

Kyiv National University of Trade and Economics Tourism and Recreation  
Department

**FINAL QUALIFYING PAPER**

on the topic:

**«Digital technology of international tourism market operators»**

Student of the 2<sup>nd</sup> year, group 13,  
242 Tourism,  
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**Task  
for a final qualifying paper**

**Name Surname**

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*Purpose of the paper* is to research the effect of digital technologies on the international tourism market operators’ activity based on the “Amadeus Ukraine” LTD.

*The subject* is the digital technologies of tourism operators (in a company “Amadeus Ukraine” LTD)

*The object* is theoretical, methodological and practical basis of digital technologies development of international tourism market operators (on the example of “Amadeus Ukraine” LTD)

**4. Contents of a final qualifying paper (list of all the sections and subsections)**

INTRODUCTION

CHAPTER 1. CONCEPTUAL ASPECTS OF DIGITAL TECHNOLOGIES’ APPLICATION FOR INTERNATIONAL TOURISM MARKET OPERATORS

1.1. Essence, definitions and main fields of digital technologies’ implementation on tourism enterprises

1.2. Innovative digital practices and technologies of international tourism market operators

Conclusions to Chapter 1

## CHAPTER 2 AN ANALYTICAL REVIEW OF AMADEUS DIGITAL TECHNOLOGIES IN THE ACTIVITY OF GALEON TRAVEL GROUP AND INTERNATIONAL TOURISM MARKET OPERATORS

2.1. Characteristics of Amadeus in the economic activity of Galeon Travel Group and its role in the activity of international tourism market operators

2.2. Evaluation of the digital solutions provided by “Amadeus Ukraine” LTD

2.3. Analysis of international tourism operators’ market

Conclusions to Chapter 2

## CHAPTER 3 THE PROJECT OF DIGITAL TECHNOLOGIES’ IMPROVEMENTS IN THE ACTIVITY OF GALEON TRAVEL GROUP AND INTERNATIONAL TOURISM MARKET OPERATORS BASED ON THE USAGE OF GDS “AMADEUS”

3.1. Measure for the development of further partnership between international tourism market operators and “Amadeus Ukraine” LTD

3.2. Main digital innovations concerning the activity of Galeon Travel Group and international tourism market operators

3.3. Effectiveness evaluation of implementation of digital technologies’ improvement in the activity of international tourism market operators and “Amadeus” LTD

Conclusions to Chapter 3

CONCLUSIONS

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## 5. Time schedule of the paper

| No. | Stages of the final qualifying paper   | Terms of the final qualifying Paper |          |
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|     |  | de jure                             | de facto |
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## INTRODUCTION

**Actuality of research.** The relevance of the study is that digitalization is becoming the main driving force in the development of the global economy. Scientists predict the onset of the Fourth Industrial Revolution, which can completely change the approaches to the work of various sectors, as well as tourism.

The topic of digital technologies in the work of travel operators should be studied in the best possible way, since it is often associated with technical processes (formation of a tourism product, miscalculations, booking, and transfer coordination) and marketing.

The topic of digital technologies and its influence was investigated by the next researches: Daniel R. A. Schallmo & Christopher A. Williams [8], Korže Saša Zupan, Mazzone D.M [13], Shmarkov, M.S. & Shmarkova, L.I. & Shmarkova, E.A [20], Zsarnoczky M [28], Зайцева В.М., Гурова Д.Д., Корнієнко О.М., Кукліна Т.С., Журавльова С.М [30], Піщуліна О [39], Розкладка Н. О [40].

**The main purpose** of the work is to study new digital technologies in the tourism sector, their importance in the further development of tourism activities and the main areas of application.

**The main problematic of the work** is what technologies in the tourism sector are of particular importance, what they for are and what are their prospects when we talk about their positive effect on the activities of the enterprise.

**The subject** of research is digital technologies in tourism.

**The object** of the research is the field of application and purpose of digital technologies in the tourism sector.

The main **objectives** of the study are as follows:

to explore the theoretical aspects of the digitalization of the economic sphere, including tourism;

to analyze the main concepts of the implementation of digital technologies in modern society and the world economy;

to highlight the main technologies that are used by tourist operators in their activities;

to analyze possible prospects for the further implementation of digital technologies in tourism enterprises.

**Methods of research.** The following methods were used for the study: analysis, comparison, generalization, deduction method, induction method, graphic method and observation. In the first chapter the observation, deduction and comparison methods were used. In the work, the SWOT-analysis uses to identify pros and cons of digital technologies implementation on the tourism enterprise (Chapter 2). In the third chapter, the author analyzed cases of digital technologies implementation on the tourism enterprises.

**Scientific innovation.** In the work the digital implementation solutions was presented, as well as detailed advantages and advices for international tour operators in the development of digital activity.

**Practical value.** The described methods for digitalization can highly increase the competitiveness of tourism enterprises, adjust process on the enterprise, reduce workload and increase the volume of sales. In addition, digital solutions can built more loyalty with customers and reduce the number of error connected to human factor, as well as personalize customers' experience.

**Publications.** As the result of investigation of the final qualifying work was published the article « Digital technologies of international tourism market operators» (appendix A).

**Paper structure.** Final qualifying paper consists of 3 chapters, introduction and conclusions, references (47 titles), 4 appendices and also 6 tables and 8 figures.



## **CHAPTER 1.**

### **CONCEPTUAL ASPECTS OF DIGITAL TECHNOLOGIES'S APPLICATIONS FOR INTERNATIONAL TOURISM MARKET OPERATORS**

#### **1.1. Essence, definitions and main fields of digital technologies' implementation on tourism enterprises**

Tourism is developing every year, which requires the industry to be flexible, innovative and adaptive to the new market conditions. Digital innovations and technological innovations are engines of development and are demonstrating their impact everywhere, especially in manufacturing and service sector. Already, many industries have undergone significant changes in their activities due to the development of electronic and information technologies

That is why the essence, main methods of application, prospects and consequences of the development of digital technologies on tourist enterprises have become an important topic for research among researchers in recent years. The potential positive effects of the digital economy (digital dividends) are provided by powerful analytical campaigns and global forums [19] and, depending on assessment methods, the size of the digital economy is currently estimated at 4.5 to 15.5% of world GDP [39].

There is a huge potential for further implementation of digital technologies in tourism sector as well, that is why the topic of Industry 4 became one of the key topic. The digital economy was first put on the agenda of the G20 at the Antalya summit in 2015, when it was recognized that we live in an era of the Internet economy, which opens up both new opportunities and new challenges for global growth for tourism as well.

The main topics that interest the tourism and hospitality sector amongst the researches in the recent years are:

- 1) key technologies in the upcoming Industry 4;
- 2) predictions on negative and positive consequences of the usage of innovative technologies;
- 3) the concept of development of tourism enterprises in the digital sphere;
- 4) the impact of the development of digital technologies on the decisions of tourists and the role of personalized tourism in the future;
- 5) the emergence of new professions and requirements for employees in the tourism sector.

It is necessary to consider in more detail the definitions of digital technologies, innovations and their impact in the economic sphere.

First of all, there are several terms for digital transformation in the world economy – digitization, digitalization, digital transformation itself. That is why we need to explore this more, because those terms describe the progress of digital technologies development, and how they can change the world economy and its sectors.

By some researches digitization defines as “the transformation of some type of analog or physical artifact into a digital artifact” [8]. We can say that digitization mostly defines the transformation-oriented process, which physically helps to transform objects into another, digital, state. The great example of it, it is the scan of documents, taking photos of something and so on.

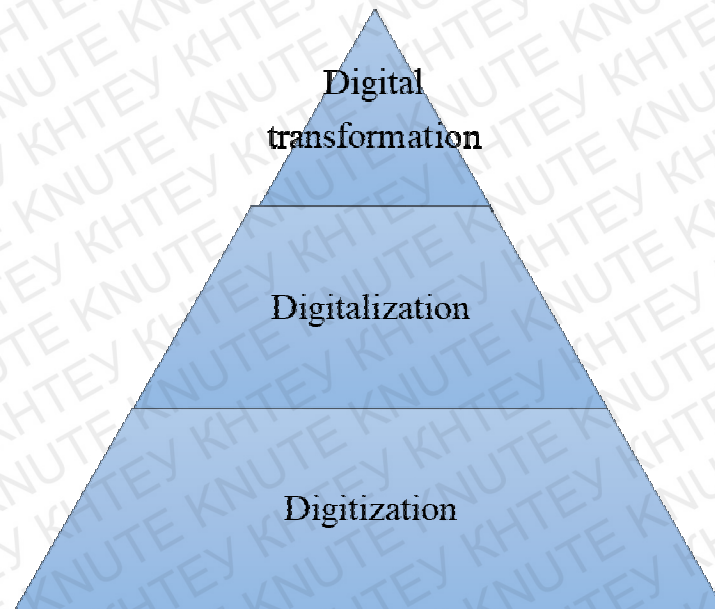
Digitalization, on the other side, perceive as a more complex definition. For example, digital consultancy agency i-SCOOP provide such definition: “Digitalization means the use of digital technologies and of data (digitized and natively digital) in order to create revenue, improve business, replace/transform business processes (not simply digitizing them) and create an environment for digital business, whereby digital information is at the core [9]”.

The next definition is digital transformation, which is bigger than digitalization. Dominic Mazzonne understand digital transformation as “the



deliberate and ongoing digital evolution of a company, business model, idea process, or methodology, both strategically and tactically” [16].

We can say that those definitions show the progress of digital technologies development, and how its’ implementation became stronger every day. Digitization describes the exact process and action made by digital technologies; digitalization describes process of technologies’ impenetation into different business, financial and social fields for the purpose of increasing effectiveness. Digital transformation stands for the evolution of the whole society and different spheres of it with the help of digital technologies. That is why it can be represented in the pyramid, where the lowes stage reflect the most basic usage of technologies.



*Fig. 1.1 Digital technologies’ pyramid*

Source: own elaboration

We can say the current state of tourism and economic activity in the world stand on the stage of digitalization, but making steps into the overall digital transformation, waiting for Industry 4 or the Fourth Industrial Revolution, which can change approaches in business.

Also, innovations that should be introduced at tourism enterprises, which may not be digital technologies, but can be expressed in the organization of business processes that adapt the activities of the enterprise to new needs, are also



important. That is why it is important to consider the classification of innovations that can be introduced in the enterprise, what groups they have and how they are defined, which can be represented in the tab. 1.1, based on the work of Zaitseva, Gurova, Kornienko, Kuklina, Zhuravlyova [30].

*Table 1.1*

***Types of innovations and their classification***

| Characteristic of the classification                 | Types of innovations   |
|--|--|
| By type of object of innovation activity             | 1) Product innovations. They cover the introduction of new or improved products;<br>2) Innovation processes. They influence on the development of new or significantly improved products, organization of production   |
| By the role in achieving the goals of the enterprise | 1) Improving innovations. They are carried out within the limits of development and improvement of directions of activity;<br>2) Strategic. They create new areas of activity or ensure the successful operation of existing areas for a long period.  |
| By value of the real direction of activity           | 1) Basic. They radically change the established or form a new direction of activity;<br>2) Modifying. They are carried out within the limits of improvement and development of basic;<br>3) Pseudo-innovation. They are external insignificant changes in products or processes that are not fundamentally new and do not create any additional benefits for consumers.  |
| By field of activity of the enterprise               | 1) Innovations at the "entrance" of the enterprise. They are targeted, bring qualitative or quantitative changes in the choice or use of materials, raw materials, equipment, information, employees, other resources;<br>2) Innovations at the "exit" of the enterprise, which changes in the results of production activities (products, services, technologies);<br>3) Innovations in the structure of the enterprise, which are targeted changes in production, service and ancillary processes. |

*Continuation of Table 1.1*

|                                |   |
|--------------------------------|---|
| By the content of the activity | <p>1) Technological, which are aimed at creating and mastering the production of new products, technologies and materials, modernization of equipment, reconstruction of buildings, implementation of environmental protection measures;</p> <p>2) Production, which are focused on expanding production capacity, diversifying production activities, changing the structure of production;</p> <p>3) Economic, which are aimed at changing methods and ways to plan all types of production and economic activities, reduce production costs, increase material incentives, employee interest, implementation of the accounting system;</p> <p>4) Trade, which are used as a new methods of pricing policy and forms of interaction with suppliers and customers; providing or receiving financial results in the form of loans, online stores creation;</p> <p>5) Social, which are related to the improvement of working conditions and nature, social security, psychological climate in the team;</p> <p>6) Management, which are aimed at improving the organizational structure, style and methods of decision-making, the use of new means of information processing.</p>  |
| By the content and scope       | <p>1) Technological, which are new technologies for the production of old or new products, the introduction of information systems, new energy sources. Technological innovations are changes first of all in means and methods of the organization of production;</p> <p>2) Product which are aimed at the creation of new goods consumed in the field of production or in the sphere of consumption (consumer goods);</p> <p>3) Organizational and managerial, which are new methods and forms of organization of all types of enterprise activities and their associations: new methods of personnel management, systems of strategic planning, forecasting, modeling of production, supply, marketing, new organizational structures;</p> <p>4) Economic, which are innovations in the financial and accounting spheres of activity, motivation and remuneration, evaluation of results.</p> <p>5) Social, which are new forms of activation of the human factor, including the process of changing working conditions, cultural, environmental and political aspects, changing lifestyles in general;</p> <p>6) Legal, which can be new legal documents that define and regulate all activities of enterprises, organizations and individuals, creating appropriate conditions for development. Some authors attribute legal innovations to social ones.</p> |
| By the scale of distribution   | Global, national, regional, branch and local (at the enterprise, in the company) innovations  |
| By the nature                  | Evolutionary and radical innovations.   |

Source: own elaboration based on [30]

Based on the terms above, as well as classifications of innovations that can be introduced at tourism enterprises, we can say that the main purpose of using

digital technologies in an enterprise is to adapt to changes in the market, increase the efficiency of the enterprise and improve the quality of services provided.

