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Abstract. The research is focused on the analysis of innovation activity of accommodation facilities in Primorsky Krai and elaborating recommendations for its enhancement based on strategic partnership and business. The study evolves around hotel facilities carrying out innovation activity. Primorsky Krai is characterized by low level of global innovations in general; yet the hotel segment is undergoing a certain kind of innovative transformation (changes or improvements in product, service, process, etc.). The innovation was evaluated according to the applied classification of changes (in service offers, concepts, technology and business processes). Such evaluation of hotel facilities innovation is based on four major criteria: openness for innovation, innovation management, resource availability and innovation efficiency (both social and economic).The carried out analysis showed that third parties involved in the processes contribute to the innovation activity of the hotel facilities. Additionally, it has been found that innovation activity of hotel facilities in the city of Vladivostok comes up to a satisfactory standard of 55%, which has to be further improved.

1. Introduction

Recently innovations have been a major development factor in modern economics. Any innovative organization shall be capable of understanding the idea of innovation, its concept, applicability, management and shall be engaged into its regular implementation along with constant improvement of innovation activity. Innovative perceptibility appears to be the key factor in measuring an enterprise's focus on innovation. Innovative perceptibility in hospitality industry is understood as a certain degree of interest and readiness of the enterprise to test run the offered innovations in its daily activities. Intensiveness of innovation activity of hotel facilities can be evaluated by studying the degree of readiness to test run innovative ideas and carry out innovation activity.

2. Background

The hospitality industry is advancing and currently retains around 10% of the world gross profit. According to the World Tourist Organization's forecast the income from the hospitality industry will be pushing to approximately 20 trillion US dollars in 2020 [7]. However, the .hospitality industry in Russia has been falling behind the global level despite its vast natural, recreational and cultural resources. The major obstacles include underdeveloped tourist infrastructure, low quality service, majority of non-classified (zero star) hotels, stereotypes about Russian image, etc. Such conditions urge for searching of development trends in order to improve and enhance efficiency of hotel facilities.

Much research has been carried out in the area of service innovations, which is specifically important for this study, hence we based it on the theoretical advances by I. Miles, T. M. Krivosheeva, E. A. Semirikova, O. V. Shemeneva [14], E. O. Pokhomchikova [18, 19], N. N. Masyuk, L.V. Mezhonova, M. A. Bushueva, O. A. Baturina, Yu. V. Baldina, G. V. Petruk, Yu. P. Kuznetsova [16], T. Davila, M. Epstein, R. Sheton [10], D. V. Sokolov, A. B. Titov, M. M. Shamanova [22]. Important works focusing on innovation activity of domestic hotel facilities include studies by Yu. V. Yakovets [23], G. A. Gomilevskaya [8] and others.

Innovation works as a powerful driver of sustainable economic growth of the country and contributes to a secure material and nonmaterial foundation of modern society and future generations.

Innovation activity can be evaluated as per resources, formally (statistical approach according to A. Yu. Reurov [20]) and as per result. This study sets a goal of carrying out the analysis of hotel facilities in Primorsky Krai with focus on intensiveness of their innovation activity while offering a number of recommendations to increase its efficiency through strategic partnership.

3. Focus of the research

We evaluated innovation activity level of hotel facilities in Vladivostok by applying Delphi method. This method is applied in case the object or phenomenon cannot be substantially described or mathematically formalized either partially or fully; in case its features lack veracious and statistically defined parameters; in case of highly unpredictable environment of object placement, particularly market environment; in case time and means for forecasting and decision making are limited and not enough to complete a research by applying formal models [3, 5].

The merits of the method include simplicity of organization, statistical processing and a large scale data selection. It comprises the following stages:

setting a research goal (estimation of the innovation activity level);

adoption of a certain research form (criteria approach, weighted coefficients application);

preparation of the informational materials (evaluation data compiled in tables, determination of coefficients);

evaluation;

result analysis (expert estimation processing);

preparation of the report on the research.

The estimation of the innovation activity of the hotels in Vladivostok was carried out on the basis of the data of 15 popular hotels located in the city, over 40 hotel rooms each.

According to the statistic data from Primorsky Service of State Statistics in 2016, 116 hotel facilities operated in the city, however analysis showed that the majority of the hotels were small enterprises, i.e. the kind of accommodation facilities lacking resources for innovation activity [6].

Therefore, we had to narrow selection relying on the following criteria: number of hotel rooms and image/awareness of the hotel facility. The study was carried out as a desktop research and the data under analysis were secondary and retrieved from the official websites of the hotels.

