Digitalization as a Main Trend in the Development of Hotel Businesses in the Regions

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Abstract—The relevance of our research is proved by the importance of development of digital technologies in all spheres of social and economic activity and also the need to ensure effective interaction in the sphere of hotel business. The objective of our research was to define the role of information technologies in development of regional hotel business and formation of clusters of the leading hotels of Krasnoyarsk krai on a key factor. Work is based on own researches of authors, data of state statistics, statistical methods and general scientific methods of the analysis were used. Additionally, in this article we provide some of the data on the state of the hotel market of Krasnoyarsk krai for 2014-18. Despite the proceeding economic and political instability demand for hotel services steadily grows in Krasnoyarsk krai that in turn stimulates development of the hotel market. Competitive advantage of any hotel enterprise is implementation of information technologies. Two clusters of the leading hotel enterprises of Krasnoyarsk krai for a key factor – to use of digital technologies are created. As factors of the objects having an impact on competitive advantage are defined: the average time of the solution of one task on the website of hotel in sec.; search promotion of the website, arrangement in search deliveries on key phrases; level of interaction of audience with publications, in point; multilingualism of the website of the hotel enterprise. Results of the cluster analysis are characterized by the current situation of the hotel market of Krasnoyarsk krai, and are a basis for more profound analysis of activity of the concrete hotel enterprises for the purpose of search of ways of increase in competitive advantages due to use of digital technologies.

Keywords: digital technologies, regional market of hotel business, formation of clusters of the leading hotels, Krasnoyarsk krai

I. INTRODUCTION

Development of digital economy because digital technologies will become crucial for maintenance of national interests and strengthening of technological sovereignty of Russia in the world market of the knowledge-intensive production [1, 2] in the nearest future is extremely important for the Russian Federation. The Government of the Russian Federation developed the measures directed to implementation of the "Digital Economy of the Russian Federation" Program until 2025 and "The development strategy of information society in the Russian Federation for 2017-2030" [3, 4]. A main goal of the Program is creation of an ecosystem of digital economy of the Russian Federation in which data in a digital form will become a key factor of production in all spheres of social and economic activity and also ensuring effective interaction in the sphere of business, science, education, including the system of the relations of the state and its citizens [3-5, 10].

In the conditions of fierce competition digital technologies actively come to the hotel market, both to the sphere of automation of internal business processes, and to the sphere of distribution of services of hotels, communications with the guest. Active implementation of digital technologies in hotel business is caused by dynamics of changes of requirements under the influence of bigger availability of information [5-10].

II. PURPOSE AND METHODS

An objective of this research was definition of a role of information technologies in development of regional hotel business and formation of clusters of the leading hotels of
Krasnoyarsk krai on a key factor – use of digital technologies by the hotel enterprise. Work is based on own researches of authors, data of the state statistics, statistical methods and general scientific methods of the analysis were used.

III. DISCUSSION

Krasnoyarsk krai is characterized by high urban saturation and education of the population. The share of the population of Krasnoyarsk krai which is actively using the Internet grew from 64.9% in 2014 to 78.2% in 2018, and the share of the population using the Internet for orders of goods and services grew from 20.8% in 2014 to 33.7% in 2018 (fig. 1) [11, 12].

In 2018 in the region 418 collective funds of placement for 32248 places, including hotels and similar means of placement (motels, hostels and other organizations of hotel type) – 301 affected 13594 places, specialized means of placement (the sanatorium organizations, the organizations of rest and tourist centers) – 117 18654 places [11, 12]. The quantity of collective means of placement in 2018 increased by 21.3% in comparison with 2014. The number of rooms grew since 2014 by 14.5% in 2018, at the same time the number of luxury rooms grew by 11.9%. The international network hotels are generally concentrated in Krasnoyarsk: "AMAKS Hotels&Resorts", "Ibis Hotel", "Novotel Hotels", "Hilton Hotels & Resorts". Services of collective means of placement in 2018 771.4 thousand people, including services of hotels and similar means of placement – 555.2 thousand people, – 216.2 thousand people used services of specialized means of placement [11, 12].

Dynamics of income of collective means of placement from the provided services without the VAT, excises and similar payments (thousand rubles) is presented in figure 1 (fig. 2) [12]. Thus, despite the proceeding economic and political instability demand for hotel services steadily grows in Krasnoyarsk krai that in turn stimulates development of the hotel market. Competitive advantage of any hotel enterprise is implementation of information technologies.

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The range of digital technologies in hotel business is rather wide: introduction of ACS and PMS systems on the basis of "cloudy" platforms in traditional business processes that allows not only to book rooms on the website of hotel but also to integrate sales with other online channels, fiscal registrars, unloading of data into UVM Ministry of Internal Affairs, to make online payment, to carry out visa support, to form reports, to work on mobile devices, to make monitoring of social networks and forums for management of reputation of hotel [13-15].

