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# THE IMPACT OF INTERNET ON TOURISM DEMAND

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**Abstract**

In XXI century, one of the trends in tourism as a leading service sector is the Internet usage. The aim of this paper is to examine whether the use of the Internet (by companies and individuals) has a different impact on domestic and inbound tourism demand in the European Union for the 2010-2019 period. The results of research indicate that the Internet usage by companies has the important positive impact on the domestic and inbound tourism expenditure in developed and transition countries in European Union while the Internet usage by individuals has the important negative impact only on the domestic tourism expenditure in transition countries in European Union. The same time, results show that the Internet usage by companies has higher impact on domestic tourism expenditure than on inbound tourism expenditure in developed and transition countries.

**Key words**: Internet, tourism expenditure, tourism demand, developed countries, transition countries.

# УТИЦАЈ ИНТЕРНЕТА НА ТУРИСТИЧКУ ПОТРАЖЊУ

**Апстракт**

У XXI веку, један од трендова у туризму као водећој услужној делатности је коришћење интернета. Циљ овог рада је да се испита да ли употреба интернета (од стране компанија и појединаца) има различити утицај на тражњу домаћег и страног туризма у Европској Унији за период 2010-2019. Резултати истраживања показују да употреба интернета од стране компанија има значајан позитиван утицај на потрошњу домаћих и страних туриста у развијеним и земљама у транзицији, док употреба интернета од стране појединаца има значајан негативан

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утицај само на потрошњу домаћих туриста у земљама у транзицији у Европској унији. Истовремено, резултати показују да употреба интернета од стране компанија има већи утицај на потрошњу домаћих туриста у односу на потрошњу страних туриста у развијеним земљама и земљама у транзицији.

**Кључне речи**: интернет, потрошња туриста, туристичка тражња, развијене земље, земље у транзицији.

## *INTRODUCTION*

Tourism is an integral part of economies in developed, transition and developing countries which records constant progression and evolution. On the one hand, tourism offers new destinations, new kinds of tourism, new forms of arrangement, and on the other hand tourism as dynamic activity requires new strategies, new management approaches as well as constant innovation. One type of innovation in tourism is the development and usage of information and communication technology (ICT). The role of ICT in tourism business management is growing, so that there are increasing demands for the development of sophisticated information systems in tourism. (Milovanović et al., 2017). Most travellers used ICT to see the appropriateness of conditions for travelling in terms of infrastructures and site vulnerabilities in natural disasters (Bano et al., 2022).

The Internet enable potential tourists to obtain information about the tourism destinations and their offers, compare quality and prices of services, book and pay for service. It has reduced costs of travel and need time for create a package arrangement that meets needs and wants of tourists (Liu et al., 2015). Internet has a positive impact on tourism demand and expenditure. „As can be inferred from the increasing number of online reservations observed in recent years, the growing number of tourism companies online has positively contributed to tourism demand growth" (Ramos & Rodrigues, 2013, p. 1443). The total amount of travel sales by Internet worldwide increases significantly every year and Internet penetration development increases international tourism expenditure (Lorente-Bayona et al., 2021).The Internet and tourism websites give a lot of information for planning trips and holidays on the most important tourist markets and become primary source of information for tourists (Milovanović et al., 2017), so tourists used Internet on the beginning of their trips in sense to obtain basic information and than start communicating more through social and telecom technologies to make the right decision to travel to a safe and good location (Bano et al., 2022).

Internet represents a service connectivity factor that has significant impact on tourism demand (Navio-Marco et al., 2018). The inclusion of tourism in the Internet of things has become a new technological requirement (Gao, 2021) and in that sense tourism has a great opportunity for improving tourism demand. Rehnam and his associate (2019) analyze the economic im-

pact of Internet implication in tourism sector. The results of their research indicate that Internet usage by individuals has short and long impact on economic growth, inbound tourism expenditure, and financial development as well as long- and short-run association between tourism expenditure (inbound tourism) and information and ICT infrastructure in developed countries. Garin-Munoz and Perez-Amaral (2011) indicate that the Internet usage is much more intensive when planning a trip abroad than for domestic travel. They find a positive correlation between the Internet penetration rates, Internet usage for travel and travels abroad.