Zsarnoczky thinks that the future of tourism and hospitality is highly depend on the digital innovations, which help to implement tourism sphere into the share economy and create new perspective for the sector [28].

## **1.2. Innovative digital practices and technologies of international tourism market operators**

It should be noted that the travel operator will need to be much more actively involved in the use of digital technologies, since at the present time Internet resources are beginning to replace them on the global market.

As it was mentioned before, the development of digital technologies can provoke Industry 4.0 in the future, which can drastically change different sectors of the economy. The other term existed for tourism, which highlights predicted outcome of the Industry 4.0 on the tourism and hospitality sector – Tourism 4.0.

The term Tourism 4.0 as a new paradigm is used ‘for the current trend of big data processing collected from a vast number of travellers to create personalised travelling experience; it is based on a variety of modern high-tech computer technologies’ [13].

We can point out the next driving force and key technologies, which will be used by the tourism enterprises in the future, and which start to be used in some companies even now: Big Data and Analytics, Internet of Things, Cloud Technologies, CPS (Cyber-Physical systems), Augmented Reality (AR)/Virtual Reality (VR).

All of those technologies are interrelated due to the specifics of their usage on practice. Even now the activity of some tourism enterprises (airlines reservations or hotel reservation) are tightly connected with CPS, Cloud Technologies and Big Data. The explanation of each technology can be



represented in the Table 1.2, they can be described as key technologies in the Tourism 4.0 (APPENDIX B).

Big Data is one the key technologies for the further development of tourism sector. It increase the effectiveness of storing data about potential and current clients thus to increase the effectiveness of the promotion of tourists products, making it more personalized. Also, it positively effects on the adjusting of the logistics process, booking and the formation of tour products.

Moreover, with the help of Big Data tourism enterprises are able to deeply analyze the need and wants of the customers, and make their service more customer-oriented with the help of improvements. According to Korže Saša Zupan: “The advantage of extracted data by Big Data technologies is that those data are based on actual tourist actions and not on data obtained by surveys. They allow the implementation of the useful predicting models to improve the efficiency of customer service” [13].

So, we can conclude that Big Data can change the general approach towards relations with clients, make it personalized and customer-friendly. It will also decrease the cost on the creation of tour product with the same time increase of the quality of the product. What is more important, Big Data can be used for analytical purposes and helps to predict business risks connected to business activity of tourism enterprises.

Tour operator organizations quite effectively made the processes of booking tourist products automated [20]. The automation process helps to reduce the number of mistakes and the negative influence of the human factor during the working process. It will increase the quality of the work done, and decrease the number of monotonous tasks for the employees of tourism sector.

Also, we need to point out the importance of APIs (Application Programming Interface) for the tourism sector. APIs are tightly connected to the Cloud Technologies (where the information can be stored), to the CPS (which help

to connect different technologies into one holistic system) and to the Big Data (which helps to collect information in big scales and filter it).

APIs are actively used by the tour operator, because they gave access to the air tickets booking, reservation of hotels and the formation of tour products. Global Distribution Systems are the main providers of information for tourist enterprises, since they collect the world data arrays on different logistic, informational and service fields. It should be noted that there are thousands of different APIs for tourists' enterprises, which have certain purposes. For example, programming interfaces exist, which help to form tourism product with less efforts, such as: Bokun, Trekksoft, Redzy, Rezgo.

GDS (Global Distribution Systems) are very important for the proper operation of tour operator and their partners, since they provide enterprises with the information needed, help to adjust transfer, logistics, make reservations and analyze different opportunities for the tour product creation. We can divide them into several types, according to the Roskladka N.O. works: [40]:

- 1) GDS (Global Distribution Systems). In the past they were used only by airline companies, who organized working process with the help of GDS. The most well-known and used GDS globally are: Galileo, Amadeus, Sabre and so on. GDS provide connection between participants of the tourism market and give opportunities for the reservation all over the world (tickets, transport, apartments and so on);

- 2) ADS (Alternative Distribution Systems). ADS can be called a new competitor for GDS, since they give opportunity for the customer to book tickets, apartments, transport, excursions by themselves and make their travel experience more personalized. The next website can provide access to such opportunity: booking.com, ORBITZ, expedia.com.

- 3) GCS (Global Consolidation System). Mostly used as inner tracking system in order to consolidate information about companies' activity (financial, administrative, logistics) and manage the operational processes on the enterprise.

4) CRS (Central Reservation System). Those types of systems provide enterprise with the information on tariffs and hotel inventory. Also, with the help of CRS it is possible to obtain real-time control over guest bookings and decrease the number of unpleasant accidents. The most well-known CRS are: Pegasus CRS, Windsurfer CRS, GuestCentric CRS, Amadeus iHotilier and so on.

5) BSP (Business Service Provider). It is a system that unites all business programs that are used internally to organize the workflow. For example, the Microsoft Office suite of office programs can be considered such a system, since it helps to keep correspondence, make notes, and create tables for keeping records, edit documents and so on. We can say that the Microsoft Office software package is a representation of such a system.

As we can see, all of those systems are important for the organization of working process, especially for tour operators. One of the most important systems is GDS, which collects information about the options for booking, allows to book flights to different destinations, create complicated roots for the certain destinations, reserve seats in the aircraft cabin, book railways, rent rooms in hotels and transport for travel, and so on.

GDS helps to create tours dynamically, with the help of on-time information about regular flights, automated calculation of the total cost of the package online. Thus, GDS makes it possible to form the most suitable product, based on the desired date, direction and conditions for movement and stay. GDS are convenient in that they make it possible to diversify the tourist product.

There are three main GDS players on the market: Amadeus, Sabre, Galileo and Travelport. According to Sabre, these three cover 99.9 percent of the GDS market share [26]. We can analyze the opportunities, which provide every main player on the market, which is presented on the tabl. 1.3. It should be noted that Amadeus it is the world leader on reservation. Its' service used by almost every top-level airline company in the world. Also, Amadeus is popular when it comes to the hotel reservations.



Table 1.3

***Types of reservations available in the main GDSs***

| <b>Amadeus</b> | <b>Sabre</b> | <b>Travelport</b> |
|----------------|--------------|-------------------|
| Air            | Air          | Air               |
| Hotels         | Hotels       | Hotels            |
| Cruises        | Cars         | Cars              |
| Cars           | Rails        | Rails             |
| Rails          | Cruise       |                   |
| Transfers      |              |                   |
| Insurance      |              |                   |

Source: own elaboration

We can say that Amadeus has more capabilities in the field of reservations, which allows it to remain the most convenient GDS among all the others. Although some of the technical processes within the Amadeus system itself are not sufficiently automated and can create confusion among the tourist employees, who are making booking.

### **Conclusions to Chapter 1**

We can summarize that digital technologies will be the future fundamental for the transformation of the entire world economy, including tourism.

This will be associated with the forthcoming Fourth Industrial Revolution, or Industry 4.0. A similar term exists for the tourism industry, called Tourism 4.0. Digital technologies will begin to play a huge role in the competitiveness of tourism enterprises, express their adaptability to changes, efficiency of activities and will directly affect the amount of profit received from tourists.

In this work we researched and achieved the next goals:

- 1) we pointed out the key statements and points of the digitalization inside the world economy and tourism sector in particular;
- 2) we analyzed the main aspects of digital technologies' implementation on the business enterprises, and its influence on the world economy and tourism in particular;

- 3) we pointed out the key technologies, which are used by tourism enterprises, mostly by tourist operators, which increase their effectiveness and competitiveness on the market;
- 4) we researched and explored the possible prospects of digital transformation of the tourism enterprises and their positive effect on the business activity

We see that the following technologies will play the most important role: Cloud Technologies; Big Data for analysis of the activity; the usage of cyber-physical systems; the usage of GDS at work; Internet of Things; promotion through Internet resources and ADS; the usage of new communication channels for more efficient transfer of information between employees; the usage of chatbots for performing routine tasks; increasing the personalization of travel products using the above-mentioned resources.

## **CHAPTER 2 AN ANALYTICAL REVIEW OF AMADEUS DIGITAL TECHNOLOGIES IN THE ACTIVITY OF GALEON TRAVEL GROUP AND INTERNATIONAL TOURISM MARKET OPERATORS**

### **2.1. Characteristics of Amadeus in the economic activity of Galeon Travel Group and its role in the activity of international tourism market operators**

Amadeus is a leading Global Booking System (GDS) and a provider of technologies that meet the needs of the global transport and tourism industry in marketing, sales and distribution.

T. Tkachenko perceives Amadeus as the leading participant of the tourism market around the world. The company offers a variety of transaction processing tools, as well as technological solutions for travel service providers, including full-service airlines, hotels, and rail, cruise and ferry operators, car rental companies [45].

T. Brych also noticed that in terms of international bookings, Amadeus system is the largest in the world. Its services are used by more than 70% of travel agencies in Europe and 36 million travelers use Amadeus every day. It is worth to mention that Amadeus is used by more than 30 thousand travel agencies (more than 100 thousand terminals), and by more than 400 airlines (about 60 thousand terminals). [29].

Amadeus provides a wide range of services, including interaction with airlines, rail and ferry services, car rental, hotels, as well as provides additional services, such as tourist insurance and more.

That is why we need to pay detailed attention to the Amadeus role in the effective operation of other travel companies. Amadeus is a worldwide network



that connects variety of tourism. Transport, hospitality, tourism, food and beverage service providers through the worldwide computerized network. The company provide its client with the best IT solutions on the market, make it possible to automate all of the business processes for tourism companies such as booking process, management, monitoring of the results and so on.

Galeon Travel Group also uses Amadeus services for efficient operation of the enterprise, because thanks to digital solutions provided by Amadeus, it is possible to provide more efficient and customer-oriented service.

Galeon Travel Group is a travel company that has been operating since 2007, providing travel services to a variety of destinations (Turkey, Egypt, Sri Lanka, India, Maldives, Indonesia, UAE, Thailand, China and Vietnam, Germany and France, Spain, Italy, Cyprus, Greece, Croatia, Montenegro, Finland, Bulgaria) [31]. The company's office is located in the city of Kiev in Pechersk.

Travel company "Galeon Travel" is a legal entity which use limited liability form of company to implement its business activity.

The main purpose of Galeon Travel LLC is to implement economic activity aimed at making a financial profit to meet the social and economic interests of members of the workforce and the interests of the founder, as well as tourists.

The subject of activity of the enterprise is the provision of tourist services, as well as other services for the tourism bookings. The main activity of the company is international tourism. Currently, the travel agency operates in Europe, Asia, Africa, South America, Australia and Oceania. The company known by arranging tours into rare destinations. The tour operator "Galeon Travel" is a multidisciplinary structure that provides comprehensive services to all types of customers, including vacationers, business travelers and tourists groups.

The main directions of the company include vacation in exotic countries and beach resorts; winter holidays, including the famous ski resorts; youth recreation; health tours in sanatoriums; sightseeing trips.

Travel agency "Galeon Travel" is engaged in the development of individual trips, booking and sale of tickets, booking hotels and excursions. The workers of

the travel agency also provides visa support and assistance in receiving the necessary documents (including health insurance), organizes transfers, book individual meetings at the airport, rent conference rooms, provide services of guides and translators.

The company has a linear organizational structure. The linear structure is the simplest hierarchical management structure, consists of the head of the enterprise and several subordinate employees. The advantage of this structure is the increase of employee responsibility (APPENDIX D).

The organizational structure of a travel agency is quite simple and consists of employees. The director of the enterprise manages the enterprise. The following subordinated to the director: deputy director, 2 managers for outbound tourism, manager for domestic tourism, cleaner.

As it was mentioned before, Galeon Travel Group provides outbound, inbound and domestic tourism services. Travel company "Galeon Travel" actively uses in its activities such marketing means of sales promotion as advertising, personal selling, sales promotion activities. In addition, the company has established close cooperation with various charitable and public organizations, which in turn enhances the positive image of the company and is another means to achieve market success.

However, the information load of management is growing, which often leads to the loss of important trends. In such circumstances, a more efficient and flexible, adapted to market conditions and a reliable decision-making system needed which would become the foundation of renewed management and allow the head of the enterprise to make rational management decisions.

Galeon Travel Group uses Amadeus for the booking goals, but the standard package of services is not enough for achieving competitive advantages on the changing market. That is why marketing digital technologies from Amadeus should be included into the operation of tour operator's activity.

For those who connect the new office to the services of Amadeus, an Amadeus curator is provided, who can accompany employees of agencies and tour

operators in matters related to working with the GDS and organizing effective cooperation with the company.

Amadeus provide partners with a full-cycle support: training and education, technical support and consulting. Amadeus Ukraine regularly holds seminars, giving partners the opportunity to train staff on a wide range of programs in the tourism industry. In addition to stand-alone programs, special attention is paid to joint seminars with leading airlines, hotel service providers and car rentals.

