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T. Dupliak

*PhD in Economics, Associate Professor of the Department of Tourism and Recreation,
Kyiv National University of Trade and Economics, Ukraine, Kyiv
ORCID ID: 0000-0001-5187-8903*

S. Kravtsov

*PhD in Public Administration, Associate Professor of the Department of Tourism and Recreation,
Kyiv National University of Trade and Economics, Ukraine, Kyiv
ORCID ID: 0000-0002-2016-1974*

V. Lysiana

*Master's student of Management, Kyiv National University of Trade and Economics, Ukraine, Kyiv
ORCID ID: 0000-0002-5858-4315*

ROLE OF TOUCHLESS ECONOMY TECHNOLOGIES IN TOURISM DEVELOPMENT OF EUROPEAN UNION COUNTRIES IN COVID-19 PERIOD

Т. П. Дупляк,

к. е. н., доцент кафедри туризму та рекреації,

Київський національний торговельно-економічний університет, м. Київ, Україна

С. С. Кравцов,

к. держ. упр., доцент кафедри туризму та рекреації,

Київський національний торговельно-економічний університет, м. Київ, Україна

В. О. Лусяна,

магістр з менеджменту,

Київський національний торговельно-економічний університет, м. Київ, Україна

РОЛЬ ТЕХНОЛОГІЙ БЕЗКООНТАКТНОЇ ЕКОНОМІКИ У РОЗВИТКУ ТУРИЗМУ КРАЇН ЄВРОПЕЙСЬКОГО СОЮЗУ В ПЕРІОД COVID-19

The article examines the features of touchless economy technologies in tourism sphere in European Union countries in conditions of COVID-19 pandemic. The main definitions of the concept of "touchless economy" are considered. It has been found that a touchless economy is an economic activity that remains possible without close physical interaction between people. The current state of the European tourism market is analyzed and the negative consequences of COVID-19 on its development are assessed. The decrease of tourists number in the European Union countries, as well as the contribution of tourism to the GDP of the world leading countries on tourism market have been studied. It was found that the market for short-term accommodation suffered unevenly in Europe: countries such as Spain (-58.1%) and Italy (-60.2%) suffered more than France (-25.0%) or Germany (-20.6%). Research of 10 largest travel and tourism markets showed that Germany dropped one place from third position in the rankings, following a 46.9 % drop in the sector's contribution towards GDP. Meanwhile, Italy rose one place from sixth to fifth, despite experiencing a 51% fall in GDP contribution. Notably, France, one of the key destinations globally in terms of

international visitor arrivals, rose one position from seventh to sixth, despite its contribution to GDP falling by almost half (48.8%). The customer expectations to increase touchless interaction with enterprises in the period of COVID-19 in European countries are considered. It has been found that even after the pandemic, customers in Europe will still use touchless technologies such as face recognition, contactless interfaces, mobile applications and etc. Research of the spread of digital technologies in tourism across Europe has found that countries of Northern Europe have shown a greater spread of digital technologies than the countries of Eastern and Southern Europe. The main technologies of touchless economy in tourism are singled out and analyzed, such as: mobile applications for online check-in at hotels and airports, online delivery and QR-menus in restaurants, artificial intelligence of digital identity management, etc. The advantages of using the touchless economy technologies in the activities of tourism enterprises in the COVID-19 pandemic conditions are substantiated.

У статті досліджуються особливості використання технологій безконтактної економіки в сфері туризму в країнах Європейського Союзу в умовах пандемії COVID-19. Розглянуто основні визначення поняття «безконтактна економіка». Виявлено, що безконтактна економіка – це економічна діяльність, яка залишається можливою без тісної фізичної взаємодії між людьми. Проаналізовано сучасний стан європейського туристичного ринку та оцінено негативні наслідки COVID-19 на його розвиток. Досліджено зменшення кількості туристів в країнах Європейського Союзу, а також внесок туризму у ВВП країн лідерів світового туристичного ринку. Виявлено, що ринок короткострокового проживання в закладах розміщення постраждав нерівномірно в Європі: такі країни, як Іспанія (-58,1%) та Італія (-60,2%), постраждали сильніше, ніж Франція (-25,0%) або Німеччина (-20,6%). Дослідження 10 найбільших ринків подорожей і туризму показало, що Німеччина опустилася на одне місце з третьої позиції в рейтингу у зв'язку із зменшенням внеску туризму у ВВП на 46,9%. Тим часом Італія піднялася на одне місце з шостого на п'яте, незважаючи на те, що внесок у ВВП скоротився на 51%. Важливо, що Франція, одна з ключових дестинацій у світі з точки зору прибуття міжнародних відвідувачів, піднялася на одну позицію з шостого на шосте місце, незважаючи на зменшення внеску туризму у ВВП майже вдвічі (48,8%). Розглянуто очікування клієнтів щодо збільшення безконтактної взаємодії з підприємствами у період COVID-19 у європейських країнах. Виявлено, що навіть після пандемії клієнти в Європі все ще будуть використовувати безконтактні технології, такі як розпізнавання облич, безконтактні інтерфейси, мобільні додатки та ін. Дослідження рівня поширення цифрових технологій у туризмі в Європі показали, що країни Північної Європи мають більш високий рівень поширення цифрових технологій, ніж країни Східної та Південної Європи. Виокремлено та проаналізовано основні технології безконтактної економіки в сфері туризму такі як: мобільні додатки для он-лайн реєстрації в готелях та аеропортах, он-лайн доставка та QR-меню в ресторанах, штучний інтелект управління цифровою ідентифікацією та ін. Обґрунтовано переваги застосування технології безконтактної економіки в діяльності туристичних підприємств в умовах пандемії COVID-19.