Tourism expenditure as essential component of tourism demand depend on multifarious factors (Laimer et al., 2006). Managers, marketers, and economists spend much time and effort on seeking valid indicators of consumer expenditure (Agag et al., 2020). Information related to tourist expenditure is highlighted more significantly in the literature (Brida & Scuderi, 2013, Aguilo et al., 2017; Olya & Mehran, 2017), but the literature about impact of Internet on tourism expenditure are rare.

Rehman, et al. (2019) investigate the impact of Internet usage by individuals on inbound tourism expenditure. Their results indicate on causation of Internet usage by individuals and inbound tourism expenditure. Ramos and Rodrigues (2013) indicate that the use of Internet by growing number of companies has positively contributed to tourism expenditure growth.

The tourist' behavior, motives and perceptions of domestic tourists are significantly different in the relation to the foreign tourists. Worldwide, tourists tend to travel more often within their country than foreign and benefit from the proximity and knowledge of a destination (Teodorović et al., 2020). During the time of global economic crisis or pandemic, domestic tourism is a substitute for international tourism (Sheldon & Dwyer, 2010).

Bearing in mind that Internet can influence on tourism expenditure because it enables potential tourists to buy the same tourism services at a lower price, in the literature special attention should be paid to the impact of Internet on the tourism expenditure. The purpose of this paper is to analyze the role of Internet usage by companies and individuals on tourism expenditure in developed and transition countries. The aim of this paper is to identify whether exist a difference in terms of the impact of Internet usage by companies and individuals on domestic and inbound tourism expenditure.

## *LITERATURE REVIEW*

New forms of tourism and tourist's special demand are increasing in recent decades (Krejić et al., 2019) and in that sense Internet has a very important role. Divisekera and Nguyen (2018) analyze the determinants of innovations in tourism. The results of their research indicate that ICT represents one of the key determinants of innovations. Tsokota Solms and Greunen

(2017) examine the impact of ICT on tourism development in Zimbabwe region. Researchers indicate the following characteristics of Zimbabweans tourism: lack of e-services and finances, inadequate infrastructure, poor system integration, low development human resources and weak ICT governance. Bethapudi (2015) investigate the impact of ICT on tourism development in rural destinations by using primary and secondary data. Researcher highlights the key role of ICT for rural tourism development.

ICT have provided new paths for relationships across tourism distribution channels, leading to increases in competitiveness and efficiency in the sector, and improved business performance (Berne et al., 2015). ICT include diverse set of technological tools used to create, exchange, store, and manage information (Enakrire & Ocholla, 2017). ICT infrastructure includes digital telephone network, mobile phones, internet capability, internet servers and fixed broadband, and other technologies (Pradhan et al., 2018, pp. 634). Broadband represents one of the most common mode of internet access (Lin & Wu, 2013) with transmission speeds equaling or exceeding 256 Kbps for downstream connections and 64 Kbps for upstream connections (Organization of Economic Cooperation and Development (OECD), 2001). Countries which have wide broadband availability have recorded higher economic growth and development as well as lower unemployment rates (Jayakar & Park, 2013). The central focus of empirical literature is analyzing the causes and consequences of ICT infrastructure (in general) and broadband and Internet usage (in particular) on economic growth (Lee & Brahmasrene, 2014; Ishida, 2015; Shahiduzzaman & Alam, 2014).

Although ICT have a strong impact on the whole economy, tourism represents one of the highly sensible sectors (Shanker, 2008). ICT enable companies in tourism to access the multiple markets. Modern ICT infrastructure accelerate the process linking tourist supply and tourist demand in the market.

In the literature, special attention is paid to the impact of ICT on tourism demand. Almost all developed countries use different ICT infrastructure with the aim to attract international tourists (Rehman et al., 2019). Ramos and Rodrigues (2013) analyze the influence of ICT on tourism demand. The results show that ICT and Internet have a positive impact on tourism demand. Bethapudi (2013) highlight that ICT has a positive and significant impact on the tourism demand in India. Wahab (2017) investigate the impact of ICT on tourism demand in India. Bekteshi and Bekteshi (2017) conclude that tourism demand depends on the ICT usage. They point out that tourist demand increases if ICT applications increase.