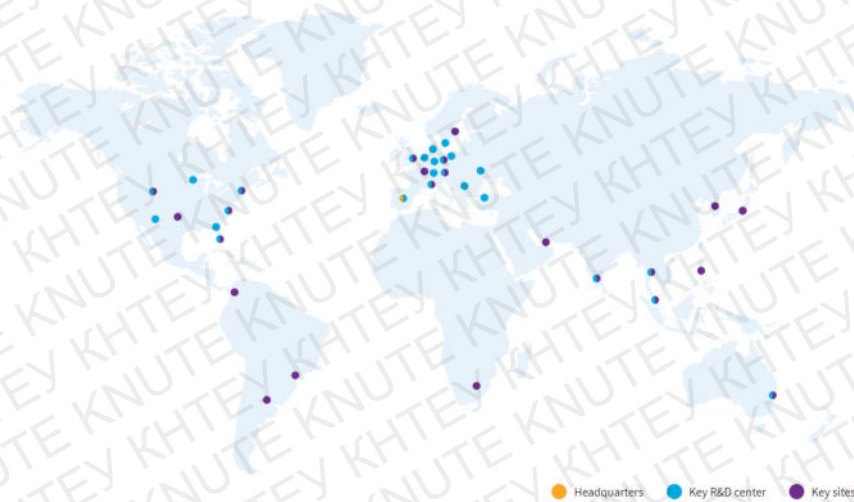
All this contributes to more efficient work of agencies, which obtaining additional income and competitive advantages with the help of the partnership with Amadeus.

Amadeus partners in some types of education are the leading industry centers and universities of Ukraine and Moldova. Functional customer support is provided by a specialized HelpDesk service, employees of HelpDesk are employees of logistic, tourism sector and IT field with an extensive experience in leading companies, agencies and airlines [35].

Agency staff can always get competent advice, as well as address issues that arise in the systematic interaction with airlines and other providers. That is a great decision for Galeon Travel Group, which makes multiple bookings on different world directions and need to be effective during the booking process.

Technical support of agencies is available anywhere in Ukraine and Moldova and provided by experienced engineers who can assist in installing and debugging programs, system and technical equipment. An important component of the continuous process of partner support is to provide the necessary advice on traditional and perspective directions of business, optimization of internal procedures, interaction with airlines, consolidators and other tourism industry participants.





*Fig. 2.1 Presence of Amadeus offices and centers around the world*

Source: [4]

Representation of Amadeus Global Travel Distribution SA in Ukraine (Amadeus Ukraine) was founded in 1997. Amadeus Ukraine connects to the reservation system, trains employees of travel agencies, and provides technical and functional support to users. Amadeus Central Booking System also operates 10,000 airline offices around that have the world have access to booking: flights of 700 airlines, which carry 95% of the world's scheduled air transportation; 60,000 rooms hotels, including 322 global hotel chains; car rental of 50 rent-a-car companies that serve 25,000 rental points; resources of other providers [33].

Lots of tour operators, agencies and travel services providers use Amadeus for their business operations both in Ukraine and in the world. Galeon Travel Group is not an exception.

Amadeus Ukraine also proceed the next important activities: interaction with airlines and other industry providers; development of local products and solutions that increase the efficiency of users; participation in the development of the country's tourism and transport industry; adapting the most advanced technologies to the peculiarities of domestic markets. The territory of Moldova also belongs to the sphere of responsibility of Amadeus Ukraine [41].

There are such features of integration with GDS for tour companies as:

- 1) Search of flight options with the help of international computer reservation systems and available calculation of the cost in the real-time. A surcharge or discount to the tour price is calculated for each flight option.
- 2) The client has access to various filters for the selection of flights on the tour booking page (stops, departure time, airlines, and flight duration).
- 3) The client has access to information about the availability of baggage, the possibility of returning the ticket and the rules of transportation of the certain airline.
- 4) The ticket is automatically booked in GDS (every booking has its PNR-ID) at the time of saving the order. The confirmation of the application will be the registered time limit prescribed by the flight payment and minimum amount of prepayment will be indicated in booking as well.
- 5) In case of non-payment of the application, the reservation in GDS for flights will be canceled automatically.
- 6) The ticket is issued automatically after full payment or prepayment of the order. Links to electronic itinerary receipts will be automatically added to the application.
- 7) Two options for forming tours with a dynamic package: "average fare" for a flight in a package to form the price in search of tours + update on the booking page. It is a very convenient feature, since it is a loading of prices for flights with the help GDS for price formation in search of tours + updating on the booking page.
- 8) Flexible tour setup system for working with GDS flights [32].

We can say that GDS is necessary for companies who have. We can say that Amadeus provides effective methods and tools for fast, high-quality and reliable operational work. Amadeus services can significantly improve the speed of processing booking requests, reduce the number of mistakes made during the



booking, make the service more customer-oriented, as well as establish management in a travel company.

It can highly increase the effectiveness of operational work of the tourism department, as well as adjust marketing research. Now Amadeus Digital Solutions provide not only booking services, but also digital products for the increase of sales volume, marketing research, research of dynamic prices, financial analysis, and business predictions and so on. It can highly increase the competitiveness of Galeon Travel Group on the market and bring new opportunities to the business activity during the pandemic.

In addition, in order to confirm the convenience and validity of using Amadeus as one of the main digital tools and technologies in the field of tourism, the following advantages of using Amadeus GDS should be noted:

- 1) reduction of the labor costs for the formation of a tourist product on regular flights;
- 2) ability to reduce financial risks since this business model allows companies to avoid on flights and hotels and not to make large deposits;
- 3) the possibility of expanding the range of areas without additional costs;
- 4) availability of all scheduled flights for online search, making it possible to satisfy even the most unusual customer requests;
- 5) always up-to-date information on availability and relevant prices.

Thus, Amadeus is a very important tool in creating a stable flow of orders and their processing, which is also an important part of the work of the Galeon Travel Group. Amadeus can be used practically by participants in the travel market - travel operators to create packages of tours, travel agents to provide customers with the most profitable travel options, transportation and travel centers, hotels, etc. This is the largest GDS of all the world, which provides a huge number of options for travel service providers from around the world.



## 2.2. Evaluation of the digital solutions provided by “Amadeus” to the tourism enterprises

Modern conditions of functioning of tourist enterprises are characterized by a high level of uncertainty, seasonal instability of demand for tourist services, lack of financial resources, insufficient customer orientation and fierce competition in the market of tourist services. Significant intensification of competition is one of the defining trends that characterize the state of the tourism sector in Ukraine today.

This fact requires the search for new ways and methods to increase the competitiveness of tourism enterprises in the market of tourism services, one of which, in our opinion, is the implementation of effective product policy, application of innovative tools to optimize the product portfolio of tourism entities.

Product policy is a complex concept that covers: the activities of the tourist enterprise to optimize the product portfolio; improving the quality of existing tourism products and their modification; creation of new tourist products and their introduction on the market; exclusion from the range of tourist products that are currently not in demand among consumers [40].

The optimal structure of the product portfolio is designed to ensure the relative stability of the tourism company sales and profits in a changing environment in the tourism market and, thus, help maintain its competitiveness.

It is worth noting that Amadeus has a huge number of services that have different directions. There are appropriate digital solutions for tour operators (Standard Amadeus Office, Amadeus Ticket Changer, Amadeus One Inventory, Amadeus FareOptimizer), for retail travel agencies (Amadeus Selling Platform, Amadeus Agency Manager, Amadeus Air Preferences), for consolidators (Amadeus Travel Platform), for online agencies (Amadeus Master Pricer, Navitaire Content, Amadeus Mini Rules), and so on. That is why it is important to consider the needs of the enterprise, since some business and operational processes require automation rather than a manual approach.

For example, travel agencies can get a standard package of Amadeus services for UAH 2240 per year. However, some commands will not be available for free use, and some of them require enterprise application.

In this case, there are two options for solving this issue: to form an appropriate package of services for the needs of the enterprise, or to increase the level of sales at the enterprise. Upon reaching certain conditions on the number of sales and the amount of transactions, Amadeus provides a package of free access to some non-free commands to those travel service providers that have shown positive results.

You can work with the system using three possible GUI-interfaces: Vista (mostly it called Amadeus Selling Platform), ProWeb and Start Web Client, which differ in functionality, price and are designed for companies of different sizes and with different business needs. The system itself is fully integrated into the Internet browser and contains some products.

**Amadeus Air** is a powerful tool for booking airline flights around the world. The system, in particular, allows you to book tickets for almost all airlines of Ukraine and the rest of the world: Aerosvit, Dniproavia, Airlines, Ukraine International Airlines, etc. The module includes a number of additional components:

- 1) Amadeus Fares, which provide companies with a solution that allows access to various categories of fares (published, confidential and special) of airlines. Gives the opportunity to get the fastest response times for real-time itinerary pricing [10];
- 2) Amadeus Negotiated Fares is a product, which allows the user to exercise independent introduction and maintenance of confidential airline tariffs presented in Amadeus;
- 3) Amadeus Master Pricer provide automatic function for the search of the most economical tariffs in real time. The product provides you with opportunity to book the cheapest fares and optimal itineraries across the expansive range of airlines [15].

**Amadeus Cars** is a tool for generating offers for customers to book cars. The system contains offers from 43 car rental companies.

**Amadeus Hotels** is a tool to generate real-time information about the availability of rooms in more than 66 thousand hotels, point out their cost depending on the type, hotel policy for booking and cancellation, as well as booking rooms selected by the client.

**Amadeus Rails** is a tool which help to achieve access to the distribution of railway products and services by analogy with airlines. At the moment, the component allows companies to book tickets only a few companies in Germany, Britain, Japan, Norway and Sweden. However, Amadeus is currently working on the expansion of the product line.

**Amadeus Cruise** is a tool that provides access to the reservation services of cruise companies, allowing tourism service providers to get complete information about cruise packages.

There are dozens of additional components, which Amadeus can provide their clients with:

- 1) **Amadeus E-mail** is a tool that provides the ability to send information about booking, fares and rules of the booking to the customer's e-mail address directly from the Amadeus system;
- 2) **Amadeus Customer Profile** is a product that allows tourism service providers to automate the procedure of booking through the use of previously entered customer information in the customer card. The function can be also used for corporate customers.
- 3) **Amadeus Travel Choice** is a tool that allows travel company to automatically take into account the desires and demands of customers considering company policy.
- 4) **Amadeus Service Fee Manager** is a product that allows to create a variety of pricing schemes for calculating service fees with flexible rules in compliance with the company's business policy.



With the help of Amadeus, tourism company can explore a range of time-saving features in the Productivity Suite such as Smart Flows, Smart Triggers, and Quality Monitor. Each module has been specifically designed to improve the efficiency and productivity of the travel agency or tour operator, directed on saving time and money.

Amadeus offers a suite of advanced tools to help tourism service providers to consolidate content from all sources, manage vendors, optimize inventory management and automate the production of package tours for faster time to market, efficiency, sales conversions and profitability.

For example, one of the advising product from Amadeus for tour operators is Amadeus One Inventory. Amadeus One Inventory is a flexible, modular platform for creating complex travel content, business rules, pricing, distribution and management. It can help to drive conversions and optimize profitability by providing customers with the best travel alternative products.

Amadeus One Inventory (formerly Amadeus Inventory Management from Travel IMS) is a modular platform that allows tour operators to flexibly integrate the required components with existing systems [5].

You can see the main advantages of Amadeus One Inventory module for the tour operators' business activities on the Tabl.2.1.

*Table 2.1*

*Functions and capabilities provided by Amadeus One Inventory for tour operators*

| Services provided  | Description  |
|--------------------|--|
| Packages and tours | Create, price and sell single components or combination packages. The function also makes it possible to bind subpackages.                           |
| Flights            | Integration of global distribution systems and manual download. Independent route management with support for origins, destinations and open routes. |
| Accommodation      | Manage all your own and third-party products, including exclusive numbers and documents in different languages.                                      |

|           |  |
|-----------|--|
| Transfers | Price control according to customer, categorization by group, address management and automatic booking of return tickets to optimize efficiency. |
|-----------|--|

*Continuation of Table 2.1*

|                                    |  |
|------------------------------------|--|
| Trains, buses, ferries and cruises | Complete contract management with full control over pricing structures and quotas, including charters or itineraries     |
| More content and services          | Manage insurance, car rentals, outdoor activities, tours with full control over quotas and price types for each service. |
| Excursions and other services      | Global control over many excursions and services, price management with many conditions and incompatible promotions.     |

Source: own elaboration

As you can see, it can help to manage content from all sources and give customers a clear understanding of company's product range. With this solution, tour operators can also manage its own vendor agreements, as well as any kind of integrated content, that is why it is a great decision taking advantage of the Amadeus One Inventory integration layer.

Also, one of the most important products is Amadeus Selling Platform Connect. This product is used by Galeon Travel Group as a main digital decision. Mostly, Amadeus Selling Platform Connect is a product for middle or small tourism enterprises (travel agencies or tour operators).

Amadeus Selling Platforms helps to create personalized travel products. The product combines relevant quality content with efficient technology to help travel agents sell more, increase profits and improve service [7].

