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JUSTIFICATION OF THE CHOICE OF INFORMATION AND COMMUNICATION TECHNOLOGIES BY TOURISM ENTERPRISES

The article analyzes the information and communication technologies used by enterprises in the tourism sector to ensure the efficiency of their operation and increase competitiveness. It has been established that each of the types of enterprises is characterized by the use of both specially developed and universal software. This approach is also explained by the fact that for certain components of the internal environment, for example, marketing or finance, universal software can be used, and for the operating room - something that takes into account the specifics of the tourism business. It was determined that in connection with the war in Ukraine, business owners faced the question of replacing software with domestic products, or world-famous ones. To justify the choice among the existing variety and, taking into account the opportunities of the business, the method of weighted assessments was used, which provides an objective assessment and selection of optimal software for travel operators and agencies, hotels, restaurants.

Key words: *information and communication technologies, tourism, hotel, restaurant, software.*

Formulation of the problem. In modern conditions, the role of information and communication technologies (ICT) is growing significantly, which is explained by their importance in the formation and increase of the competitiveness of the tourist enterprise. Tourism business can be considered one of those that actively uses ICT in its own business activities. Moreover, thanks to ICT, there is effective interaction between consumers and the enterprise, between suppliers and the enterprise, as well as between other participants of the tourism market.

Information and communication technologies are very dynamic, which determines their constant development and the emergence of new innovative technologies. Among their great variety, an important role belongs to software, since business automation not only increases the effectiveness of all areas of business, but also allows to minimize errors in work. Planning and forecasting, as well as the CRM system, have become permanent components of such software. At the same time, the war, in addition to great destruction and negative consequences, also had large-scale consequences of an economic nature. In terms of software, a large part of the domestic business used the software of the aggressor country, it is worth mentioning the very popular 1C or Bitrix24. Many such developers, in connection with the war, in order not to lose customers, began to change the country of registration (for example, Iiko-Syrve). Therefore, the question of not only replacement, but also the choice of the optimal software to meet the requirements of a particular enterprise becomes especially relevant.

Analysis of recent research and publications. The use of information and communication technologies is a problem that interests many scientists both in Ukraine and abroad. The number of researchers working in this field is increasing every year, which is also explained by the development of the technologies themselves, the appearance of radically new types of them. Among domestic scientists, it is worth mentioning S. Melnychenko [1], V. Pasichnyk [2], V. Mahovka [3], N. Dekhtyar [4], among foreign scientists – Buhalis, D. [5], O'Connor P. & Murphy J. [6] and others. Much attention is paid to the implementation of software, modern types of ICT and the efficiency of their use. Despite a significant number of publications in this area, the issues of optimal software selection remain in need of further research.

Formulation of the purpose of the article. The purpose of the research is the analysis of information and communication technologies that can be implemented in the activities of tourism business enterprises.

Presentation of the main research material. Tourist operators and travel agents, as one of the tourism

enterprises, use various software products in their activities, each of which is aimed at solving the corresponding task or is multitasking. For each of these types of enterprises, there are both specialized and unified technologies. To a large extent, it depends on the type of enterprise (tourist operator or travel agency), size, financial capabilities and availability of relevant specialists. Because some ICTs require significant costs, both time, human, and financial.

Analyzing the tourist market of Ukraine, it should be noted that as of the beginning of September 2022, the number of tourist operators specializing in domestic tourism remained unchanged compared to the previous period, i.e., 363 enterprises continue their own business activities [7].

At the same time, if we consider tourist operators engaged in the organization of domestic and outbound tourism, then in this category there was a significant reduction (by 13%), which, in turn, was reflected in the amount of income, which decreased by more than 20%.

If we examine information and communication technologies used by tourism operators of Ukraine, it is worth noting that this type of enterprise uses specialized software for its operational activities, as a type of ICT. That is, a system that allows you to connect all travel service providers, work with travel agencies and fully provide all areas of activity. The year 2022 became an impetus for domestic developers of specialized programs, and 2023 will be able to fully satisfy the demand with domestic offers. At the same time, most companies used the software of the aggressor country, which appeared on the market of tourist services in the early 90s. In particular, the most common software solutions were SAMO-Tour and Master-tour (more than 60% of companies used them). At the same time,

The peculiarity of these programs was that they are aimed at the formation of tourist products, dynamic pricing, automation of routine processes, quotas and price formation, optimization of online orders, work with travel agencies and financial and accounting.