Internet is one of the various types of ICT that can be utilize in tourism (Cetinkaya, 2009) as a marketing and communication tool in facilitating information sharing and online transactions (Doolin et al., 2002). It has dramatically changed travel and tourism. Travel agencies,

tour operators, hotels, airlines, and other subjects in tourism use the Internet as important marketing tool (Sahin and Segun, 2015).

The increasing growth of Internet applications, such as social media platforms, has generated overwhelming data in different formats, including structured and unstructured (Song et al., 2017). Social media are widely used in tourism due to modern trends and changes of tourist's behavior (Zlatanov et al., 2021). Internet applications provide tourists with online channels from which to retrieve information, express opinions, and book trips (Li et al., 2021) and after that they could make decision where to go and stay during their vacation. Internet data are generated from the web and social media sources in virtual networks, such as search engines, Wikipedia, microblogs, Facebook, and Twitter (Hashem et al., 2015; Song et al., 2017) and in that sense it suggest to potential tourists where and why to go, how much does it cost etc.

Internet possibilities that enable two-way communication between potential tourists as well as between potential tourists and subjects in tourism have a profound impact on tourism demand and tourist behavior (Wiedmann & Langner, 2016). Internet has become the main source of information for potential tourists. Growth in the number of internet users in the world lead potential tourists, who demand cultural, natural and touristic values, to purchase tourism services via internet (Çakır & Yalçın, 2012). Information available to potential tourists has significant impact on tourist`s decision making, especially when potential tourist choosing a tourism destination to visit (Bieger & Laesser, 2004; Gursoy & McCleary, 2004; Jeng & Fesenmaier, 2002) and choosing a hotel or other facilities. Potential tourists in Germany spend about 9 hours for holiday research on the Internet and visit about 13 different websites during making decisions about travel. A good quarter of potential tourists spent between 12 and 25 hours for research information about tourism destinations and tourism services visiting about 50 different websites (FUR, 2011).

## *RESEARCH METHODOLOGY*

In order to analyse the impact of the Internet on tourism expenditure, a time series analysis was applied in this study. Research information base has included the period from 2010 to 2019. It has included the data about Internet usage from Eurostat Database (The World Bank, 2010-2020) as well as data about tourism expenditure from WTTC DATA GATEWAY (World Travel & Tourism Council). The study deploys data for the period from 2010 to 2019 of 27 European Union members which are categorized into two groups: 1) developed countries and 2) transition countries. In this paper, the data were analysed in the software STATA by regression analysis that has examined the impact of the Internet usage (by companies and by individuals) on domestic and inbound

tourism expenditure. Reliability issues are governed by using Breusch-Pagan test for testing the heteroscedasticity as well as Durbin Watson test and Breusch-Godfrey LM test for testing the autocorrelation.

Specifically, the following hypotheses were tested:

H1 – The Internet usage by companies has different impact on domestic and inbound tourism expenditure in transition countries;

H2 – The Internet usage by individual has different impact on domestic and inbound tourism expenditure in transition countries;

H3 – The Internet usage by companies has different impact on domestic and inbound tourism expenditure in developed countries;

H4 – The Internet usage by individuals has different impact on domestic and inbound tourism expenditure in developed countries.

## *RESULTS AND DISCUSSION*

### *Transition Countries*

Regression results after correction of heteroscedasticity and autocorrelation problem are given in Table 1, Table 2, Table 3 and Table 4. The heteroscedasticity is checked through Breusch-Pagan test while Durbin Watson test and Breusch-Godfrey LM test are used for testing the autocorrelation.