Amadeus Selling Platform Connect provides access to the largest selection of all-inclusive and low-cost carriers from around the world, and allows company to quickly book additional services. The product provides a wide range of hotels, public and private transport, various types of transfers and local services (excursions). Amadeus Selling Platform Connect also provides the ability to integrate content from suppliers. You can see how the system looks like on the Appendix C.

Features of integration with GDS:

- 1) Search of flight options with the help of international computer reservation systems and calculation of the cost in the real-time. A



surcharge or discount to the tour price is calculated for each flight option.

- 2) The client has access to various filters for the selection of flights on the tour booking page (stops, departure time, airlines, and flight duration).
- 3) The client has access to information about the availability of baggage, the possibility of returning the ticket and the rules of transportation of the certain airline.
- 4) The ticket is automatically booked in GDS (every booking has its PNR-ID) at the time of saving the order. The confirmation of the application will be the certain automatically registered time limit for flight payment and minimum amount of prepayment will be indicated in booking as well.
- 5) In case of non-payment of the application, the reservation in GDS for flights will be canceled automatically.
- 6) The ticket is issued automatically after full payment or prepayment of the order. Links to electronic itinerary receipts will be automatically added to the application.
- 7) Two options for forming tours with a dynamic package: "average fare" for a flight in a package to form the price in search of tours + update on the booking page;
- 8) Automatic loading of prices for flights with GDS for price formation in search of tours + updating on the booking page.
- 9) Flexible tour setup system for working with GDS flights [37].

Based on the above digital solutions mentioned, as well as the information received, we must draw conclusions about how beneficial it is for a tourism provider to use innovative solutions provided by Amadeus. For this, a SWOT analysis will be drawn up, which will reflect the main advantages, disadvantages, as well as threats and opportunities that can be expected by a travel service provider when using Amadeus products.

Our results will be presented on the Table 2.2., considering the tourism activity of Galeon Travel Group, which characterized by the limited number of clients, differentiated tourism products from different world regions (Asia, Africa, Europe, Middle East), small size of the enterprise and lack of branding representation.

It is possible to achieve more competitiveness for the Galeon Travel Group on the market with the help of using appropriate digital technologies for the promotion of tourism products, adjusting customer-oriented policy with the help of digital tools and maintain operational processes.

*Table 2.2*  
*SWOT analysis of Amadeus implementation on the tourism enterprise for Galeon Travel Group*

| <b>Strength</b>   | <b>Weaknesses</b>  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Amadeus has strong IT base and knowledge;</li> <li>2. Cost reduction;</li> <li>3. Possibility to use software anywhere and anytime;</li> <li>4. Independency regarding the hardware side;</li> <li>5. SLA signed between two parties;</li> <li>6. Help to make high quality services;</li> <li>7. Adaptability of the different tools for different needs;</li> <li>8. Frequent maintenance and updates;</li> <li>9. Provision of support from Amadeus employees;</li> <li>10. Increase in sales of tourism products</li> <li>11. Access to the relevant prices, products and so on.</li> </ol> | <ol style="list-style-type: none"> <li>1. Limited personalization of the tools;</li> <li>2. Lack of knowledge of employees of tourism sector on innovative technologies;</li> <li>3. Negative influence of the internal environment (pandemic, financial crisis and so on).</li> <li>4. Reticence of users and STARSS Champions because of extra workloads.</li> </ol> |

Continuation of Table 2.2

| Opportunities  | Threats   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Improvement of sales force skills of the tourism enterprises;</li> <li>2. Ease to deploy (3-4 month);</li> <li>3. Ease to resilient contract and not costly;</li> <li>4. An increase in the number of tourists due to adjustments in operational activity;</li> <li>5. Expanding the product line to meet the needs of a large number of customers;</li> <li>6. Increase competitiveness of enterprise due to the usage of efficient digital solutions;</li> <li>7. Entering new market segments;</li> <li>8. The conclusion of new partnership agreements.</li> </ol> | <ol style="list-style-type: none"> <li>1. Sometimes lack of communication between Amadeus and tourism service providers that can cause damage.</li> <li>2. Treatment of integration and bugs;</li> <li>3. Confidentiality issue;</li> <li>4. Issues in data/files restitution.</li> </ol> |

*Source: own elaboration*

Thus, for a tourist enterprise the main advantages of the introduction of GDS-tours are: a significant reduction in labor costs for the formation of a tourist product on regular flights; the ability to reduce financial risks, as the proposed business model allows you to avoid rigid blocks of seats on flights and hotels and not to make large deposits; the possibility of expanding the range of areas without additional costs; availability of all scheduled flights for online search, making it possible to satisfy even the most unusual customer requests; always up-to-date information on availability and relevant prices.

### **2.3 Analysis of international tourism operators' market**

Modern tourism is one of the most advanced industries in the world economy and can be positioned as an independent type of economic activity [47].

Almost a third of the planet's population uses the tourist aspects of the complex daily. Tourism is among the top five industries in the world economy. In



developed countries and regions, tourism is a major source of income. Every tenth worker in the world is involved in tourism. In addition, according to World Tourism Organization forecasts, international tourism volumes will increase by an average of 4% annually [23].

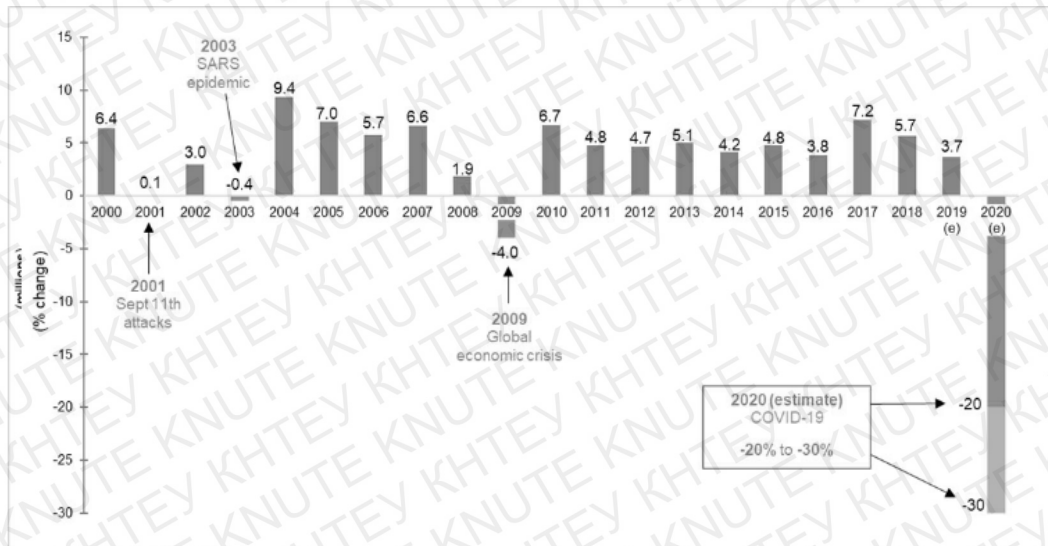
Accordingly, total exports from international tourism reached 1.7 trillion on average, or \$ 4.6 billion per day. As an international export category, tourism ranks third after the chemical and fuel industries, ahead of car manufacturing. In many developing countries, tourism is a priority export category. Such growth of the international tourism sector is due to the global economic recovery, which has led to an increase in demand in almost all tourism markets, both developed and developing [23].

However, even such benefits are not fully used, the tourism industry is underfunded, many issues and resources remain unimplemented, the financial and economic crisis, complex political events do not bring the country to a competitive level in the tourism industry.

Today the tourism industry of Ukraine is very important in the system of the economy of the country, is in a state of rather dynamic and positive development, is one of the ways to accelerate the European integration processes, and therefore a means of raising the world position of our country.

But it should be mentioned that world tourism sector faced a real threat in 2020 and an enormous downturn due to the COVID-19 and quarantine restrictions, which include such important parts of tourism industry like: bans of cross boarding, cancellation of air traffic, isolation of citizens.

Since tourism it is a social industry, connecting with people communication it suffered a lot and is vulnerable to the changes in the world. UNWTO estimates international tourist arrivals decline by 20% to 30% in 2020 (Figure 2.1). This would translate into a loss of 300 to 450 US \$ billion in international tourism receipts (exports) almost one third of the US \$ 1.5 trillion generated globally in the worst-case scenario [26].

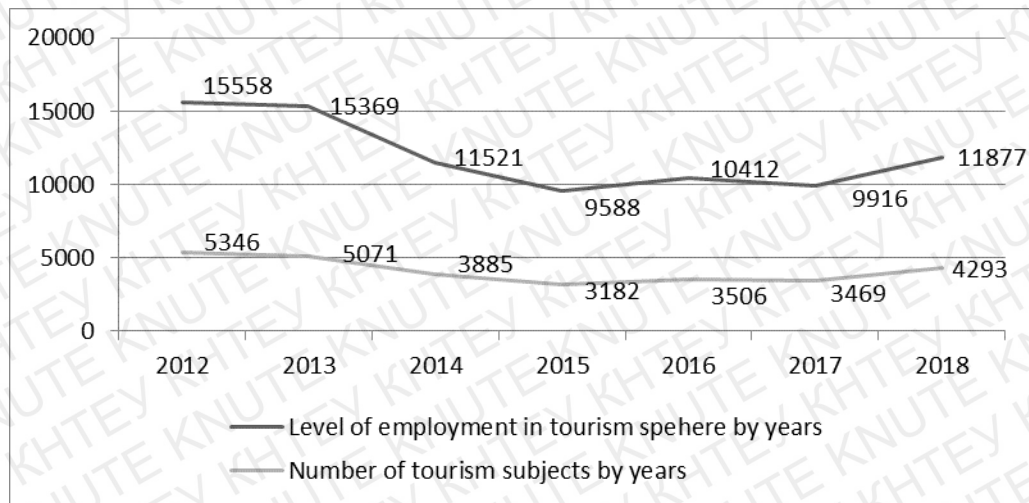


*Fig. 2.2 2020 forecast International tourist arrivals, world (% change) according to UNWTO*

Source: [23]

A particularly important indicator that determines the competitiveness of the country's tourism industry and ensures its implementation and maintenance is the number of available tourism entities and the volume of employees involved in tourism. During the period 2012-2015, the number of tourist activity subjects has been steadily decreasing compared to each previous year – by 5.4%, 30.5%, and 22.1%, respectively (Figure 2.4).

Also, tendencies in number of subjects of tourist's activity and rate of employment in tourism should be discussed. There is a correspondence between political and economic situation, as well as with the state of tourism sphere existed, according to statistical data [34].



*Fig 2.3 Number of subjects of tourist activity and employment in tourism*

*Source: own elaboration based on [34]*

This situation was primarily due to the low level of financing of the tourism industry, the high cost of servicing the tourist activity, the lack of interest in the development and support of the domestic tourist enterprise. At the same time, there are positive growth rates in 2017 and 2018.

Whereas, the aggravation of the political situation, the military conflicts in the east of Ukraine, significant social tensions, general reduction in the solvency of the population, fluctuations in exchange rates, absence of clear mechanism of responsibility for violation of the article of the Law "On Tourism", low rates of modernization of the material base and shortage of financial resources have led to a decrease in the number of subjects of tourist activity.

In order to understand exactly how things are on the market of international travel operators and what the level of competition is, we must analyze the situation in the market.

In 2018, the Department of Tourism and Resorts of the Ministry of Economic Development and Trade of Ukraine provided reports on the results of their activities to 527 tour operators (according to the Ukrainian online magazine Turprofi.om.ua). The results of served Ukrainian tourists who traveled abroad in 2017-2018 in persons we can see on the Tabl. 2.4.



Table 2.4

*TOP-20 tour operators by the number of served Ukrainian tourists who traveled abroad in 2017-2018, persons*

| №  | Tour operator                                      | Years   |         |
|----|--|---------|---------|
|    |  | 2017    | 2018    |
| 1  | “JoinUP!” LLC                                      | 678 013 | 878 416 |
| 2  | “Anex Tour” LLC                                    | 453 801 | 515 582 |
| 3  | “Tez Tour” LLC                                     | 233 639 | 284 956 |
| 4  | “Akkord Tour” LLC                                  | -       | 260 563 |
| 5  | “Coral Travel” LLC                                 | 198 305 | 242 071 |
| 6  | “TTBK” LLC   | 136 191 | 230 462 |
| 7  | “TPG” LLC  | 238 321 | 228 381 |
| 8  | “Pegas Touristik” LLC                              | 83 286  | 115 887 |
| 9  | “GTO” LLC  | 22 273  | 66 400  |
| 10 | “Zeus Travel” LLC                                  | 14 316  | 20 014  |
| 11 | "Obriy Inc." PJSC                                  | 13 058  | 15 930  |
| 12 | “Tango Travel Plus” LLC                            | -       | 12 817  |
| 13 | “Tango Travel” LLC                                 | 24 952  | 12 799  |
| 14 | “Oasis Travel Group” LLC                           | -       | 9 722   |
| 15 | “KiyAvia” LLC                                      | 7 053   | 8 202   |
| 16 | “Siesta” LLC                                       | 6 797   | 7 883   |
| 17 | “Universal Sale Agency of air transportation” PJSC | 15 784  | 7 264   |
| 18 | “Orbita” LLC                                       | 5 761   | 7 179   |
| 19 | “Advant Travel” LLC                                | -       | 7 178   |
| 20 | “Muzenidis Travel Lviv” LLC                        | 5 356   | 7 084   |

Source: own elaboration based on [40]

We see that the leaders on the Ukrainian tourism market are: “Join Up!”, “Anex Tour”, and “Tez Tour”. “Accord Tour”, “Coral Travel”, “TTBK”, Travel Professional Group (TPG).