Key words: *touchless economy; digital technologies; European Union member countries; digitalization in tourism; mobile applications.*

Ключові слова: *безконтактна економіка; цифрові технології; країни-члени Європейського Союзу; діджиталізація в туризмі; мобільні додатки.*

Statement of the problem in general and its connection with important scientific or practical tasks. The impact of the COVID-19 pandemic on the tourism industry in European Union has caused significant economic losses. According to World Travel & Tourism Council (WTTC) the number of international arrivals in Europe decreased by

69% during the quarantine period in 2020, which caused losses 1.126 trillion US dollars of tourism contribution to GDP and 3.6 million direct job cuts in tourism [1].

However, the conditions of the pandemic have made an important contribution to rethinking the technology in trade of tourist services. Nowadays, the global market offers a transformed model of the relationship between seller, consumer and a new form of internal communication between employees, which is reflected in the phenomenon of touchless economy. Touchless economy is a new direction in the development of market relations, which is relevant and will receive stable demand in the long run.

Analysis of recent research and publications, which initiated the solution of this problem and on which the author relies, the selection of previously unsolved parts of the general problem, which is the subject of this article. Theoretical approaches of touchless economy have been studied by such domestic and foreign scientists as T. Shataieva [2], A. Tymkiv [3], T. Wu [4], etc. Tetiana Shataieva [2] defines touchless economy as a type of economy (synonyms can be Internet economy, Web economy or Digital economy), which implies the existence of defining parameters of economic activity, possible without physical interaction of entities, such as meetings, purchases, orders, reporting and online consultations. Andrii Tymkiv [3] describes touchless economy as a restriction of direct contact, a prototype of the Internet economy, or the digital economy, which does not imply the complete absence of socio-economic relations between the subjects. Tim Wu [4] declares that touchless economy includes economic activities that remain possible without close physical interaction between people: online meeting, live yoga session, virtual conference, direct delivery of food and other physical goods. However, features of touchless economy in tourism needs further investigation, especially in the light of current trends in COVID-19 period.

Formulation of the goals of the article (task statement). The article aims to identify the main touchless economy technologies and its role in tourism development in European Union member countries in COVID-19 pandemic conditions.

Presentation of the main material of the study with a full justification of the obtained scientific results.

Europe is one the world's leading tourism destination. Tourism is a main contributor to the economy of many European Union countries. The world's top 10 countries tourism earners include Spain, France, United Kingdom, Italy and Germany. The negative impact of COVID-19 pandemic on tourism caused huge declines of international tourist arrivals in Europe in 2020. Since the beginning of the pandemic EU external borders have been closed and travel restrictions have been implemented.

In 2020, guests spent around 272 million nights in short-term rental accommodation in the EU booked via Airbnb, Booking, Expedia Group or Tripadvisor, representing a decrease of around 47% compared with 2019, the year before the COVID-19 pandemic. The short-term accommodation market was hit unevenly across Europe, with countries such as Spain (-58.1%) and Italy (-60.2%) affected more severely than France (-25.0%) or Germany (-20.6%). Eight countries (Czechia, Greece, Italy, Cyprus, Hungary, Malta, Slovenia and Iceland) registered falls of more than 60%. Regional data shows that traditional summer destinations around the Mediterranean Sea, as well as big cities, were hit much harder than the European average. Major urban tourism destinations such as Rome (-78.0%), Barcelona (-75.6%) or Prague (-73.5%), lost around three-quarters of guest nights in 2020. The breakdown of guest nights by the origin of the guests shows that domestic tourism only fell moderately (-6.7%), while international tourism shrunk by more than two thirds. Countries such as Spain, Italy or Croatia, which in past years had very high shares of international guests (67.7%, 74.1% and 95.4% respectively), were affected much more severely than for example France or Germany, where the shares of international guests were much lower (42.7% and 36.9%). In these countries, some regions actually experienced an increase in the number of guest nights [5].

