ISSN : 0974 - 7435 Volume 10 Issue 12

2014

BioTechnology

An Indian Journal

FULL PAPER

BTAIJ, 10(12), 2014 [6748-6755]

Evaluation model of the resort hotel designing based on the unascertained measurement model

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ABSTRACT

As people's material improved, vacation has become a trend of modern life. The tourism industry has become important in the world, so is the resort hotel designing in the society. This article gives a new appraisal model to inspect the resort hotel designing. The unascertained measurement model is used to inspect whether or not the resort hotel designing of Handan is perfect and efficient or not, which is useful for people to enjoy the vacation.

KEYWORDS

Unascertained measurement model; Resort hotel designing; Inspection mechanism.

INTRODUCTION

Tourism resort hotel is known as a resort, which refers to a city located in the surrounding leisure places, providing leisure services situation for the people. Professional hotel as a service to tourist consumption market, demands not only basic functions of traditional hotel, but also needs perfecting and developing appropriate in order to meet the different needs of different consumer groups. Resort hotel is the cartificial landscape combination of art and technology by relying on natural factors existing, which needs the good reasonable shaping space and the pleasant environment to provide comprehensive services for resort group[1,2]. This article uses the unascertained measurement model to inspect the hotel whether or not being competitive, which has not been used before, but the method is used in lots of fields[3]. Firstly, this article introduced the outline of the resort hotel designing, which contends the items that is used to inspect the hotel; secondly, we introduced the unascertained measurement model[4,5]; then we introduced the appraisal index system of the resort hotel designing[6], lastly we set an example to introduce the evaluation model of the resort hotel designing in Handan[7].

OUTLINE OF THE RESORT HOTEL DESIGNING

Resort hotel is a general accepted small community providing for oneself. As the development of modern science and technology, rich material life, so that each functional space of the resort hotels is very perfect and the independence is stronger and stronger. At the same time for adjustment of project facilities and artificial environment make resort hotel independence relative to the natural environment growing. The artificial environment in the natural environmental conditions is more reasonable in the resort hotel environment. Resort hotel general construction in suburb provides different relaxed environment for the urban residents. People having enough time on holidays or weekends often do not want to stay in the city, which is so noisy that it is difficult to ease the tense, mood and fatigue. Resort hotels must not only meet the demand of mass tourism groups resort, offering different leisure environment, and there are a lot of resort hotels providing characteristic accommodation environment to attract holiday groups, so that we can better meet the needs of different tourist groups and that of the individual. And compared with ordinary household atmosphere, resort hotel environment is more thoughtful, perfect, and comfortable. Furthermore, resort hotel serves a different function in terms of living space.

The resort hotel designing has the obvious public welfare nature ; simultaneously it is a system of engineering, which decides not only the resort hotel's influential role, but also that environment must be impelled by the superintendent. Giving priority to the public transportation, its significance already is not limited to solving the public of resort hotels.

Designing thought

The interior designing and architectural designing are a complementary relationship. The inside of the building is an organic part of the construction of the whole, so the two parts can not be separated. The realization process of them is an organic whole. Feelings of the people on the resort hotel are not only from the hotel to the appearance of the construction, more comes from the shape of the indoor environment, therefore, this is the priority among priorities, and cannot be ignored.

Regional style

The interior regional style of the resort hotel mainly has two kinds of methods. One is to rely on the resort hotel location of the geographical superiority, which has been recognized; the other is to concentrate on excavating the local folk customs and history information. The design of resort hotels needs the door environment as the breakthrough point in order to create attractive impressive indoor environment.

The question is often ignoring this point regional style. Some resort hotel in the design of the space just apply, cause financial, material waste, and ultimately fail to serve the expected design purpose, giving people uncomfortable feeling.

Spirit culture

Resort hotel is a special space, which must first have the basic function of accommodation, and secondly meet the different needs of different groups of people. It is the unification of function and spirit, let the guest feel the cultural atmosphere and surprise, and the source of this kind of feeling is not only decorative handle typical, and should reflect the elements of other in the hotel space environment. It is different from other public building space, it must have a specific environment: from the color, light, medium, or even small furnishings to chew.

Room designing

The hotel's income depends mainly on the room, so the importance of room designing is self-evident. The designing must be the human-oriented, because the guest rooms are private activities for the longest time space. The room is the embodiment of hotel grades most main space, which requires the better, fine and convenient design of the guest room, which can give the guests a good psychological feeling.

Characteristic

A prominent characteristic of resort hotel is highlighted by its connection with the natural environment resources, for the natural environment resources is of help in shaping the interior space environment design of the resort hotel. Such a characteristic can impress the tourists at the first sight and attract their attention.

Regional

The designing of resort hotel interior space environment copies the regional characteristics of forms and symbols. The wrong methods are that do not reflecte regional style means. Embodying the regional style is drawing the real culture, discarding the false and retaining the true, learning from each other in the premise of respecting local habits and customs, maintaining local folk culture and regional characteristic, and suiting one's measures to local conditions. Embodying the regional style and communication also lies in allowing us to express our understanding of regional traditional culture and symbolic elements with a new concept through space, material and color.

Other items

Within the macro environment of fast economic development, the market of travelling and vacationing tends to be more mature and diverse. During such a process, travelling and vacationing are exceptional in their vast diversity, such as comfortable seaside vacationing, healthy hot-spring vacationing, and joyful mountain type vacationing.