The most prominent positions goes to “Join Up!” and “Anex Tour” accordingly. “Join Up!” increase their numbers of served tourist on 200 thousand for a one year. “Anex Tour” increase their numbers on 62 thousand.

The next four participant (Tez Tour, Akkord Tour, Coral Travel, TTBK, TPG) show very similar results in their tourism activities. Some of the participants show stable growth rates. For example, TTBK increase the number of tourists on

almost 69 thousands per year. Tez Tour increase its' number of tourists on 51 thousands. Coral Travel shows increase in 43 thousands of tourists. Only TPG shows decrease in the number of tourists served – on 10 thousands lesser then in was in 2017.

We can see that participants from 7 to 20 show lower results compared to the leading tour operators. It is worth noting that “Tango Travel” has several legal entities, and therefore, their number of served tourists is generally larger than the indicators taken into account separately. The same applied can to the “Muzenidis Travel Lviv”, because the list includes one legal entity from Lviv.

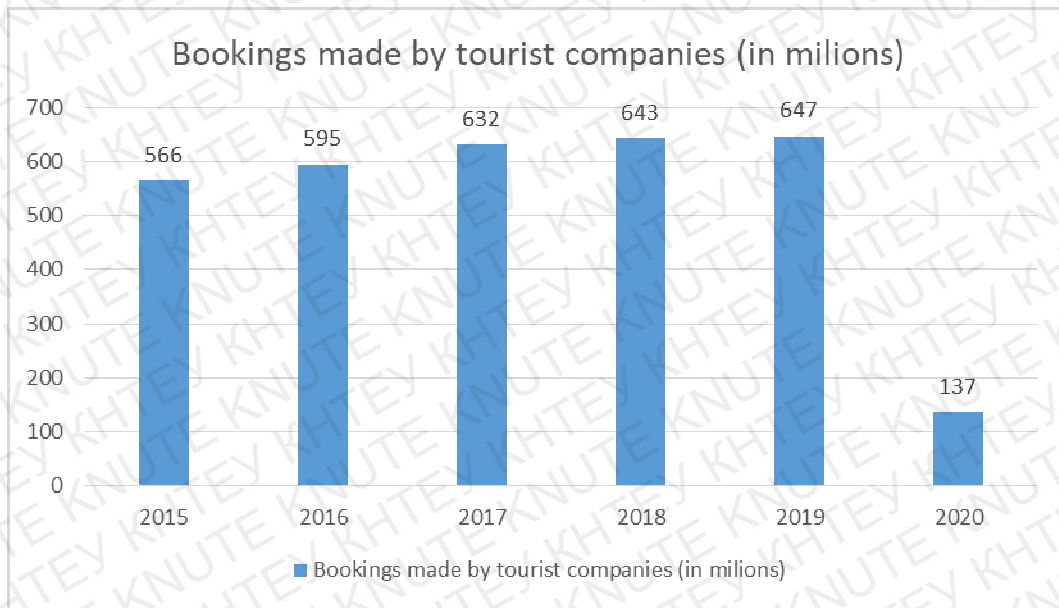
However, it should be noted that the market of tourist services of tour operators in Ukraine is indeed saturated, which means that the level of competition remains high and requires competitive advantages in the market. That is why we can definitely say that Galeon Travel Group results are below average, however, its activity is mostly directed towards limited group of loyal customers. In order to increase performance the measures concerning digital technologies policy should be done.

This situation is especially acute due to the negative consequences of the global pandemic, which significantly reduced the number of tourists traveling abroad. This could cause a severe crisis to international travel operators targeting this particular market segment. Certain restrictive measures also require mobility and detachment from the office in order to maintain proper contact with tourists and provide an effective service.

In this case, the use of innovative technologies is a particularly important step to stabilize the enterprise in the market. It is innovative technologies that make it possible to do work outside the office, to do work at any time and to keep effective communication with partners to solve problem situations.

GDS is a digital product that helps agencies and travel operators to do efficient work without being tied to an office, track progress, increase sales, and also select the most suitable options for tourists. This is why we need to analyze

Amadeus' bookings performance, given the current situation. The results can be seen on the Pic. 2.4.



*Fig. 2.4 Amadeus' total number of travel companies air booking*

Source: own elaboration based on [4]

We can see that tourism industry suffered a lot from the consequences of global pandemic of COVID-19. Those negative results can be seen even on the global companies, which provide tourism services all over the world. Thus Amadeus' total number of travel agency air booking declined by almost 82% comparing to 2019 [4].

We need to mention that from 2015 to 2019 Amadeus showed a very stable growth in the number of bookings made by tourist companies. However, according to Amadeus Global Report 2020, in the fourth quarter of 2020 the situation became better, Amadeus air travel agency bookings showed a gradual improvement, supported by both the gross bookings evolution and a continued normalization of the cancellation ratio. Non-air bookings declined by 56% in 2020.

Also, in 2020 Amadeus-commissioned Forrester Consulting study revealed that roughly 74% of over 550 surveyed corporations said that modernizing travel and expense (T&E) processes and tools is key to increasing efficiency in operations, accelerating their digital transformation and improving the experience of employees [4].



This study shows rather positive attitudes of tourism service providers to GDS usage during global pandemic. It helps them to face with consequences, which were caused by drastic decrease in tourists due to flight restrictions, unstable political and social situation all around the world, anti-virus policies and so on.

Amadeus provides travel agencies, operators and travel service providers with the opportunity to sell to corporate and individual customers in more than 210 markets around the world.

According to M. V. Tonkoshkur the Amadeus System used by 64,000 travel agencies and 10,000 airline offices around the world can make a reservations in such fields [46]:

- 1) flights of more than 700 airlines, operating more than 95% of the world scheduled air transportation;
- 2) rooms in more than 60,000 hotels, including 322 global hotel chains;
- 3) car rental of 50 rent-a-car companies serving more 25,000 rental points;
- 4) resources of other providers, including leading railway systems, cruise companies, tour operators, ferries and insurance companies.

Amadeus is represented in more than 210 markets and is the undisputed leader among GDS in Europe and Latin America, with strong positions in North America, Africa and the Asia-Pacific region.

We can say Amadeus is an effective partner and best provider of digital solutions for tourism enterprises, including international tourism operators and its representatives.

## Conclusions to Chapter 2

In this chapter we analyzed main characteristics of Amadeus GDS, its activity and role of the Amadeus' digital solutions for the effective operation of tourism service providers.

Also, the chapter highlighted digital solutions and modules provided by Amadeus in details. The analysis of international tourism operators' market in Ukraine was done: the state of global tourism, trends on the Ukrainian tourism market, analysis of the tour operators' main leaders, indicators of Amadeus activity in the progress from 2015-2020.

We can conclude that Amadeus can be effective tool: to manage tour operators activity; increase the volume of sales; adjust operational process; to reduce costs connected to the labor (the time, which employees spend on the processing of orders decreases); improve product quality, improve the professional competence of employees at a travel company; track the progress of order processing and generate more accurate statistics; quickly adapt to changes in the market and increase the level of competitiveness of a travel company.

Amadeus provide clients with three possible GUI-interfaces: Vista (Amadeus Selling Platform), ProWeb and Start Web Client. They differs in functionality and the aim of the activity for different enterprise's needs. The price for installing Amadeus in the new office – 2240 UAH per year for the basic package.

However, there are lots of other service, which can be provided on the additional payment and form the most appropriate software portfolio of the tour operators. For example, Amadeus One Inventory which can integrate with other tour operators' programs and provide tourism enterprises with the most convenient digital decisions. Such approach can help to form individual set of services based on the need of the particular enterprise.

However, according to the author, in order to significantly improve the efficiency of an enterprise, it is worth practicing the systematic implementation of digital technologies, which is not only GDS, but also other services.

### **CHAPTER 3 THE PROJECT OF DIGITAL TECHNOLOGIES' IMPROVEMENTS IN THE ACTIVITY OF GALEON TRAVEL GROUP AND INTERNATIONAL TOURISM MARKET OPERATORS BASED ON THE USAGE OF GDS “AMADEUS”**

#### **3.1 Measures for the development of future partnership between international tourism market operators and “Amadeus Ukraine” LTD**

As the Global Reservation Systems developed, the quality of services has improved by reducing customer service time, increasing the volume and variety of services offered, as well as opportunities to optimize the loading of airliners, implement a strategy of flexible pricing, the use of new management methods. The high reliability and convenience of these redundancy systems have contributed to their rapid and widespread use.

Nowadays, 98% of foreign tourism companies use booking systems. The disadvantage of the reservation systems is the relative complexity of use, because they arose before the mass spread of the Internet, but now there is an active implantation of the technologies based on the Web interface in the tourism industry.

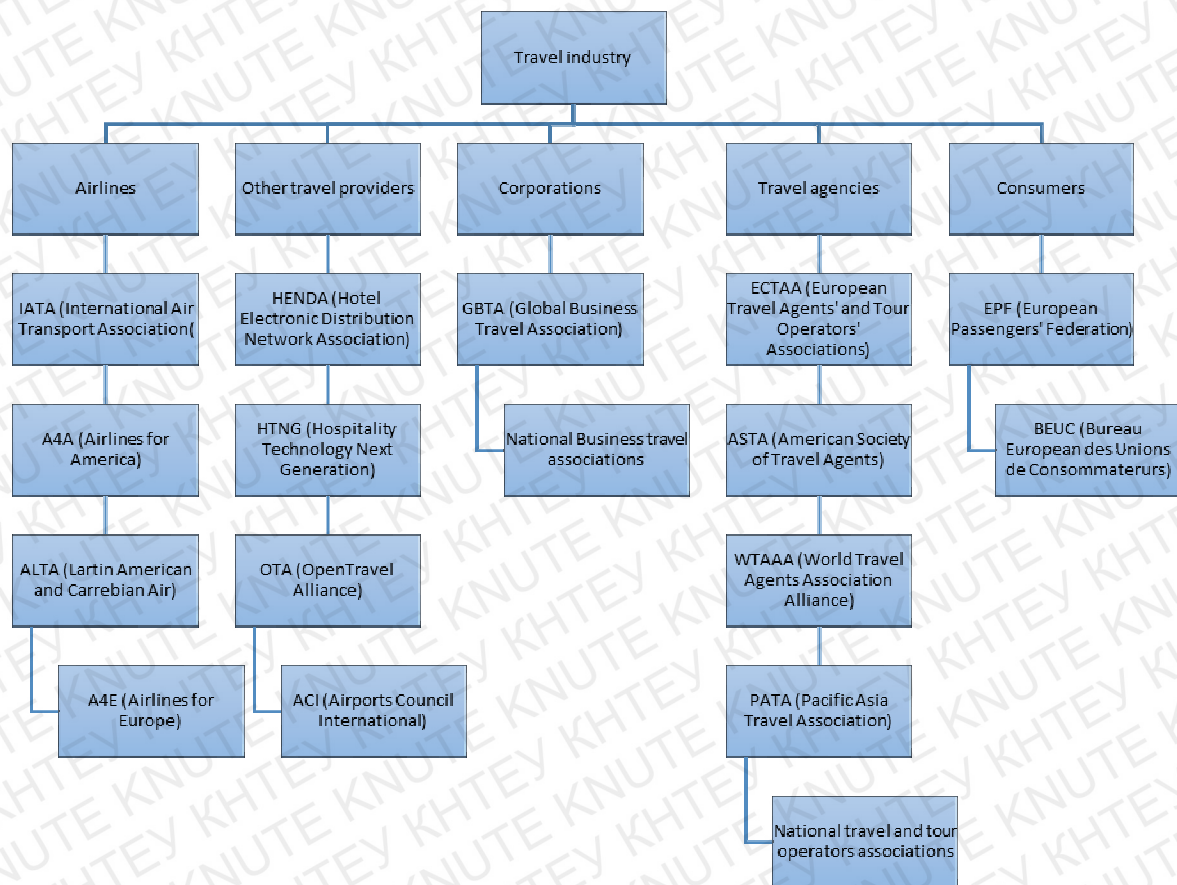
The usage of modern computer booking systems not only opens up new opportunities for more efficient business activity for tourism enterprises and airlines, but also helps to create favorable conditions for the development of tourism all around the world.

The network of partnership, which created by the Amadeus help to involve different market participants. As the result, it unites travel enterprises of all levels all around the world and provides full-service to the customers in the travel



industry. Moreover, Amadeus Software delivers professional and robust travel portal solutions that enable agents deliver complete travel packages efficiently and rapidly [11].

Tour operators and tourism agencies are only one of the participants in the massive partnership network. We can see the main stakeholders of Amadeus in travel industry on the Figure the 3.1.



*Fig.3.1 Main stakeholders of Amadeus in travel industry*

Source: own elaboration based on [6]

We can conclude that international associations, federations and alliances actively participate in the working process of Amadeus, which means that tour operator or travel agency can highly increase their social networking with the help of membership in the National Business or Travel associations.

Our world is changing rapidly, and with it the factors that directly affect the development of the tourism and hospitality industry - from providers of tourism

services to tourists. Today, tourists are striving for personalized approach, clarity in planning and organizing their travel; want to have a wide choice and the ability to compare tourist routes and offers; understand the dynamic pricing structure; have access to the necessary information from any device in real time, in a 24/7 format.

