the number of the international tourist arrivals, has been confirmed.

*Table 2: The regression model – the impact of IDI subindexes on the number of the international tourist arrivals*

| Random-effects GLS regression | Number of obs = 48 |
|---|---|
| Group variable: countrynum | Number of groups = 6 |

| | |
|---|---|
| R-sq: within = 0.4008 | Obs per group: min = 8 |
| between = 0.3810 | avg = 8.0 |
| overall = 0.1841 | max = 8 |
| | Wald chi2(3) = 27.40 |

| corr(u_i, X)  = 0 (assumed) | | | | | | Prob > chi2 =  0.0000 |
| --- | --- | --- | --- | --- | --- | --- |

| International tourist arrivals | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] | |
| --- | --- | --- | --- | --- | --- | --- |
| IDI access | -776131.6 | 404428.6 | -1.92 | 0.055 | -1568797 | 16533.82 |
| IDI use | 916003.7 | 228258.4 | 4.01 | 0.000 | 468625.4 | 1363382 |
| IDI skills | 284145.9 | 334202.7 | 0.85 | 0.395 | -370879.3 | 939171.1 |
| _cons | 1959795 | 3 779633 | 0.52 | 0.604 | -5448150 | 9367741 |
| sigma_u | 4768278.4 | | | | | |
| sigma_e | 835720.38 | | | | | |
| rho | .97019709 | (fraction of variance due to u_i) | | | | |

Source: Prepared by the authors (STATA 13)

The results of regression analysis indicate that IDI subindexes have no significant impact on the international tourism receipts of the republics of former Yugoslavia as tourism destinations in the period from 2008 to 2017, considering that probability value for IDI access is 0.387 and for IDI use is 0.105, which is higher than 0.05 (Table 3). But, the results indicate that the number of the international tourist arrivals has a significant positive impact on the international tourism receipts, because the probability value is 0.000. Based on the results of regression analysis, it can be concluded that the hypotheses H4: There is the impact of the IDI access on the international tourism receipts and H5: There is the impact of the IDI use on the international tourism receipts, have not been confirmed. But, bearing in mind that the number of the international tourist arrivals has impacted the international tourism receipts as well as that IDI use has a significant positive impact on the number of the international tourist arrivals, it can be concluded that IDI use has an indirect positive impact on the international tourism receipts. The number of the international tourist arrivals and the international tourism receipts are increasing with increasing use the ICT.

*Table 3: The regression model – the impact of IDI subindexes and the number of the international tourist arrivals on the international tourism receipts*

| Random-effects GLS regression | | | | Number of obs    =      48 | | |
| --- | --- | --- | --- | --- | --- | --- |
| Group variable: countrynum | | | | Number of groups =       6 | | |
| R-sq:  within  = 0.0327 | | | | Obs per group: min =       8 | | |
|     between = 0.9898 | | | | avg =     8.0 | | |
|     overall = 0.9425 | | | | max =       8 | | |
| | | | | Wald chi2(4)     =   129.53 | | |
| corr(u_i, X)  = 0 (assumed) | | | | Prob > chi2    =   0.0000 | | |

| International tourism receipts | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] | |
| --- | --- | --- | --- | --- | --- | --- |
| International tourist arrivals | 690. 4981 | 66.90547 | 10.32 | 0.000 | 559.3658 | 821.6305 |

| | | | | | | |
|---|---|---|---|---|---|---|
| IDI access | 2.83e+08 | 3.27e+08 | 0.86 | 0.387 | -3.59e+08 | 9.24e+08 |
| IDI use | -3.38e+08 | 2.08e+08 | -1.62 | 0.105 | -7.46e+08 | 7.04e+07 |
| IDI skills | 1.55e+08 | 2.43e+08 | 0.64 | 0.523 | -3.21e+08 | 6.31e+08 |
| _cons | -1.03e+09 | 1.98e+09 | -0.52 | 0.605 | -4.91e+09 | 2.86e+09 |
| sigma_u | 3.82e+08 | | | | | |
| sigma_e | 4.73e+08 | | | | | |
| rho | .39421781 | (fraction of variance due to u_i) | | | | |

Source: Prepared by the authors (STATA 13)

## Conclusion

The ICT in tourism represents the indispensable path to economic growth and development for the developed, developing and transition countries. In the paper special attention was paid to analyze the impact of ICT on tourism destination competitiveness of the republics of former Yugoslavia. Out of five-set hypotheses, two are confirmed, and those are H1: There is a correlation between the competitiveness of the republics of former Yugoslavia as tourism destinations and the IDI and H3: There is the impact of the IDI use on the number of the international tourist arrivals. On the other side, results revealed that there is no impact of IDI access on the number of international tourist arrivals and international tourism receipts, also that there is no impact of the IDI use on the international tourism receipts, ie. that H2, H4, and H5 are not confirmed.

Therefore, it can be concluded that two indicators of IDI (IDI access and IDI skills) have no significant impact on the competitiveness of the republics of former Yugoslavia as tourism destinations. But, the IDI use has a significant impact on international tourist arrivals. Although, the IDI use has no significant impact on the international tourism receipts, it can be concluded that the IDI use can contribute to the increase of the international tourism receipts, because the increase of the IDI use contributes to the increase of the international tourist arrivals, while the increase of the international tourist arrivals contributes to the increase of the international tourism receipts. The results indicate that the IDI use is a key factor of destination competitiveness (Pastor et al., 2014).

By linking the IDI with tourist arrivals and tourism receipts the study contributes to understanding the impact of ICT on the competitiveness of a tourism destination. A special implication of this study is that it was done on the example of the republics of former Yugoslavia, considering that there are no studies that previously focused on this area in order to analyze the impact of ICT on the competitiveness of the tourist destination.

The main limitation of this study is lack of the data about ICT for 2014. Given the fact that quantitative performance of a destination can be measured not only by annual numbers of tourist arrivals and amount of annual tourism receipts but also by the level of expenditure per tourist and length of overnight stays, future studies should focus on analyzing the impact of ICT on these quantitative performances of destination too.

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