The cost of such software varies from the specialization of the travel operator, the number of destinations offered for sale and the company's financial capabilities. In addition, this type of program, as one of the types of ICT in tourism, is easily integrated with the IT-Tour and Vacation system for data transmission. Tourism enterprises faced an acute problem regarding ICT and their use, since many software products were created and provided by Russian developers (Table 1).

So, as can be seen from the data in the table 1, domestic ICT developers have every opportunity to develop and capture the market. Tourist operators have great potential for development in the future, which means that ICT will be relevant for them.

Information technologies, such as specialized programs for travel operators, also have the ability to integrate with GDS (global distribution systems), which have a wide range of possibilities in booking tickets (air, rail, etc.) on board any airline, hotel reservations are also available, car rentals, cruises and booking tickets for various events. There are four GDSs in the world: Amadeus, Worldspan, Galileo, Sabre. Each of them has the ability to implement the corresponding booking, but the key difference, however, is the geographical coverage and basing of the different airlines.

In accordance with the Licensing conditions for the implementation of tour operator activities, enterprises of this type must necessarily have a website, which can be considered as a type of ICT, as it allows communication between the enterprise and consumers. Taking into account all indicators of a convenient and useful website, an analysis of the activity of visitors on the website of key tour operators of Ukraine was carried out, the indicators of which are shown in Table 2.

Accordingly, we can observe how the war affected the reduction of potential demand, how much even familiarization with the offers of leading tourist operators fell. As for ICT, for effective communication and ensuring business activities, travel agencies have a personal office on the website of the respective travel operator. In addition, if the travel agent cooperates with several travel operators, it is advisable to use special programs. In particular, CRM (Customer Relationship System) is very popular among representatives of the tourism business.

The most popular among Ukrainian travel agencies are МоїТуристи (for example, Tour&Tickets), IT-Tour (for example, Sea of Tours), ITERIOS (Join Up!, Mer-Ka-Ba).

If we analyze ICT in the hotel business, these accommodation establishments also actively implement them in their business activities. Today, hotels in Ukraine use several programs for hotel enterprises: Fidelio and Opera (typical for large hotels and global hotel chains, such as Hilton), B52, EasyMS, Servio.

For comparison, let's compare several offers for hotels (Table 3).

Table 1

Software in need of replacement for tourism enterprises

Scope of application	Name	Domestic analogues
CRM, accounting and selection of tours	1C; AmoCRM; Bitrix24; Qui-Quo; САМО-софт; САМО-турагент; Мастер тур; Мастер-Агент	ТІТБІТ; МоїТуристи; ITERIOS; Оверія-Туризм
For hotels	Shelter; Travelline; OtelMS; Bnovo; Эдельвейс	Servio; B52;EasyMS; SmartPlanet
For restaurants	Iiko; R-Keeper	Poster; Ultra; Profit Solutions; Servio; SkyServicePOS; Chameleon POS
Chat bots	Cleversite; JivoSite	Pipe.bot; Corezoid; KwizBot; Skibble

Source: [8]

Table 2

Indicators of visitor activity on the site

Tour operator	Average length of stay on the site, min		Number of pages viewed	
	2021	2022	2021	2022
Coral Travel	7:34	2:27	4,08	2,8
Tez Tour	6:16	4:43	4,75	3,56
Annex Tour	9:37	1:56	7,22	3,45
Travel Professional Group	4:27	2:46	5,58	2,06
Join Up!	9:58	5:43	4,59	3,88
PEGAS Touristik	6:04	2:34	3,95	1,8

Source: [9]