4. Solutions, results and recommendations

Primorsky Krai is characterized by low level of global innovations in general; yet the hotel segment is undergoing a certain kind innovative transformations (changes or improvements in product, service,

process, etc.). The innovation was evaluated according to the applied classification of changes (in service offers, concepts, technology and business processes) [7].

Such evaluation of hotel facilities innovation was based on four major criteria: openness for innovation, innovation management, resource availability and innovation efficiency (both social and economic) [9].

Table 1 presents an information matrix per each selected hotel. The evaluated parameters include service offer, technological innovations (solutions) and innovations in business processes. Table 1 contains information on the contents of each group of innovations.

Table 1. Evaluation criteria of innovation activity of the hotel facilities and containing notes[a].

Type of innovation	Criterion
Service offer innovation	Doorkeeper service Pet friendly facilities Hotel staff speaking foreign languages ATM on the premises of the hotel Souvenir shop in the hall iVisa service Bed & Breakfast service
Concept-based innovation	Availability of a definite target customer segment (business, families, youth, etc.) Integrity in room style (outlined on the website, a certain concept, rooms in classic style or fusion style, etc.) Staff uniform Hotel being a part of a chain Restaurant in a hotel
Technological innovations (solutions)	Hotel's website Website updated in 2016 free Wi-Fi on the premises of the hotel Air-conditioning in all the rooms Online booking option Callback service on the website Online live chat service Interactive TV e–menu of the restaurant Mobile version of the website
Business processes innovations	Alternative booking systems 360° virtual tour of the hotel Photos of the hotel on its official website Loyalty program SMM marketing (promotion in the social networks).

[a] Source: completed by the authors.

The 14 criteria from Table 1 served the basis for the evaluation table with the data («1» – yes, the criterion is available; «0» – no, the criterion is not available).

Table 2 shows evaluation of the innovation activity of the hotels in the city of Vladivostok.

According to the data presented in Table 2 we may conclude that hotel facilities with the highest innovation activity level are Avanta Hotel – 88%, Azimut Vladivostok Hotel – 84% and Hyundai –

76%. The hotels with the lowest innovation activity according to the evaluation criteria are Granit – 40%, Primorye – 48% and Versailles – 56%.

Table 2. Evaluation of the innovation activity of hotels in the city of Vladivostok and containing notes[a].

Hotel	Service offer innovations, score		Concept-based innovations, score		Technological innovations, score		Business processes innovations, score		Total	
	de facto	with coefficient	de facto	with coefficient	de facto	with coefficient	de facto	with coefficient	de facto, score	with coefficient, score
Azimut Hotel Vladivostok	5	0,75	5	1	6	0,7	4	0,9	20	0,84
A-Hotel Amurskiy Zaliv	5	0,75	5	1	5	0,6	4	0,9	19	0,81
Equator	5	0,7	3	1	4	0,5	3	0,65	15	0,71
Versailles	4	0,65	2	0,65	4	0,5	2	0,45	12	0,56
Astoria	3	0,5	4	0,8	4	0,5	3	0,65	14	0,61
Avanta	5	0,7	4	0,8	10	1	5	1	24	0,88
Meridian	2	0,4	4	0,8	4	0,5	2	0,35	12	0,51
Primorye	2	0,4	3	0,65	3	0,4	2	0,45	10	0,48
Zhemchuzhina	3	0,5	5	1	3	0,4	4	0,9	15	0,70
Acfes-Seiyo	4	0,6	4	0,8	4	0,5	2	0,45	14	0,59
Moryak	3	0,5	2	0,45	4	0,5	2	0,45	11	0,48
Granit	2	0,4	2	0,2	4	0,5	2	0,5	10	0,40
Gavan	4	0,6	4	0,8	4	0,5	4	0,9	16	0,70
Hyundai	5	0,75	4	0,8	5	0,6	4	0,9	18	0,76
Villa ArtE	3	0,55	4	0,8	5	0,6	2	0,45	14	0,6

[a] Source: completed by the authors.

Table 3 shows the level of innovation at the accommodation facilities in Vladivostok as per its different types.

Table 3. Level of innovation at the hotels of Vladivostok as per its different types and containing notes[a].

Innovation type	Actual value, score	Maximum value, score	Final percent
Service offer	55	105	52,4%
Concept-based	55	75	73,3%
Technological	69	150	46,0%
Business processes	45	75	60,0%

[a] Source: completed by the authors.

On analyzing the data we may conclude that the innovation activity of the hotels in Vladivostok remains at the satisfactory level of 55,3% which has to be further improved.