*Table 1. The impact of Internet usage on domestic tourism expenditure in transition countries*

```
Iteration 0:  rho = 0.0000
Iteration 1:  rho = 0.8817
Iteration 2:  rho = 0.8954
Iteration 3:  rho = 0.8955
Iteration 4:  rho = 0.8955

Cochrane-Orcutt AR(1) regression -- iterated estimates
```

| Source | SS | df | MS | Number of obs | = | 129 |
|---|---|---|---|---|---|---|
| | | | | F(2, 126) | = | 5.78 |
| Model | 2994.71096 | 2 | 1497.35548 | Prob > F | = | 0.0040 |
| Residual | 32620.9514 | 126 | 258.896439 | R-squared | = | 0.0841 |
| | | | | Adj R-squared | = | 0.0695 |
| Total | 35615.6623 | 128 | 278.247362 | Root MSE | = | 16.09 |

| DEx | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| EnIAccess | 1.874933 | .63456 | 2.95 | 0.004 | .6191572 | 3.130708 |
| InIAccess | -.7092599 | .2379669 | -2.98 | 0.003 | -1.180189 | -.2383305 |
| _cons | -111.9503 | 55.18801 | -2.03 | 0.045 | -221.1657 | -2.734823 |
| rho | .8954723 | | | | | |

```
Durbin-Watson statistic (original)    0.233358
Durbin-Watson statistic (transformed) 1.740490
```

After correction the autocorrelation problem new Durbin Watson statistics value (1.740490) implying that there is no autocorrelation now (Table 1). The results of regression analyze indicate that Internet usage by companies and individuals has significant impact on domestic tourism expenditure in transition countries in European Union. The Internet usage by companies has positive impact on domestic tourism expenditure, while the Internet usage by individuals has negative impact on domestic tourism expenditure in transition countries.

Internet represents important tools for promotion and distribution of tourism offers. If more companies use the Internet, then potential tourists will have more information about the tourism offer. Internet used by companies as promotion tool can influence on potential tourists to make decisions about trips and on that way can increase tourism expenditure. On the other hand, Internet usage by individuals enable potential tourists to compare tourism offers and prices and choose the most favorable offer. Because of that, the increase of the Internet usage by individuals lead to the decrease of tourism expenditure in transition countries.

*Table 2. The impact of Internet usage on inbound tourism expenditure in transition countries*

```
Iteration 0:  rho = 0.0000
Iteration 1:  rho = 0.8734
Iteration 2:  rho = 0.8938
Iteration 3:  rho = 0.8940
Iteration 4:  rho = 0.8940
Iteration 5:  rho = 0.8940

Cochrane-Orcutt AR(1) regression -- iterated estimates
```

| Source | SS | df | MS | Number of obs | = | 129 |
|---|---|---|---|---|---|---|
| | | | | F(2, 126) | = | 5.98 |
| Model | 292.758066 | 2 | 146.379033 | Prob > F | = | 0.0033 |
| Residual | 3085.877 | 126 | 24.4910873 | R-squared | = | 0.0866 |
| | | | | Adj R-squared | = | 0.0722 |
| Total | 3378.63507 | 128 | 26.3955865 | Root MSE | = | 4.9488 |

| FEx | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| EnIAccess | .67476 | .1952405 | 3.46 | 0.001 | .2883848 | 1.061135 |
| InIAccess | -.1383575 | .0732309 | -1.89 | 0.061 | -.2832792 | .0065642 |
| _cons | -45.64626 | 16.96331 | -2.69 | 0.008 | -79.21616 | -12.07635 |
| rho | .8939652 | | | | | |

```
Durbin-Watson statistic (original)    0.250716
Durbin-Watson statistic (transformed) 1.824682
```

After correction the autocorrelation problem new Durbin Watson statistics value (1.824682) implying that there is no autocorrelation now (Table 2). The results of regression analyze about impact of Internet usage on inbound tourism expenditure in transition countries indicate that only Internet usage by companies has significant impact on inbound tourism expenditure while the Internet usage by individuals has not significant impact on inbound tourism expenditure in transition countries (Table 2). The results indicate that the Internet usage by companies has difference impact on domestic and inbound tourism demand in transition countries. Internet usage by companies has higher impact on domestic than on inbound tourism expenditure.