Travel agencies and tour operators in such a situation need instant access to all existing content, as well as processes that allow them to receive complete and accurate information about the available offers of tour operators in a standardized format to compare alternatives for making operational decisions.

Transparency of relationships with partners and tourists, as well as the possibility of close cooperation with tourism service providers, will play an important role in ensuring high quality tourism services [10].

Thus, the entire travel industry is undergoing significant changes. Airlines, hotel chains, railway and cruise operators, and other participants in the market are trying to control distribution processes to be closer to tourists, bypassing the often-long chain of intermediaries, including tour operators and travel agents.

Travel providers are turning into retailers. It means that they are entering the B2C segment, and now they are not willing to pay tour operators and travel agents. This kind of changes can drastically change the tourism industry and put additional issues to the distribution of the aviation content to the customers. The solution to this problem can be a new distribution standard NDC (New Distribution Capability), developed by IATA [25].

Amadeus and other companies specializing in the global distribution of travel content are well aware that the rapidly changing situation in the travel market will eventually lead to serious changes in the business priorities.

It means that Amadeus cannot stay just a GDS system for no longer to effectively adapt in the market. Amadeus currently offers content from 813 airlines (including 104 low-cost airlines), 90 rail operators, 580,000 hotels and 233 tour operators.



This is a huge array of information, which used today by the most progressive tourism enterprises around the world. In 2019, the company took the next step by announcing its Live Travel Space strategy implementation.

Live Travel Space is a marketing strategy standing for the creation of a new marketing ecosystem where all participants in the tourism market can easily interact with each other regardless of the data format (GDS, NDC, API, XML) and others. It will help to combine completely different content: flights, hotels, transfers, railway d, cruises, etc. Now, the strategy carried out in the B2B segment. However, it reflects the current situation in the whole tourism industry, where other travel distributors tries to decrease interaction with tourism intermediaries, such as travel agencies or tour operators.

That is why Amadeus plans to work with a variety of channels and distribution formats, but focus on travel agents and tour operators.

This approach will allow travel agencies and operators to provide tourists with the best range of travel services at the time they need and stabilize the situation on the market.

The milestone of the Live Travel Space ecosystem are modern technologies and a professional workforce of Amadeus, numbering more than 16,000 employees in 190 countries of the world.

The core of the ecosystem is the cloud solution Amadeus Travel Platform, which unites all available standards and sources of travel content. This type of platform will allow tourism operators and travel agencies to receive a variety of information and easily integrate and scale it taking into account the needs of tourists.

Amadeus improved its travel segmentation by dividing its global B2B distribution channels into four main segments: Retail Travel Agencies, Online Travel Agencies, Business Travel Agencies and Corporations.

Each of the segments has unique features, and even the universal digital solution cannot suit all participants in the tourism market.



Amadeus can help partners to meet the needs of tourists by understanding how a specific segment works. Moreover, Amadeus plans to expand its range of software products and solutions not only for each segment separately, but also for hybrid business models, which can drastically improve the financial and marketing positions of the tourism agencies and tour operators.

At the same time, it will be possible to provide a personalized service in any way convenient for a tourist: through mobile devices, a website, SMS or chat bots. It predicted that B2B interface and online agencies would appear, as well as other technologies and communication tools that are already available now, but will improve in the future. Amadeus provide the result across multiple channels and platforms.

M&A processes in the tourism and hospitality industry are creating new types of participants, which offering a full range of travel services and diverse content. Live Travel Space uses the latest information technologies, draws on the experience and knowledge of employees, and practices full openness to the unique solutions of many travel service providers and tourists. That is why partnership with an Amadeus can be a long-term perspective for the better business results, reducing business risks and help to adhere to sustainable development.

The main goal for tourism enterprises, such as travel agencies and tour operator is to be open to the integration of the new technologies. It may require investing in the personnel, changings of the working process, buying additional devices, digitalization of the enterprise. Now there is a trend between tourism enterprises and tour operator to create its' own innovative technologies for the further integration with Amadeus. It helps to attract additional financial flows from the IT travel product, to promote its services, to build effective working system and straighten partnership with an Amadeus.

To sum up, the innovative approaches in the tourism activity can highly improve the outcomes from the partnership with Amadeus. In addition, the partnership can help to adapt to the changing conditions in the market and stay flexible even during the global pandemic.

### 3.2. Main digital innovations concerning the activity of Galeon Travel Group and international tourism market operators

As it was mentioned before, the changing condition in the market lead to the transformation of business process in the tourism industry. Tour operator and tour agencies forced to improve their approaches to the business activity. One of the most effective way to increase business indicators is the usage of digital technologies.

For the Galeon Travel Group, the main point of the digital innovations should be automation of the business process. Amadeus provides dozens of digital solutions, which can reduce the time of processing the order and increase the quality of the work done.

In the certain moment, Galeon Travel Group creates tour options for different directions of the world. It requires the quick and effective cooperation with booking systems and tariffs from the variety of airlines.

Among tourism directions on Galeon Travel Group are: Turkey, Egypt, Sri Lanka, India, Maldives, Indonesia, United Arab Emirates, Thailand, China, Vietnam, Germany, France, Spain, Italy, Cyprus, Greece, Finland, Bulgaria, Montenegro, Croatia and so on.

For example, Amadeus Ticket Changer can reduce time spent on these tasks from 30 minutes to 3 clicks, and with a high degree of accuracy to reduce ADM-related costs [24].

The other one solution, which can highly improve ticketing operations, is Amadeus Solutions. It can fully integrate to the inner resources (programs and systems) of the tour operator, and compatible with Amadeus front-office systems. The main advantages for enterprise to use Amadeus Solutions is the ability to make quality control of PNR, check the changes of the schedules and updates on bookings.

Another direction for the improvement of Galeon Travel Group Tour Operator activity is price policy. As it was mentioned above, there is a tendency for tourist and other travel intermediaries to decrease their intersection with a tour

operators or travel agencies. One of the reasons it is overpriced tourism product with an additional fees, and another reason is the lack of personalization.

Fare Optimizer Solutions directed on the research of the tariffs in the real time. It can analyze changings in prices; look for the drop in prices for destinations and notify tour operators about that [14]. The product stand for dynamic pricing policy and help airfares to fluctuate. There is even an opportunity to rebook the tariff during the drop automatically. This innovation can increase the loyalty of customers, attract new tourists and generate new revenues for the future.

Another option for Travel Galeon Group to automate process is to implement Amadeus B2B Wallet digital product. It can help enterprise to make smart optimize currencies; choose the most appropriate methods of payment [17]. It all can decrease costs and increase revenue of the enterprise.

Another sphere to improve is the analytical work. As it was mentioned above, Amadeus made a detailed segmentation of its clients to increase its revenue. The same works for tourism enterprises as well. With the help of target audience in-depth analysis, it is possible to point out the needs and wants of the clients. It helps to increase the number of sales, obtain stable revenue and predict changes in the market.

Data analysis helps to predict future fluctuations in the market and research on the tendencies amongst clients buying behavior. That is why data analysis is the necessary tool to reducing business needs, adjust working process and form more customer-oriented approach for the enterprise.

Amadeus Agency Insight Search Analysis can efficiently perform as a product for data analysis. Amadeus Agency Insight Search Analysis uses data on hundreds of millions of weekly searches in Amadeus Master Pricer to give you unique insight into changing customer travel interests [1].

It analysis the major trends in the departures, find the most popular routes of tourists, compare popularity of different destinations for the period of time and changes of its actuality.



In addition, this digital technology may help to expand the product line in future and increase customer-oriented approach with the help of personalization of the packages.

Another important thing for the innovation is dynamic tour packaging. Dynamic tour packaging is the formation of tours in real time on the one website, mostly for the requests of a specific user with the actualization of prices and places [44].

The main difference between dynamic tour packaging and traditional packaging is that its pricing is always based on the current availability of incoming services. Dynamic packages are similar in that often flight and accommodation is available only as part of a package or only from a specific retailer. The term dynamic packaging is often used incorrectly and describes the less complex process of changing the various components of a tour within a package [25].

For Ukraine, dynamic tour packaging is relatively new trend, but the technology itself appeared in Europe and the United States more than 10 years ago, where the sale of tours formed thanks to dynamic tour packaging makes up more than half of the volume of all sold tourist products. Transparency and safety make dynamic tour packaging convenient tool for online booking. By the way, in Europe, the implementation of online tours mainly grows precisely due to dynamic tour packaging, because the percentage of online booking of individual tourist services practically does not change and remains at a high level, since the market capacity for growth is practically exhausted. Pic 3.2. reflects the dynamics of the growth of dynamic packaging tours in the general structure of sold tour packages.



*Fig. 3.2. Shares of dynamic and classic packaging in Europe (2011-2015)*

Source: own elaboration based on [13]

A survey conducted by London Economics in 17 European countries identified the main benefits of dynamic packaging for clients:

- 1) the possibility of saving money because of the classic package tours or additional fees the of the tour on different websites (48%);
- 2) the possibility of forming personal tours to exotic and rare destinations (29%);
- 3) increased flexibility in travel planning and transportation options (23%).

Considering the specifics of the Ukrainian market, we will add security to the list of benefits. Head of the commercial department

The Head of Commercial Department, Valentin Vedyakin, in his report on dynamic packaging on the Internet, noted that more than 40% of travelers, thinking about a vacation, but do not have a clear idea of the country they are going to. He believe that pre-formed package tours with a fixed set of services most often do not meet the growing demands of tourists. Technologically, dynamic packaging makes it possible to search and book tours without being limited by the standard search

parameters, thereby creating an individual tour package and many options for recreation routes in accordance with the wishes of a particular tourist.

In addition to simplicity and ease of use, the online service is notable for the fact that it uses the innovative technology of TravelTainment, the patented Fuzzy Logic search algorithm [27].

The algorithm made in such a way that if it is impossible to form a tour in the system that fully meets the tourist's needs and wants, for example, due to the lack of suits in a hotel or flight, then the system independently, without additional requests, will offer the options that are closest in terms of criteria [18].

Thus, the client guaranteed to receive a positive response to his or her request. Due to fast searches and guaranteed availability of seats, the conversion rate of website visitors to buyers is significantly increased.

In addition, agencies get the opportunity to earn on highly profitable additional services, such transfers, insurance and other services, individually provided to the traveler if it is necessary. TravelTainment technologies have proven their relevance and consistency in a challenging economic environment, helping travel companies overcome industry challenges and drive profitability [27]. For Ukrainian companies now is the time to think about new methods and channels of sales and adopt the latest developments that open up broad prospects.

As we can see, there are different methods to improve the business of the tour operator, including Galeon Travel Group. In addition, the enterprise should be adaptive to the changes in the market, because tendencies and new approaches appeared every year and bring new opportunities, competitive advantages and sustainable development. On the Table 3.1, you can see the major Amadeus products and technologies, which should implement Galeon Travel Group in order to be more effective.

*Table 3.1.*

*Main digital solutions for Galeon Travel Group*

| Digital | Functions | Area of | Advantages for the enterprise |
|---------|-----------|---------|-------------------------------|
|---------|-----------|---------|-------------------------------|



| technology               |   | implementation                        |  |
|--------------------------|---|---------------------------------------|--|
| Amadeus Ticket Changer   | Calculates tariff changes automatically | Automation of processes               | Reduce time spent on these tasks from 30 minutes to 3 clicks, and with a high degree of accuracy to reduce ADM-related costs                             |
| Amadeus Solutions        | Control of bookings                     | Automation of processes               | Reduce time spent. Make quality control of PNR, check the changes of the schedules and updates on bookings   |
| Fare Optimizer Solutions | Control of tariffs available            | Automation of processes, price policy | Can increase the loyalty of customers, attract new tourists and generate new revenues for the future   |
| Amadeus B2B Wallet       | Control of financial flows              | Automation of processes               | Make smart optimization of currencies; choose the most appropriate methods of payment. It all can decrease costs and increase revenue of the enterprise. |

*Continuation of the Table 3.1*

|  |   |                                 |  |
|--|---|---------------------------------|--|
| Amadeus Agency Insight Search Analysis | Research of the tendencies on the market        | Analytics                       | Give a unique insight into changing customer travel interests, help to make prediction on changes, be flexible in the market and more customer-oriented. |
| Dynamic packaging                      | Create personalized and customer-oriented tours | Marketing, automation processes | Give an opportunity to form extraordinary product with guaranteed choices for tourist due to the algorithm.  |
| User-friendly website                  | Attract new customers and presents the company  | Marketing                       | Give a positive digital experience for tourists, can increase the volume of sales and strengthen the brand.  |

Source: own elaboration

We need to mention the creation of the user-friendly website, which can highly increase the revenue and help to attract new target audience. The current website is not user-friendly and has lack of usability. However, websites of tourism companies it is one of the milestones for the proper marketing system. In addition, Amadeus digital solutions can interact with inner resources of the enterprises, which can increase the flow of tourists and financial assets.

3.3. Effectiveness evaluation of implementation of digital technologies’ improvement in the activity of international tourism market operators and “Amadeus” LTD

Computer-based booking systems showed major effectiveness in the tourist services market. In order to attract tourism companies (travel agencies and tour operators), companies, which provide digital solutions, have expanded the range of solutions, make it possible to make hotel reservations, car rental, air passenger insurance, ticketing in one place.