Table 3

Comparative characteristics of hotel management

Name	Benefits	Disadvantages
Fidelio	Data on customers are combined into profiles stored in a single database, where the possibility of an unlimited amount of information about the guest is provided. Additional information about the guest (for example, the degree of importance of the client, his type of activity, the company's market share, information about payment methods). Working with active and inactive guest profiles	The high cost, which is especially difficult for small hotels, as well as certain difficulties (initial) when working with the system (that is, it is a little more complicated compared to, for example, cloud versions)
Servio	Optimal use of the number pool. Effective hotel management system. Availability of various modules. Hint system. Data protection. Integration.	The shortcomings of this system, according to the results of reviews, include the work of technical support. However, these are subjective assessments of certain users
Ultra	Consideration of national legislation and international standards. Accessibility for users. High quality. A large dealer network	It can be attributed that certain difficulties may arise when working with a large number of numbers

Modern ICTs become reliable assistants in hotel operations, simplifying routine work and increasing their own efficiency. In addition, it is worth noting that the use of ICT allows you to improve relations with customers, increase the productivity of staff and be better than competitors.

The restaurant business has always attracted consumers, thereby creating demand for both new types of dishes and technologies for their preparation, as well as technologies for ordering services. However, it is impossible not to use modern advances, especially if they make work easier and achieve better results.

Food establishments, including restaurants, are active users of ICT. It is very important to note that the automation of the restaurant business allows you to optimize the operation of the establishment, thereby avoiding unnecessary costs and predicting operational activity. The main task facing relevant ICT is to increase the efficiency of the restaurant, avoiding additional costs and optimizing the work of all participants. The introduction of ICT allows both to improve the quality of services and to ensure an appropriate price.

In modern conditions, the restaurant business actively uses ICT, where many participants used software that has lost its relevance. Along with this, there are enough developers on the domestic market that fully provide catering establishments with appropriate technological solutions. It is worth mentioning the restaurant software Poster, Ultra, Servio. Each of them has a number of advantages, and the cost and functionality find the right user.

For example, Poster POS, which simplifies running a restaurant business and provides full-fledged operations: online cash register, warehouse, finance, analytics and CRM, works in the cloud, supports PRRO – costs from UAH 480 per month [10]. The developers of Ultra for restaurants offer services from UAH 319 per month [11].

Restaurants and similar food establishments must use modern ICT, as this type of business is developing at a very fast pace. An example of such use are institutions in Singapore and Japan, where VR and AR technologies are actively implemented, and an interactive bar.

However, among the great variety of different types of ICT, for example software, the question of choosing the best one, that which will meet the requirements and specifics of the business as much as possible, often arises. It is clear that the price policy, popularity and other factors are important, but in order to choose such software that will meet the company's requirements as much as possible, it is suggested to use the weighted average method for

such an assessment, where the weight of each component is a reflection of the significance of the corresponding indicator (1):

$$X_i = \sum_{a=1}^{n} w_a x_a + \sum_{b=1}^{m} w_b x_b + \sum_{c=1}^{p} w_c x_c + \sum_{d=1}^{q} w_d x_d + \sum_{e=1}^{r} w_e x_e, \quad (1)$$

where X_i – overall evaluation of the software;

a, b, c, d, e – corresponding characteristics of each block;

w_a, w_b, w_c, w_d, w_e – weights for each characteristic of the software;

x_a, x_b, x_c, x_d, x_e – the sum of points for each characteristic of the software.

Accordingly, in order to evaluate the optimal software for hotel and restaurant business enterprises, we suggest to start using an approach based on weighted estimates and based on research Derun I. [12].

5 blocks are offered to evaluate the choice: I – functional characteristics; II – technical characteristics; III – cost characteristics; IV – characteristics of the supplier; V – reservation characteristic.

Accordingly, the first block included such components as reporting, customer relations, and operational data, and the second included software flexibility, the ability to work in different formats, work with a database, and integration with various programs and applications (Fig. 1).

In fig. 2 presents blocks 3 and 4, where, respectively, the price, service, training and improvement, as well as the history of the developer's work, financial condition, technical support and feedback are assigned (Fig. 2).