### *Developed Countries*

After correction the autocorrelation problem new Durbin Watson statistics value implying that there is no autocorrelation now (Table 3 and Table 4). Table 3 and Table 4 indicate the results of regression analyze in developed countries in European Union. In the developed countries only the Internet usage by companies has significant impact on domestic tourism expenditure as well as on inbound tourism expenditure. Its impact is

*Table 3. The impact of Internet usage on domestic tourism expenditure in developed countries*

```
Iteration 0:  rho = 0.0000
Iteration 1:  rho = 0.9064
Iteration 2:  rho = 0.9093
Iteration 3:  rho = 0.9093
Iteration 4:  rho = 0.9093

Cochrane-Orcutt AR(1) regression -- iterated estimates
```

| Source | SS | df | MS | Number of obs | = | 159 |
|---|---|---|---|---|---|---|
| | | | | F(2, 156) | = | 3.33 |
| Model | 7320.55207 | 2 | 3660.27604 | Prob > F | = | 0.0382 |
| Residual | 171258.476 | 156 | 1097.81074 | R-squared | = | 0.0410 |
| | | | | Adj R-squared | = | 0.0287 |
| Total | 178579.028 | 158 | 1130.24701 | Root MSE | = | 33.133 |

| DEx | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| EnIAccess | 4.179707 | 1.970164 | 2.12 | 0.035 | .288067 | 8.071347 |
| InIAccess | -.1465846 | .4601979 | -0.32 | 0.751 | -1.055608 | .7624386 |
| _cons | -346.8803 | 170.9348 | -2.03 | 0.044 | -684.5256 | -9.234866 |
| rho | .9093481 | | | | | |

```
Durbin-Watson statistic (original)    0.186950
Durbin-Watson statistic (transformed) 1.787885
```

positive. The results indicate that the Internet usage by companies has difference impact on domestic and inbound tourism demand in developed countries. The Internet usage by companies has higher impact on domestic than on inbound tourism expenditure. The hypotheses H1 and H3 are supported while the hypotheses H2 and H4 are not supported. The Internet usage by companies has different impact on domestic and inbound tourism expenditure in transition countries and developed countries. The Internet usage by companies has higher impact on domestic than on inbound tourism expenditure in transition countries as well as in developed countries. The Internet usage by individuals has significantly impact only on domestic tourism expenditure in transition countries.

*Table 4. The impact of Internet usage on inbound tourism expenditure in developed countries*

```
Iteration 0:  rho = 0.0000
Iteration 1:  rho = 0.8875
Iteration 2:  rho = 0.8973
Iteration 3:  rho = 0.8974
Iteration 4:  rho = 0.8974

Cochrane-Orcutt AR(1) regression -- iterated estimates
```

| Source | SS | df | MS | Number of obs | = | 159 |
|---|---|---|---|---|---|---|
| | | | | F(2, 156) | = | 3.30 |
| Model | 617.144638 | 2 | 308.572319 | Prob > F | = | 0.0396 |
| Residual | 14599.0395 | 156 | 93.5835864 | R-squared | = | 0.0406 |
| | | | | Adj R-squared | = | 0.0283 |
| Total | 15216.1841 | 158 | 96.3049627 | Root MSE | = | 9.6739 |

| FEx | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| EnIAccess | 1.453782 | .5770839 | 2.52 | 0.013 | .3138749 | 2.593688 |
| InIAccess | -.176713 | .134873 | -1.31 | 0.192 | -.4431259 | .0896999 |
| _cons | -104.0604 | 49.90091 | -2.09 | 0.039 | -202.6291 | -5.491764 |
| rho | .8973538 | | | | | |

```
Durbin-Watson statistic (original)    0.224860
Durbin-Watson statistic (transformed) 1.800458
```

## *CONCLUSION*

Tourism is one of the main users of the Internet. The Internet represents the new channel of communication between tourists as well as between the tourists and tourism providers. Although, Internet have the

significant impact on tourism expenditure, in the literature has not paid special attention to the Internet as factor of tourism expenditure on macro level. The paper has paid special attention to analyze the impact of Internet usage on tourism expenditure.

The contribution of this paper is threefold. First, it shows that Internet has significant role in the reshaping tourism expenditure. Second, author indicate on different influence of Internet on domestic and inbound tourism expenditure. Third, author indicate that Internet usage by companies and Internet usage by individuals has different impact on domestic and inbound tourism expenditure.