For the purpose of evaluating the impact of the innovation type on innovation activity of the hotels, the model of multiple linear regression was applied according to the formula below:

$$Y = k_0 + k_1 x_1 + k_2 x_2 + k_3 x_3 + k_4 x_4 \qquad (1)$$

Y− index of hotel innovation activity;

x_1– innovation activity level in service offer, units/quantity;

x_2– application level of concept-based innovations, units/quantity;

x_3– application level of technological innovations, units/quantity;

x_4– application level of business processes innovations, units/quantity.

T-statistic serves the purpose of testing the weight of the regression coefficients. Low indices of t-statistic manifest absence of veracious statistic connection between variable X and dependant variable Y. The correctness of the regression equation is checked by applying the determination coefficient – R2 in the range 0≤R2≤1. The closer R2 index comes to 1, the stronger is the statistic relationship between the dependant variables.

The impact of the abovementioned factors on the results of the innovation activity was studied using Excel.

The regression statistics results are presented in Table 4.

Table 4. Obtained regression coefficients and containing notes[a].

Coefficient	Index
Multiple R	0,989
R2	0,978
Standardized R2	0,969
Observation/number of hotels	15
Y intersection	1,69
t–statistic for X1	0,369
t– statistic for X2	3,463
t– statistic for X3	5,578
t– statistic for X4	1,473

[a] Source: completed by the authors.

According to Table 4, R2 amounts to 97,8% which means that X1, X2, X3 and X4 characterize 97,8% of Y (innovation activity level) behaviour. X3 (application of technological innovations) has the biggest impact on the final innovation activity level as well as X2 (application of concept-based innovations).

The further equation was composed on the basis of the above indices for the purpose of innovation activity evaluation:

$$Y = 1,69 + 0,22 \cdot X_1 + 1,49 \cdot X_2 + 1,01 \cdot X_3 + 0,78 \cdot X_4 \qquad (2)$$

Equation (2) has an absolute term – 1,69 (t–statistic – 2,5), which therefore, signifies sufficient influence of additional impact factors on the innovation activity of the hotel facilities apart from the selected ones which may include external factors (governmental support, legal regulations, etc.).

In the course of the research we have come to the conclusion that innovation activity level of the hotel facilities in Vladivostok is satisfactory with the index of 55%. However, it needs to be further improved and below we listed the most efficient methods to enhance it:

application of technological innovations;

application of innovations in business processes;

application of concept-based innovations;

These types of innovations are expected to have the best effect on the innovation activity of hotel facilities in Vladivostok.

5. Conclusion

Concept-based innovations and innovations in business processes appear to be the most widely adopted among the hotel facilities in Vladivostok. Hoteliers focus on the interior and hotel policy: hotel rooms style, staff uniform, target customers segment (in most cases – business). Among innovations in business processes it is necessary to mention new promotion channels (SMM-marketing), loyalty programs for regular clients, clients acquisition (360° virtual tours of the hotel, quality photos of the facilities, alternative booking systems, etc.).

In the study we have come to the following conclusions:

innovation activity level of hotel facilities is satisfactory and amounts to 55,3%;

innovation activity is largely represented by certain innovative changes or transformations (in processes, goods and services);

hotel facilities do not generate innovations independently. The innovations are generally borrowed (imitated) or generated by means of outsourcing (hiring a third party for innovation development and application);

intensiveness of the innovation activity remains at the satisfactory level whereas innovative perceptibility of the facilities amounts to 54%.

Given that we have ascertained that outsourcing is one of the ways of generating innovation, our further research will be dedicated to the role of scientific and research potential of higher educational establishments in increasing innovative efficiency of accommodation facilities.

Experts estimate that innovative transformations in the hotels of Vladivostok show good social efficiency (contribute to the positive image-making and customer satisfaction as well as increased public awareness of the hotel) indexed with 65% out of the possible 100%. Resource endowment for innovation activity amounts to 61%. This criterion includes technologies and equipment, investments and ability to predict needs and desires of the clients. Innovation management amounts to 60% which is also satisfactory. This index includes availability of innovation management system, efficiency of the marketing department and well-developed corporate culture. The fourth criterion of innovative perceptibility only amounts to 55%. This proves that hotel facilities are to a lesser extent engaged in experience exchange, take part in few events and do not largely adopt international experience whereas the staff lacks motivation in generating and using the innovations. Nevertheless, the overall innovation activity level of the hotel facilities in the city of Vladivostok is satisfactory.

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