And block V, which is necessary for evaluating the choice of software – reservation (Fig. 3), but this block has been changed for restaurant software.

According to the main systems for the hotel and restaurant business considered in the research process, and based on the approach of weighted estimates (formula 1), the following results were obtained among the selected systems (Table 4).

This approach allows to choose as objectively as possible, when it is important to choose not the most expensive, but the one that best meets the requirements of each enterprise.

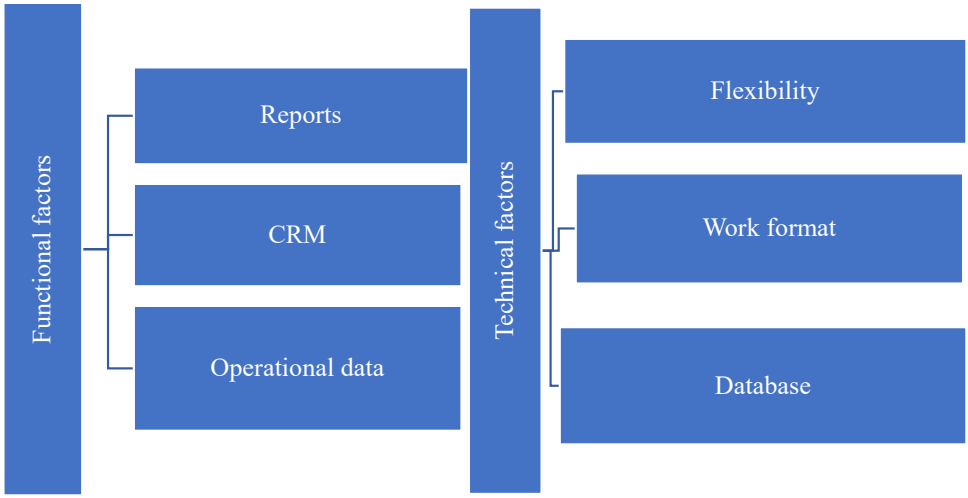

Fig. 1. Characteristics of the functional and technical characteristics of the software of tourism enterprises

Source: built on the approach [12]

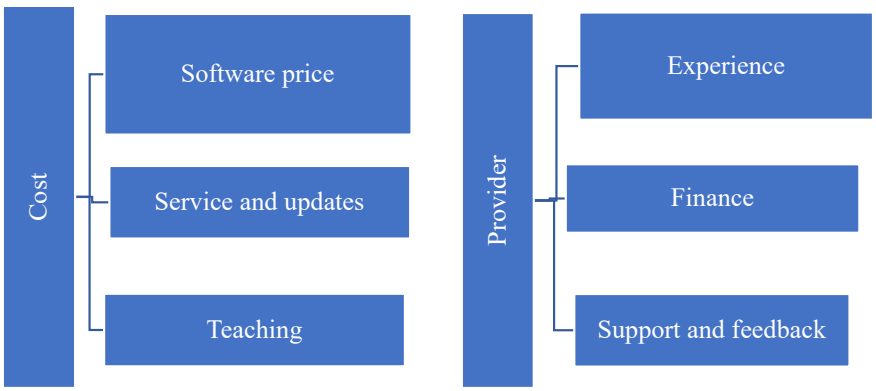

Fig. 2. Characteristics of costs and software provider

Source: built on the approach [12]