Due to the negative impact of COVID-19 pandemic share of tourism contribution to GDP in European countries decreased in 2020. In terms of the global rankings (Table 1), some European countries improved while others fell in the rankings. Germany dropped one place from third position, following a 46.9 % drop in the sector's contribution towards GDP. Meanwhile, Italy rose one place from sixth to fifth, despite experiencing a 51% fall in GDP contribution. Notably, France, one of the key destinations globally in terms of international visitor arrivals, rose one position from seventh to sixth, despite its contribution to GDP falling by almost half (48.8%). Meanwhile, the UK, which in 2019 ranked as the world's fifth biggest travel and tourism market, fell three places to number eight, sustaining a GDP fall of 62.3%. A of strongest lockdowns, continuing travel restrictions and damaging quarantines caused it to suffer the biggest collapse of 10 largest travel and tourism markets [1].

EU countries opened its external borders to vaccinated travelers from non-EU countries in summer 2021. Digital technologies play important role in tourism development in the pandemic COVID-19 because tourists need information about safety and health conditions in the place of their travel. Main tools of digitalization in tourism that help to make travel safe and healthy are digital COVID certificate, mobile applications and web sites that propose information about epidemiological situation, restrictions and requirements for travelers, online booking and payment, disinfection robots and room service robot, contactless technologies (sensors, facial recognition, voice-controlled, contactless payments), etc.

Table 1.
Travel and Tourism total contribution to GDP, 2019 and 2020

2019		USD bn	2020		USD bn
1.	United States	1,869.7	1.	United States	1,103.7
2.	China	1,665.6	2.	China	667.2
3.	Germany	393.1	3.	Japan	234.9
4.	Japan	373.0	4.	Germany	208.8
5.	United Kingdom	305.0	5.	Italy	132.2
6.	Italy	269.8	6.	France	123.2
7.	France	240.5	7.	India	121.9
8.	Spain	202.1	8.	United Kingdom	115.0
9.	India	191.3	9.	Mexico	91.2
10.	Mexico	175.6	10.	Australia	81.4
11.	Australia	149.1	11.	Brazil	78.0
12.	Brazil	115.7	12.	Spain	75.4
13.	Canada	111.6	13.	Netherlands	64.6
14.	Thailand	106.5	14.	Philippines	52.8
15.	Netherlands	101.6	15.	Canada	52.4
16.	Philippines	90.0	16.	Saudi Arabia	48.5
17.	Saudi Arabia	79.2	17.	Thailand	41.7
18.	Turkey	77.6	18.	Russia	40.1
19.	Russia	75.5	19.	South Korea	39.9
20.	South Korea	73.2	20.	Switzerland	36.8

Source: [1]

The term “touchless economy” refers to the way businesses are forced to succeed as a result of Covid-19. The best way to determine its value is to list its main characteristics at the moment:

- Businesses are forced to adapt to strict policies, including interaction with limited contact, limited fees, travel restrictions, and so on in order to mitigate health risks;
- Numerous aftershocks can already be observed on world markets. These include changes in consumer behavior, new regulations and disruptions in supply chains;
- Medical experts and business leaders predict that Covid-19 will directly affect the economy by the end of 2022;
- Businesses that will survive the Covid-19 pandemic will be the ones to rely on business models adapted to this new standard keeping everyone safe.

As a result of COVID-19, customers are increasingly looking for digital, non-touch based interactions with organizations, given concerns about physical interactions. The survey shows that even post pandemic customers across the world will still be increasing their use of touchless interfaces, such as facial recognitions, touchless interfaces, apps, etc. For instance, 77 percent of respondents in Germany expected to increase touchless interactions during the pandemic, and 73 percent of them showed willingness to keep doing the same after the pandemic (figure 1).

Figure 1. Customer expectations to increase touchless interactions with organizations during vs post COVID-19, by European country

Source: [6]

The best way to define a concept of touchless economy is to outline its main features. We can characterize the low touch economy as one that minimizes the physical distance between objects of communication, facilitates the work with the information exchange channel, significant speed, relative increase in efficiency by reducing time, reducing the cost of enterprises to organize work, expanded platforms to organize work and communicate with customers. However, despite the positive features, the negative ones include the inability of certain industries, such as tourism and hotel business, to completely replace the mechanisms of touchlessness, poor communication, some lack of means of communication, lack of correct and simple educational information about software products, the human factor of fear, anxiety, the need for physical contact and movement, etc.

Touchless economy is a possible activity without close physical interaction between people. It exists in tools such as online meetings, live broadcasts, virtual exhibitions and conferences, product delivery or distance learning using Zoom and Skype digitalisation platforms with gamification elements and etc. As fundamental, the signs of a touchless economy maintain a healthy atmosphere, isolation, and hygiene, but limit mobility, psychological stress, and conflict.