Such computerization of travel agencies' and tour operators' activities has significantly increased their productivity.

Reservation systems, such an Amadeus, supply travel agencies and tour operators with special packages that include these programs and, of course, special equipment for carrying out activities.

The interaction of the tour operator with computerized booking systems creates the next opportunity:

- 1) to integrate and communicate with a tourism industry;
- 2) prove effective management for their business activities;
- 3) to increase the volume of sales and bring new products for the tourism market;
- 4) manage effective planning;
- 5) adjust flow of tourism;
- 6) make an in-depth analysis of the tourism market and predict changes on the market.

Due to Skibitsky O.M., information technology and microprocessor technology must provide an effective solution to the main goal of the enterprise, its development and competitiveness in general, solving problems of effective accounting and auditing, economic and marketing analysis, quality service and time savings in tourism [42].

The degree of automation of the tourism industry depends on the total amount of services provided, their structure and cost, quality characteristics, which, ultimately, determines the survival of the tourism market in a competitive environment. This makes it difficult to determine the effect of automation on the tourism enterprises [22].

Efficiency means the ability of the management system to make it functions properly and adjusting working flow. However, we can also perceive it as a reduction in the cost of using the computerized systems in relation to the investment made for the implementation of such a system. Unfortunately, such an approach cannot fulfill all of the sides of the measurement of GDS implementation on the enterprise.

Researchers think that effectiveness of the management can be measured in the improvement of information efficiency per one specialist, i.e. in the growth of personnel productiveness and in the reduction of costs associated with the processing of the one unit of information (for example, one booking). In their



opinion, indirect efficiency is essential. It achieves because of the better performance of standard operations, disclosure of internal reserves, and so on [43].

As the business moves from the production of goods or items to the production of services, the ability to increase efficiency becomes essential for the productivity and quality of the results. However, the sum of dozens information procedures may not add up to effective information services [21].

The economic effect of the usage of digital technologies by the company means the production result achieved through the implementation of innovative technologies. The corresponding calculation of economic efficiency involves comparing the positive effect or revenue with the cost of implementing new digital solutions and innovations.

The introduction of GDS and other digital technologies in the tourism industry and in the market is associated with material costs (capital investments, operating costs).

An important point of implementing personal computers and computerized networks, GDS or other digital technologies in the tourism business is the hardships in assessment on each and one enterprise. Those indicators may include high variability from enterprise to enterprise.

Since the costs of usage of computerized systems are one-time, insofar as they are in their economic essence are additional capital investments in the circulation of funds and other tangible assets.

At the same time, the evaluation of the efficiency of real investment projects should be carried out by comparing the amount of investment costs and amounts and terms of return on invested capital, which cover the entire set of resources used, as non-reflection of indirect costs makes it impossible to compare the efficiency of the project.

In addition to the cost of purchasing computer equipment, you should consider investments in intangible assets – the cost of developing (purchasing) software, staff training and system maintenance.

Estimation of economic efficiency of GDS can make from 1 to 2% of cost of the project, however, the received results well "fit" into traditional methods of an estimation of efficiency of investment projects, providing construction of their "profitable" part [38].

In the scientific literature, there are two main approaches to determining the economic efficiency of automation of enterprise management [36].

First, it is an assessment of the effectiveness of these measures as a direction, albeit specific, new technology in production. This calculation based on all the main factors adopted in the general method of determining the economic efficiency of capital investments and new equipment.

The second approach characterized by measures, which aimed at the creation of the original methodology for economic justification of management automation. Thus, various mathematical-logical and cybernetic constructions proposed for the further usage, which, according to their authors, reflect the quantitative dependence of economic results achieved in economic and production activities of the enterprise on improving the quality of management, information properties of the system and appropriate management.

The quality of computer information systems usage determined by their efficiency and reliability. The efficiency of the GDS determined by the growth rate of annual income, where one of the most important indicator is the reduction of labor costs (reduction of labor intensity).

In accordance with methods e analyzed such generally accepted economic indicators used for the evaluation of computerized systems implemented: payback period, profitability index, net discounted income, internal rate of return. However, decisions on the validity of the system implementation should be made from the all of the information and indicators obtained during analysis. It should be noted that not all these techniques give a reliable idea of the results in the calculation period.

Jasmina Jović, Predrag Radovanović, Cvetko Andreeski conducted a survey of representatives of 118 travel agencies [12]. The agencies were divided into different groups, reflecting the following criteria:

- 1) the size of the enterprise (small enterprises, medium and large).
- 2) the nature of tourism activities (local, regional, national and international agencies).
- 3) the number of travel agency offices (1, from 2 to 5, more than 5)
- 4) the total number of employees in the enterprise (from 1 to 5, from 6 to 20, from 21 to 50, more than 50).
- 5) the scope of business operations in which the company is engaged (organization of services in tourism, mediation in the provision of travel services, organization and mediation in the provision of travel services)
- 6) services provided by agencies.

The main purpose of this survey was to confirm the correlation between the introduction of GDS in the activities of a tourism company and the increase in the number of sales, the economic efficiency of the enterprise.

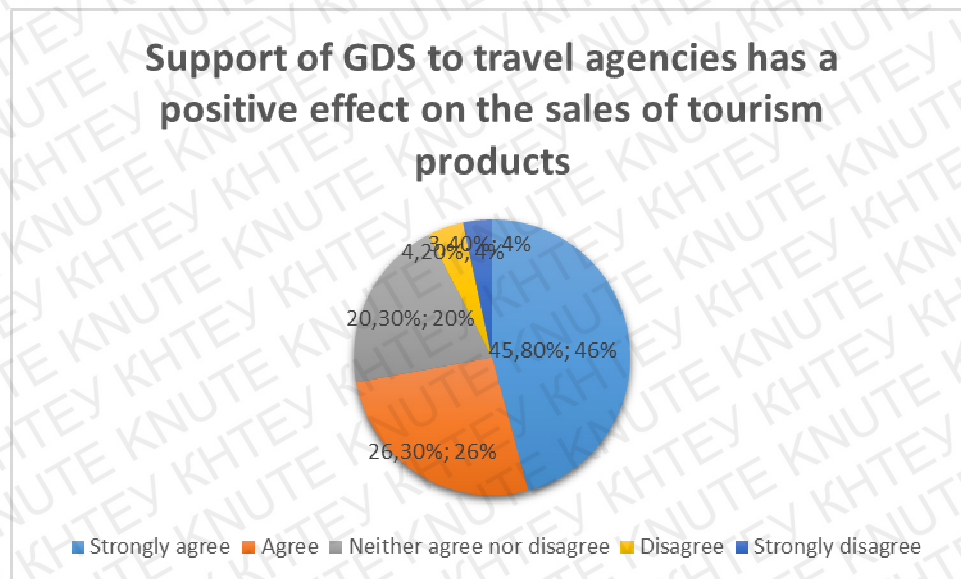
The main question of the survey formulated in the next way: "Support of GDS to travel agencies has a positive effect on the sales of tourism products".

Participants can choose the next answers:

- 1) Strongly agree;
- 2) Agree;
- 3) Neither agree nor disagree;
- 4) Disagree;
- 5) Strongly disagree.

We can provide the results of the survey on the Pic.





*Fig.3.1 Percentage of respondents (employees of tourism enterprises)*

Source: own elaboration based on [12]

As we can see, the majority of participants responded positively – 72, 1%. (48, 80% – strongly agree; 26, 30% – agree). That is, we can say that tourism enterprises, obviously, trace a correlation between the implementation of GDS in their business processes and an increase in the sales of tourism services, and, therefore, an increase in the economic efficiency of the enterprise.

We can say that the proper implementation of GDS into the working flow can increase performance on different level: operational performance; management; financial performance; boost the loyalty from the customers; reduce the number of monotonous work done by employees.

### **Conclusions to The Chapter 3**

We analyzed what partnerships with Amadeus and travel operators might look like in the future. It is worth noting that now other intermediaries in the tourism market (such as airlines or hotels) are trying to reduce the number of interactions with tourism enterprises, since this brings additional losses for them.

That is why other market participants are actively using digital technologies and marketing services to promote their products without the middle. Complicating matters is the fact that customer requests have become much larger lately.

Therefore, for example, tourists want more flexibility from tours, more choice of destinations, different dates and places of settlement. Tour operators are not always able to meet the needs of their clients due to the lack of flexibility in their systems, which is why they lose their competitive advantages.

Amadeus proposed a new form of market ecosystem that could support travel agents and tour operators. However, this requires the active introduction of new digital technologies on the part of enterprises. Galleon Travel Groups require a lot of innovation in order to significantly increase their efficiency (both sales volume and order processing speed).

GDS are the primary basis for the efficient operation of the tour operator, as well as the side solutions that they provide. To improve the processes at the enterprise, a comprehensive implementation of innovations is required: from investing in innovations, to their correct implementation in the internal resources of the enterprise, to training employees and building management.

It should be noted that the effectiveness of innovation is difficult to measure exclusively by economic indicators, since often innovations increase the efficiency of human capital. In addition, one should take into account the level of services provided and the long-term impact of technology on the development of the enterprise.

## CONCLUSION

We have studied the issue of innovations in the tourism sector, in particular the implementation of GDS in the work of tour operators.

This issue is becoming more and more relevant, since the tourism sector has a high level of competition and requires enterprises to adapt to changes in the market rapidly. The travel industry is rapidly changing with the arrival of new players: online agencies, GDS, aggregator sites for the selection of tours, online services for the provision of travel services.

In the first chapter, we studied the theoretical foundations of innovations in the tourism sector, their types, essence, main features, and applications. The main digital trends are: Big Data and Analytics, Internet of Things, Cloud Technologies, CPS (Cyber-Physical systems), Augmented Reality (AR)/Virtual Reality (VR).

CPS are one of the most perspective technologies for the tour operators, since it increase the level of productivity of tourism personnel, help to book flights, make dynamic packaging and provide access to all type of content available on the Internet. GDS are one of the type of CPS and presented by such worldwide-known GDS as Galileo, Amadeus, Sabre and so on.

In the second chapter, we examined in more detail GDS Amadeus, the digital solutions provided by the company, and analyzed the company's position in the modern travel services market. An analysis of the Ukrainian market of international travel operators was also carried out.

Amadeus digital solutions can: increase the level of competitiveness of the enterprise, establish processes in the company, reduce the amount of time for processing an application, improve the quality of the work done, create a more personalized product, influence customer loyalty, conduct market analysis, and provide dynamic pricing for partners.

It is worth noting that the Ukrainian tourist market has been severely affected by the pandemic, and businesses require additional measures in order to



maintain their positions and continue to support business activity. This, in turn, requires innovation and a change in business practices.

In the third chapter, we explored the possibilities of implementing digital practices from Amadeus at the Galleon Travel Group. The features of Amadeus' business partnership with travel operators were analyzed, and possible technologies that could be introduced at the enterprise were proposed.

It should be noted that research on the effectiveness of the implementation of innovative technologies is difficult due to the complexity of the impact of innovation on the enterprise. Therefore, for example, not always the positive impact of innovative technologies can be measured by an increase in the level of sales, but also by the quality of work of employees, an increase in the level of customer loyalty, and so on.

We can say that the tourism industry has many challenges, including the forthcoming Fourth Technological Revolution, which could potentially change the market.

That is why it is necessary to introduce innovations in tourism enterprises, since now there are tendencies for a decrease in the share of travel operators and travel agents in the travel services market. People want more personalized products, more mobility in dates and destinations. It is necessary to take into account the changing needs of tourists, as well as propose new solutions for business.