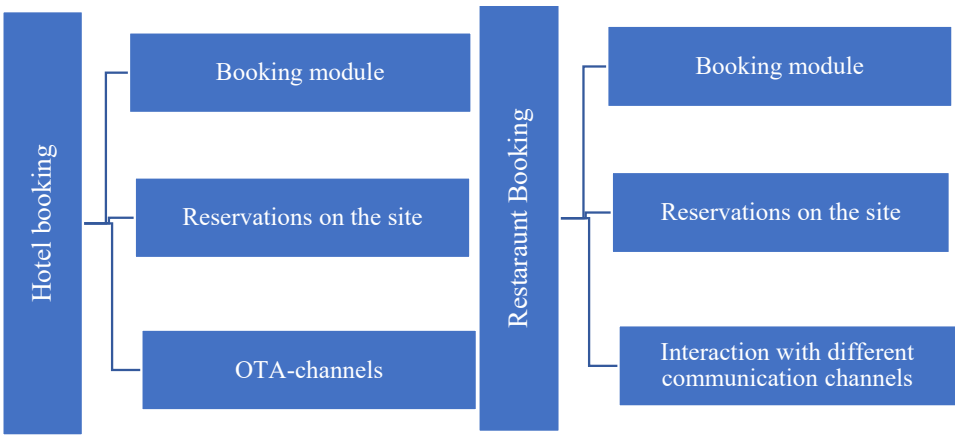

Fig. 3. Characteristics of software reservation variations

Source: built on the approach [12]

Table 4

Summary of software selection results

Fidelio	Servio	Ultra
10,5	10,8	9,5
Servio	Poster	Ultra
12,4	14,05	12,07

Conclusions. Information and communication technologies not only make it possible to improve the work of an enterprise in the field of hospitality, but also to make it more competitive, more attractive not only for consumers, but also for the enterprise's personnel, to facilitate the interaction of all interested participants.

Summarizing the information on the specifics of the use of information and communication technologies by tourism enterprises, we can conclude that for each type of enterprise, both specially developed technologies and general technologies are offered on the market, that is, those that can be adapted to a specific type of business. Each of these forms has its advantages and disadvantages. The business itself determines which product to use, which best meets the requirements and helps to effectively engage in business activities. Common to all ICTs in this field is that every year tourism enterprises use them more in their activities. And also, the fact that the products are moving to the cloud version. If 10 years ago only 12% of ICT had a cloud version, today only 13% do not have it. Many products have both options, but the dynamics of development is greater for cloud versions.

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ОБҐРУНТУВАННЯ ВИБОРУ ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНИХ ТЕХНОЛОГІЙ ТУРИСТИЧНИМИ ПІДПРИЄМСТВАМИ

У статті здійснено аналіз інформаційно-комунікаційних технологій, що використовуються підприємствами туристичної сфери задля забезпечення ефективності їх функціонування та підвищення конкурентоспроможності. Встановлено, що підприємства туризму більш легко адаптуються до нових вимог ринку, а тому відносяться до таких, що активно впроваджують автоматизацію бізнес-процесів. ІКТ мають багато форм та видів, які постійно змінюються, або ж на ринку з'являються кардинально нові пропозиції. Програмне забезпечення є різновидом інформаційно-комунікаційних технологій, однак у той же час, дуже важливою частиною операційної діяльності підприємств туризму. Встановлено, що для кожного із типів підприємств характерним є використання як спеціально розробленого софту, так і загального призначення. Даний підхід пояснюється і тим, що для певних складових внутрішнього середовища, наприклад, маркетинг чи фінанси, може бути використано універсальне програмне забезпечення, а для операційної – те, що враховує особливості саме туристичного бізнесу. Серед пропозицій готельного та ресторанного бізнесу, а також туроператорських програм значна частина була представлена софтом країни-агресора. Визначено, що у зв'язку з війною в Україні, перед власниками бізнесу постало питання заміни програмного забезпечення вітчизняними продуктами, або ж всесвітньо відомими. Наведено порівняння популярних систем, що вже використовуються бізнесом. Для обґрунтування вибору серед існуючого різноманіття та, з урахуванням можливостей бізнесу, було використано метод зважених оцінок, що забезпечує об'єктивну оцінку та вибір оптимального програмного забезпечення для туристичних операторів та агентств, готелів, ресторанів. Пропозиції ключових блоків та їх складових були обрані на основі вимог бізнесу у частині фінансових можливостей, функціональних та технічних характеристик, підтримки клієнтів та можливостей самого бронювання. Даний підхід може бути використаний для оцінки обґрунтованого та спрощеного вибору інформаційно-комунікаційних технологій в залежності від базових характеристик відбору.

Ключові слова: *інформаційно-комунікаційні технології, туризм, готель, ресторан, програмне забезпечення.*