Hospitality industry has also gained experience in the touchless economy, using new features of mobile applications, such as: mobile registration and check-in; mobile guest identification number (with a barcode); mobile guest requests; hotel information; mobile check-out, etc. World experience has shown that touchlessness, which is the best solution to the problem of non-profit, can be ensured by providing at least the following steps:

- Ability to book and pay for rooms online;
- Use of cloud services and professional software;
- Use of hotel television for communication;
- Extended access control and security system;
- Operation of chatbots;
- Keyless access to the number (using a digital key in the application);
- Registration for spa treatments or fitness classes in the application;
- Online conferences, emails and meetings in Zoom service for certain departments;
- Online training of all employees.

In the case of restaurants, their adaptation is subject to the creation of its own delivery service or in cooperation with Glovo, Deliveroo, Uber Eats, etc. A popular trend is the transition to a model of a cloud restaurant, for example, Ghost kitchen. To ensure compliance with epidemiological requirements, a new generation of menus for Ukrainian restaurateurs has been developed, namely QR-menus. Social distance is the basis of the restaurant business during the quarantine period. Therefore, the use of a touchless menu allows you to reduce contact with staff.

An important issue for airports, airlines is the establishment of a system of remote identity verification outside the airport. The technology is already available and tested. It is based on reading passport data using NFC (Near Field Communication) with the latest instant face recognition technology. Amadeus, an IT travel provider in the global travel industry, has already used a number of touchless technologies in its quarantine activities, such as biometrics and biometric profile of tourists, artificial intelligence of digital identity management, which have become especially popular and relatively stable during the crisis.

Radisson Hotel Group is one of the world's largest and most dynamic hotel groups. It has a worldwide presence (in 120 countries), with more than 1600 hotels and over 250000 rooms in operation and under development. Radisson Hotels mobile application gives such possibilities: manage reservations, rebook hotels quickly, get booking confirmation instantly, add booking to digital wallet, in-app credit card reader for faster booking, receive notifications on special deals and discounts, discover offers via search and filter features, save up to 10% when booking on the mobile app and earn points for every stay [7].

For remote communication, most travel companies with large staff use applications such as the virtual environment Citrix and VMware, virtual private networks (VPN), platforms for corporate collaboration (such as HighQ) and more. Such virtual offices, including Google Mail and related quarantined products, have been used by tour operators for a long time and help the managers of tour operators to maintain communication between teams and are an alternative to personal business meetings. Tour operators has focused on educating highly qualified professionals by organizing virtual schools, self-study courses, online learning platforms, distance learning systems for tourism and more.

One of the issues of tour operators to address the crisis may be the use of mechanisms of touchless economy, namely the digitalization of communication. Digitalization is a term used to describe the digital transformation of society and the economy. Its characteristic feature is the use of digital technologies and innovations. Advantages of tourism business digitalization:

- save time and increase the productivity of business processes;
- optimization of the communicative environment;
- cross-sell / upsell-sell opportunities (motivating sales);
- competitive opportunities by improving the customer experience and overall workflow optimization;
- security in the application of touchless economy.

The main solutions of Internet marketing and B2B and B2C tools for tour operators are social networks, official sites and search platforms. Effective online banking technology is actively used to make touchless payments, which allows not only to reduce contact, but also to reduce the cost of the bank's fee.

Use of AI (artificial intelligence) allowed to establish communications with the tourism destination, offering to the main request changes that we can expect in the coming months in the country, travel restrictions and warnings, navigation, hospitality industry standards and more. User companies can share information to learn more about the benefits of countries and with fast search and access to data and information from travel providers, vendors and destinations, search is more open and less linear, more intuitive, more personal and informative than ever before.

Research of the European Commission has found some differences in the spread of digital technologies in tourism across Europe. The countries of Northern Europe have shown a greater spread of digital technologies than the countries of Eastern and Southern Europe. The same study showed that tourism SMEs lag behind large enterprises. OECD data show that 77% of tourism businesses that offer accommodation, food and beverage have a website or homepage, and 70% these enterprises use social media. The most innovative and high-value digital companies operating in the tourism sector are Airbnb, Skyscanner, Uber, Booking.com, HomeAway, etc. [8].

Conclusions from this study and prospects for further exploration in this direction. Tourism sector, which has suffered the most from the effects of COVID-19, needs to apply a new concept of touchless economy to secure its market position and emerge from the crisis. COVID-19 is a catalyst for innovation and integration of new technologies in the tourism sector. Touchless and digital technologies can help to recovery of tourism in post-COVID-19 European Union member countries. Such type of digital technologies as Augmented Reality (AR) and Virtual Reality (VR) can be also used by tourism enterprises to attract more customers. AR and VR deserve more attention and will be examined in future research.

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