In transition countries, a lower standard of living has the effect on individuals to find lower-priced arrangements through Internet, which reduces domestic tourism expenditure. Internet usage by companies has significant impact on domestic and inbound tourism expenditure in transition and developed countries in European Union. It can be concluded that the growing number of companies that use of Internet has positively contributed to tourism expenditure growth (Ramos & Rodrigues, 2013) in developed and transition countries in European Union. Internet penetration development in companies increases tourism expenditure (Lorente-Bayona et al., 2021) - domestic and inbound. The impact of Internet usage by companies on domestic tourism expenditure is higher than on inbound tourism expenditure in developed and transition countries.

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# УТИЦАЈ ИНТЕРНЕТА НА ТУРИСТИЧКУ ПОТРАЖЊУ

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**Резиме**

Овај рад представља резултат истраживања утицаја Интернета на туристичку тражњу и туристичку потрошњу у развијеним и државама у транзицији. Такође, рад ставља акценат на информације и комуникацијске канале који су кључни у туристичкој индустрији и који помажу ширењу информација. Они доводе и до повећања туристичке тражње која даље имплицира повећану потрошњу. Студија обухвата период од 2010. до 2019. године и обухвата државе ЕУ које су подељене у две категорије: развијене државе и државе у транзицији. Регресионом анализом испитан је утицај примене Интернета од стране компанија и појединаца на потрошњу домаћих и страних туриста. Поузданост података утврдили смо коришћењем Breusch-Pegan теста за тестирање хетероскедастичности као и Durbin Watson теста и Breusch-Godfrey LM теста за тестирање аутокорелације. Истраживање је укључивало коришћење података о употреби Интернета из базе Еуростата као и подаци о туристичкој потрошњи из WTTC DATA GATEWAY (World Travel & Tourism Council). Постављене су четири хи-

потезе рада: X1: Примена Интернета од стране компанија има различит утицај на потрошњу домаћих и страних туриста у државама у транзицији; X2: Примена Интернета од стране појединаца има различит утицај на потрошњу домаћих и страних туриста у државама у транзицији; X3: Примена Интернета од стране компанија има различит утицај на потрошњу домаћих и страних туриста у развијеним државама; X4: Примена Интернета од стране појединаца има различит утицај на потрошњу домаћих и страних туриста у развијеним државама.

За државе у транзицији резултати регресионе анализе показују да коришћење Интернета од стране компанија и појединаца има значајан утицај на потрошњу домаћих туриста у државама у транзицији у Европској Унији. Коришћење Интернета од стране компанија има позитиван утицај на потрошњу домаћих туриста, док коришћење Интернета од стране појединаца има негативан утицај на потрошњу домаћих туриста у државама у транзицији. Резултати регресионе анализе о утицају примене Интернета на потрошњу страних туриста у државама у транзицији показују да само коришћење Интернета од стране компанија има значајан утицај на потрошњу страних туриста, док употреба Интернета од стране појединаца нема значајан утицај на потрошњу страних туриста у државама у транзицији. Резултати показују да коришћење Интернета од стране компанија има различит утицај на потрошњу домаћих и страних туриста у државама у транзицији.

У развијеним државама примена Интернета од стране компанија има значајан утицај на потрошњу домаћих туриста, као и на потрошњу страних туриста. Његов утицај је позитиван. Резултати показују да коришћење Иинтернета од стране компанија има различит утицај на потрошњу домаћих и страних туриста у развијеним државама. Хипотезе X1 и X2 су потврђене, док хипотезе X3 и X4 нису потврђене.

Утицај Интернета је у туристичкој индустрији велики и значајан и туризам се ослања у великој мери на савремене начине комуникације и дистрибуције. Међутим, неопходно је указати да у литератури није посебна пажња посвећена утицају Интернета као средства комуникације и дистрибуције на туристичку потрошњу, иако је он евидентан. Овај рад говори о значају Интернета као каналу комуникације који подстиче туристичку потрошњу.