## REFERENCES

1. Agency Insight Search Analysis. Amades Website. URL: <https://amadeus.com/en/portfolio/tour-operators/agency-insight-search-analysis> (retrieved from 17.09.2021)
2. Amadeus Corporate Information, Corporate performance. Amadeus Corporate website. – 2020. URL: <https://corporate.amadeus.com/documents/en/resources/corporate-information/corporate-documents/global-reports/2020/corporate-performance.pdf>
3. Amadeus Fare Optimizer// Amadeus Website. URL: <https://amadeus.com/documents/en/tour-operators/sales-sheet/fare-optimizer-sales-sheet.pdf> (retrieved from 17.09.2021)
4. Amadeus Global Report 2020. Amadeus Corporate website. – 2020. URL: <https://corporate.amadeus.com/documents/en/resources/corporate-information/corporate-documents/global-reports/2020/amadeus-global-report-2020.pdf>
5. Amadeus One Inventory// Amadeus: website. URL: <https://amadeus.com/en/portfolio/tour-operators/one-inventory> (retrieved from 17.05.2021)
6. Amadeus Partnership//Amadeus Website. URL: <https://amadeus.com/en/partners> (retrieved from 13.09.2021)
7. Amadeus Selling Platform Connect//Amadeus: website. URL: <https://amadeus.com/en/portfolio/retail-travel-agencies/selling-platform-connect> (retrieved from 17.05.2021)
8. Daniel R. A. Schallmo & Christopher A. Williams, "Digital Transformation Now!"/ /Schallmo R.A Daniels & Williams A. Chritopher//Briefs in Business Springer. – 2018. – № 978-3-319-72844-5



9. Digitization, digitalization and digital transformation: the differences//i-SCOOP website. URL: <https://www.iscoop.eu/digitization-digitalization-digital-transformation-disruption/> (retrieved from 09.04.2021)
10. Fares and Pricing// Amadeus: website. URL: <https://amadeus.com/en/portfolio/airlines/fares-and-pricing> (retrieved from 17.05.2021)
11. Itinerary Amadeus// Tripfo Website. URL: <https://www.tripfro.com/itinerary-amadeus.php> (retrieved from 17.09.2021)
12. Jović J. & Radovanovic P. & Andreeski C. The impact of global distribution systems on travel agencies business efficiency. J. Jovi. & P. Radovanovic & C. Andreeski //HORIZONS. – 2016. – p. 187-201.
13. Korže Saša Zupan. From Industry 4.0 To Tourism 4.0//Innovative Issues and Approaches in Social Sciences. – 2019. – Vol.12. – pp. 29-52. DOI: <http://dx.doi.org/10.12959/issn.1855-0541.IIASS-2019-no3-art3>
14. Marmer L. Live Travel Space – a new ecosystem of Amadeus [Internet]. Available at: <http://tourbus.ru/hotline/161.html>. Accessed May 18, 2019. (In Russ.)
15. Master Pricer// Amadeus: website. URL: <https://amadeus.com/en/portfolio/retail-travel-agencies/master-pricer> (retrieved from 17.05.2021)
16. Mazzone D.M. Digital or death: digital transformation: the only choice for business to survive smash and conquer// Smashbox Consulting. – 2014. – 166 p
17. PayOut: Amadeus B2B Waller//Amadeus Website. URL: <https://amadeus.com/en/business-function/payments/b2b-wallet>
18. Pulugurta S. Madhu E. Kayitha R. Fuzzy Logic–Based Travel Demand Model to Simulate Public Transport Policies./ S.Pulugurta, E.Madhu, R. Kayitha. Journal of Urban Planning and Development. – 2015. – №4
19. Report Digital Transformation Initiative. Executive summary//World economic forum: website. URL: <http://reports.weforum.org/digital->



[transformation/wp-content/blogs.dir/94/mp/files/pages/files/dti-executive-summary-20180510.pdf](https://www.dti.gov.uk/transformations/wp-content/blogs.dir/94/mp/files/pages/files/dti-executive-summary-20180510.pdf)

20. Shmarkov, M.S. & Shmarkova, L.I. & Shmarkova, E.A.. Digital technologies in the organization and management of tourist organizations// 1st International Scientific Conference "Modern Management Trends and the Digital Economy: from Regional Development to Global Economic Growth"// Advances in Economics, Business and Management Research. – 2019. DOI: <https://doi.org/10.2991/mtde-19.2019.18>
21. Shpyrnya O.V, Minchenko V.G. Sales technology in the tourism industry. Krasnodar, Kuban State University of Physical Education, Sport and Tourism, 2012. 200 p. (In Russ.)
22. Shpyrnya, O.. (2019). Amadeus company's activity strategy in the market of tourist services. Scientific bulletin of the Southern Institute of Management. 100-104. 10.31775/2305-3100-2019-3-100-104.
23. Tourism and COVID-19. UNWTO: website. URL: <https://www.unwto.org/tourism-covid-19>
24. Travel agencies and tour operators recover faster with the help of automation//Amadeus Website. URL: <https://amadeus.com/en/insights/blog/travel-agencies-tour-operators-recover-faster-automation> (retrieved from 17.09.2021)
25. Travel Agents Could Lose Out in the Dynamic Packaging Battle. First Conference Ltd. 2005. URL: <https://web.archive.org/web/20050206213800/http://www.eyefortravel.com/index.asp?news=44726>
26. Travel and Booking APIs for Online Travel and Tourism Service Providers//Alexsoft: website. URL: <https://www.altexsoft.com/blog/engineering/travel-and-booking-apis-for-online-travel-and-tourism-service-providers/> (retrieved from 09.04.2021)

27. TravelTainment Amadeus Finals 2015. Amadeus Website. URL: <https://www.amadeus.ru/products/doc/TravelTainmentAmadeusMITT2014final.pdf>
28. Zsarnoczky M. The digital future of the tourism & hospitality industry//Boston Hospitality Review. – 2018. – № 6. – pp. 1–9
29. Брич. В. Я. Туроперейтинг: підруч. / за заг. ред. д.е.н., проф. В. Я. Брича. – Тернопіль : Екон. думка ТНЕУ, 2017. – 440 с.
30. Використання інноваційних технологій в галузі туризму: монографія / Зайцева В.М., Гурова Д.Д., Корнієнко О.М., Кукліна Т.С., Журавльова С.М. – Запоріжжя: Дике Поле, 2015. – 144 с
31. Галеон Тревел Груп на Печерську (GTP)// GTP: website. URL: <https://gtp.com.ua>
32. Джинджоян В.В. Впровадження продуктових та процесних інновацій у збутову діяльність туристичних підприємств. Інвестиції: практика та досвід. – 2018. – № 9. С. 39–45.
33. Заневська Л. Глобальна дистрибутивна система (GDS) AMADEUS: лекція №13. Л. Заневська//Репозитарій Львівського державного університету фізичної культури. – 2016. URL: <http://repository.ldufk.edu.ua/bitstream/34606048/4810/1/%D0%9B%D0%B5%D0%BA%D1%86%D1%96%D1%8F%20%D0%90%D0%9C%D0%90%D0%94%D0%95%D0%A3%D0%A11-1.pdf>
34. Кількість суб'єктів туристичної діяльності. Державна служба статистики України website. URL: <http://www.ukrstat.gov.ua>
35. Муровцев А. My Helpdesk: все для удобства агентов / А. Муровцев // Украинский туризм. Приложение “Расширяя горизонты”. Киев. – 2012. – № 2. – с. 12-13. URL [http://www.amadeus.com/ua/documents/aco/ua/ru/am\\_3\\_2012\\_web.pdf](http://www.amadeus.com/ua/documents/aco/ua/ru/am_3_2012_web.pdf) (retrieved from 15.05.2021)
36. Никифорчин М. Д. Суть та основні поняття операційної ефективності в діяльності підприємства / М. Д. Никифорчин // Науковий вісник



- Херсонського державного університету. – Херсон. – 2013. – №3. – С. 88–92.
37. Основні напрямки туризму 2013–2019. UNWTO: website // URL: <http://www2.unwto.org> (retrieved from 21.05.2021)
38. Осокіна А. В., Чичкан-Хліповка Ю. М. Теоретико-прикладні аспекти управління операційною ефективністю підприємства // Чернігівський науковий часопис. Серія 1. Економіка і управління. – Чернігів, 2015. – №1 (6). – С. 46-56.
39. Піщуліна О. Дві сторони цифрових технологій: "цифрова диктатура" або збереження стійкості//Разумков-центр вебсайт. – 2019. URL: <https://razumkov.org.ua/statti/dvi-storony-tsyfrovykh-tekhnologii-tsyfrova-dyktatura-abo-zberezhennia-stiikosti/>
40. Роскладка Н. О. GDS-тур як інструмент оптимізації продуктового портфеля туристичного підприємства / Н. О. Роскладка, А. О. Врона // Проблеми системного підходу в економіці. – 2019. – Вип. 4. – С. 100-106. – URL: [http://nbuv.gov.ua/UJRN/PSPE\\_print\\_2019\\_4%282%29\\_16](http://nbuv.gov.ua/UJRN/PSPE_print_2019_4%282%29_16)
41. Сазонець О. М. Інформаційні системи і технології в управлінні зовнішньоекономічною діяльністю: навч. посіб. / О. М. Сазонець. – К. : «Центр учбової літератури». – 2014. – 256 с.
42. Скібіцький О.М. Економічна ефективність впровадження автоматизованих систем управління в підприємствах готельно-ресторанного і туристичного бізнес / О.М. Скібіцький // Економіка та управління підприємствами. – 2018. – №18. – С. 347-354.
43. Скопень М. М. Інформаційні системи і технології в готельно-ресторанному та туристичному бізнесі: підручник / [М. М. Скопень, М. К. Сукач, О. П. Будя, О. І. Артеменко, Л. А. Хрущ]. – К.: Ліра-К. – 2017. – 764 с.
44. Стахова Людмила Вячеславовна Преимущества использования динамического пакетирования туров для отрасли и бизнеса // Сервис +. 2016. №3. URL: <https://cyberleninka.ru/article/n/preimuschestva>



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(дата обращения: 21.09.2021)

- 45.Ткаченко Т. Вплив глобальних дистрибутивних систем на розвиток сучасного туристичного бізнесу / Т. Ткаченко// Економіка та держава. – 2018. – № 6 – С. 56-59.
- 46.Тонкошкур М. В. Конспект лекцій з навчальної дисципліни «Технологія міжнародної туристської діяльності» (для студентів денної та заочної форми навчання напряму підготовки 6.030601 – «Менеджмент») / М. В. Тонкошкур; Харків. нац. ун-т міськ. госп-ва. ім. О. М. Бекетова. – Харків : ХНУМГ ім. О. М. Бекетова. – 2018. – 146 с.
- 47.Урядовий портал. Постанова КМУ про затвердження Стратегії розвитку туризму та розвитку курортів на період до 2026 р. URL: <https://www.kmu.gov.ua/ua/npas/249826501>.

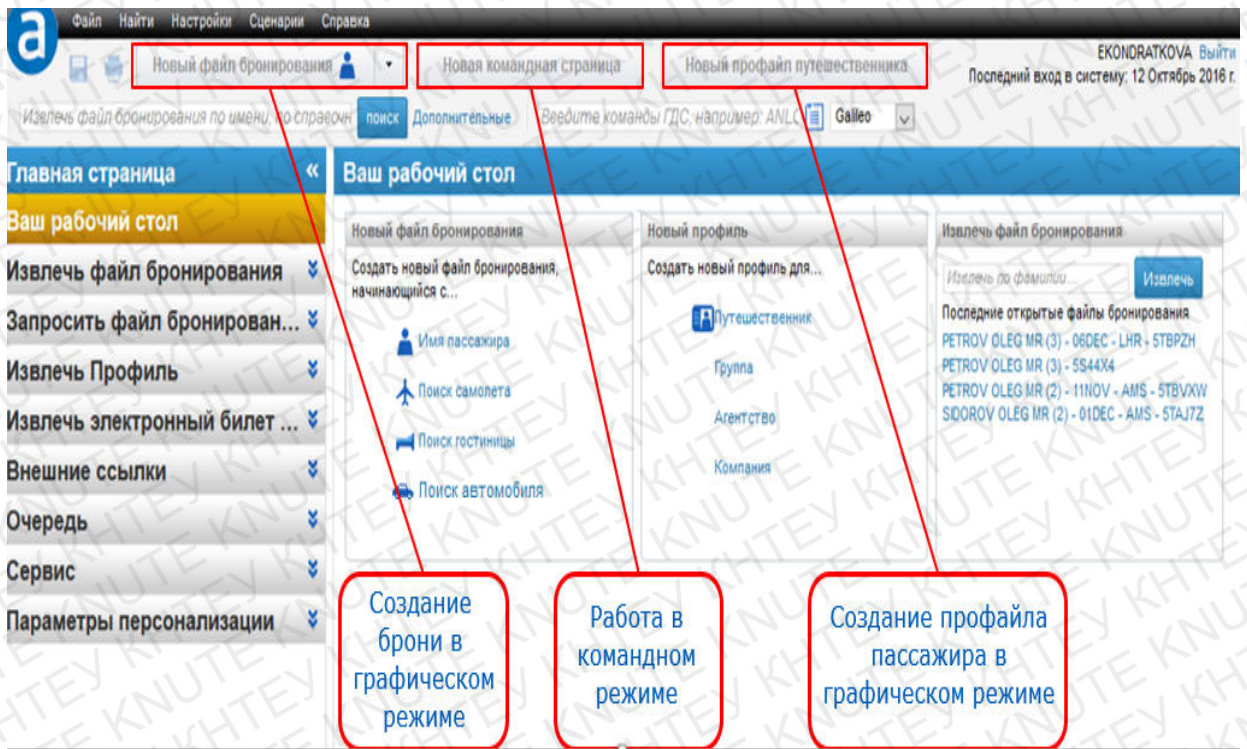
## APPENDICES

*Appendix B*

| Big Data and Analytics   | Internet of Things  | Cloud Technologies   | Cyber-physical systems   | Augmented Reality   |
|--|---|--|--|---|
| Big Data or big data are structured or unstructured large volumes of data. They are processed with special automated tools to be used for statistics, analysis, predictions and decision making. | The Internet of Things (IoT) connects devices into a computer network and allows them to collect, analyze, process and transmit data to other objects through software, applications or technical devices | Cloud technologies are technologies for using server resources with the simultaneous launch of a large number of virtual servers, independently of each other. Interruptions to one server will not affect other servers, ensuring overall uptime. In addition, cloud technologies make it possible to uniformly regulate and pay only for the resources used, without overpayments. | CPS consist of connected physical and computing components and operate at the junction of the real and virtual worlds, ensure their interaction and effective management of a variety of technologies - smart cities, automated production management systems, energy, Big Data, Internet of Things IoT, artificial intelligence and others. | Augmented reality (AR) is a technology that allows information to be integrated with real world objects in the form of text, computer graphics, audio and other representations in real time. Information is provided to the user using a heads-up display, augmented reality glasses or helmets (HMD), or other form of human graphic projection (such as a smartphone or projection video mapping). |



## Appendix C



Menu of Amadeus Selling Platform Connect



APPENDIX D