Digital innovations in hotel business which begin to take root actively: digital front desks; the systems of a videoraspovozvaniye and an entrance without key; digital screens and videowalls in zones of expectation and conference rooms; digital hotel rooms; augmented reality (virtual travel on hotel and sights of the area); increase of a role of digital social media, etc. Thus it is possible to summarize that implementation of digital technologies forms competitive advantages of the hotel enterprises.
For formation of clusters of the hotel enterprises of Krasnoyarsk krai for a key factor – to use of digital technologies six leading hotel enterprises having an appreciation of consumers and recommended to Booking.com [16] were defined. All enterprises are in Krasnoyarsk, have 3-4*. The analysis among the leading hotels is expedient since other enterprises are guided in the activity by leaders of the market. As factors of the objects having an impact on competitive advantage are defined:

- X1 – the average time of the solution of one task on the website of hotel in sec.;
- X2 – search promotion of the website, arrangement in search deliveries on key phrases;
- X3 – the level of interaction with audience with publications, in point;
- X4 – multilingualism of the website of the hotel enterprise.

### TABLE I. THE FACTORS OF DIGITAL TECHNOLOGIES AFFECTING COMPETITIVE ADVANTAGE OF THE HOTEL ENTERPRISES

| Cod of a factor | "City AMAKC hotel", 3* | Snow Owl hotel, 4* | Siberia hotel, 4* | Krasnoyarsk hotel, 3* | Hilton Grand Im Krasnoyarsk hotel, 4* | Garazh hotel, 3* |
|----------------|------------------------|-------------------|------------------|----------------------|--------------------------------------|------------------|
| 1              | 20                     | 15                | 5                | 9                    | 20                                   | 3                |
| 2              | 199                    | 13                | 270              | 341                  | 68                                   | 49               |
| 3              | 2.4                    | 2.1               | 4.9              | 2.6                  | 2                                    | 1                |
| 4              | 3                      | 2                 | 3                | 3                    | 24                                   | 1                |

Values of indicators of factors after normalization performance are presented in table 2.

### TABLE II. THE NORMALIZED VALUES OF INDICATORS OF FACTORS OF DIGITAL TECHNOLOGIES

| Hotel     | X1       | X2       | X3       | X4       |
|-----------|----------|----------|----------|----------|
| 1         | 1.262    | 0.348    | -2.101   | -0.371   |
| 2         | 0.473    | -1.182   | -0.336   | -0.495   |
| 3         | -1.104   | 0.932    | 2.017    | -0.371   |
| 4         | -0.473   | 1.516    | 0.084    | -0.371   |
| 5         | 1.262    | -0.730   | -0.420   | 2.228    |
| 6         | -1.420   | -0.886   | -1.061   | -0.619   |

The matrix of Euclidean distances between the studied hotel enterprises is given in table 3.

### TABLE III. A MATRIX OF EUCLIDEAN DISTANCES BETWEEN THE STUDIED HOTEL ENTERPRISES

| Hotel | 1     | 2     | 3     | 4     | 5     | 6     |
|-------|-------|-------|-------|-------|-------|-------|
| 1     | 0     | 2.469 | 2.438 | 3.025 | 3.504 | 3.139 |
| 2     | 2.469 | 0     | 3.537 | 2.892 | 2.872 | 2.052 |
| 3     | 2.438 | 3.537 | 0     | 2.115 | 4.461 | 3.585 |
| 4     | 3.025 | 2.892 | 2.115 | 0     | 3.881 | 2.835 |
| 5     | 3.504 | 2.872 | 4.461 | 3.881 | 0     | 3.966 |
| 6     | 3.139 | 2.052 | 3.585 | 2.835 | 3.966 | 0     |

After association by a method of "the closest neighbor" two clusters (tab. 4) are created. The distance between clusters is equal to 3.504. The sum of distances between objects is equal to 46.771; average distance 3.118.

### TABLE IV. RESULTS OF ASSOCIATION OF EUCLIDEAN DISTANCES

| Hotel | 1, 2, 3, 4 | 5, 6 | 5, 6 |
|-------|------------|------|------|
| 1, 2, 3, 4 | 0         | 3.504| 0    |
| 5, 6     | 3.504      | 0    |      |

The analysis of table 4 allows to distinguish two clusters from the considered objects of the hotel market of Krasnoyarsk krai. The first cluster is merging of hotels at numbers 1, 2, 3, 4. On the level of the competition hotels 3 and 4 with cluster distance 2.115 are the closest. Hotels 5 and 6 are allocated in the second cluster with distance 3.881, data of hotel also have similarity concerning factors of competitive advantage due to digital technologies.

### IV. RESULTS

Thus, two clusters of the leading hotel enterprises of Krasnoyarsk krai for a key factor – to use of digital technologies are created. Results of the cluster analysis are characterized by the current situation of the hotel market of Krasnoyarsk krai, and are a basis for more profound analysis of activity of the concrete hotel enterprises for the purpose of search of ways of increase in competitive advantages due to use of digital technologies.

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