INTRODUCTION OF THE UNASCERTAINED MEASUREMENT MODEL

Suppose $x_1, x_2, \cdots, x_n$ as n evaluated supervisory units, $X = \{x_1, x_2, \cdots, x_n\}$ as muster of judged object, as to $x_i \in X$. There are m evaluating index $I_1, I_2, \cdots, I_m$ and the muster of factors is index space $I = \{I_1, I_2, \cdots, I_m\}$. x_{ij} Shows that x_i 's value in factor I_j .

Suppose $C = \{c_1, c_2, \cdots, c_K\}$ as appraisal space, where, $c_k (1 \le k \le K)$ is the number k 's degree.

Single factor unascertained measure

If the value of unit x_i about factor I_j is different, then x_i in the appraisal degree is different too. Suppose x_{ij} is the observation value of the index, then, $\mu_{ijk} = \mu(x_{ij} \in c_k)$. It means that x_{ij} makes x_i a

specific complexion in C. Then, μ_{ijl} is the result of the measurement and it must meet the following three measurable principles: 1) $0 \le \mu_{ijk} \le 1$ 2) $\mu(x_{ij} \in \bigcup_{k=1}^{K} c_k) = \sum_{k=1}^{K} \mu(x_{ij} \in c_k)$ 3) $\mu(x_{ij} \in C) = 1$

where, $i = 1,2,\cdots,n$, $j = 1,2,\cdots,m$, $k = 1,2,\cdots,K$.

Then, μ_{ijk} is the unascertained measure and μ_{ijk} is unit x_i's single factor's measure appraisal matrix, in which, $\mu_j^i (1 \le j \le m)$ means x_{ij} makes x_i has c_k grade in j row.

$$(\mu_{ijk})_{m\times K} = \begin{pmatrix} \mu_{i11}, \mu_{i12}, \cdots, \mu_{i1K} \\ \mu_{i21}, \mu_{i22}, \cdots, \mu_{i2K} \\ \vdots \quad \vdots \quad \cdots \quad \vdots \\ \mu_{im1}, \mu_{im2}, \cdots, \mu_{imK} \end{pmatrix} \tag{1}$$

where, $i = 1,2,\cdots,n$.

The decision of factor's weight

The observation value of the unit x_i about factor I_j is x_{ij} and the measure vector μ_j^i is that x_{ij} makes the unit in $c_1, c_2, \cdots, c_K$, then,

$$\mu_j^i = (\mu_{ij1}, \mu_{ij2}, \cdots \mu_{ijK}) \tag{2}$$

We know from above, how many classification contributions factor I_j makes to unit x_i.

1) If $\mu_{ij1} = \mu_{ij2} = \cdots = \mu_{ijK} = \frac{1}{K}$, it means x_i's weightiness among every evaluation grade are the same, that is to say, I_j has no effect on distinguishing x_i's affiliated sort. Here classification weight of x_i about I_j is $w_j^i = 0$;

2) If one $\mu_{ijk_0} = 1$, while the rest $K-1$ weights are all zero. Then I_j's observation value x_{ij} makes object x_i belong to grade c_{k_0}. I_j's weight about x_i is maximal. If we suppose that w_j^i is the classification weight of I_j about x_i, then the w_j^i is the max, $w_j^i = 1$;

3) By the same reason, we can infer that the more dispersed value of μ_{ijk}, the smaller I_j's classification weight w_j^i about x_i.

The anterior analysis show that μ_{ijk} reflects functionary magnitude, which I_j distinguishes x_i's sort that determines w_j^i's magnitude about x_i. Decentralized or centralized degree has various descriptions. It can be described by information entropy:

$$H(j) = -\sum_{k=1}^{K} \mu_{ijk} \cdot \log \mu_{ijk} \tag{3}$$

$$V_j^i = 1 - \frac{1}{\log K} H(j) = 1 + \frac{1}{\log K} \sum_{k=1}^{K} \mu_{ijk} \cdot \log \mu_{ijk} \tag{4}$$

$$W_j^i = V_j^i \Big/ \sum_{j=1}^{m} V_j^i \tag{5}$$

where, $0 \le W_j^i \le 1$, $\sum_{j=1}^{m} W_j^i = 1$.

From the characters of information entropy, we know:

① if and only if $\mu_{ij1} = \mu_{ij2} = \cdots = \mu_{ijK} = \frac{1}{K}$, the least value of V_j is zero;

② if and only if only one $\mu_{ijk_0} = 1$, and the other $K-1$ are all zero, the maximal V_j is one;

③ the more decentralized of μ_{ijK}, the largest of V_j;

Then $W^i = (w_1^i, w_2^i, \cdots, w_m^i)$ **(6)**

We call W^i is x_i's classification weight vector about m indexes.

Hence, we can calculate w_j^i by formula (3), (4) and (5). If x_j^i is provided, which means index's classification weight result from observation data of swatch, whether it has in cluster or not, we may calculate classification weight. Now that weight can be calculated, which means it cannot be subjectively determined by experts. Experts determine index's importance weight only.

Classification weight and importance weight of index are different in meaning, method and usage. Importance weight is determined by index itself and only subjectively determined by expert. It is fit to all swatches in muster of object and has not the function of classifying a specific swatch. The most essential difference between unascertained model and other models is that classification weight is the only way in determining composed reliability of index's classification and we cannot use importance weight to replace classification weight [5].

Synthesis appraisal system

If the single factor measuring appraisal matrix (1) is known and the each factor's classification vector about x_i is (6), then

$$\mu^j = W^i \cdot (\mu_{ijk})_{m\times K} = (w_1^j, w_2^j, \cdots, w_m^j) \begin{pmatrix} \mu_{i11}, \mu_{i12}, \cdots, \mu_{i1K} \\ \mu_{i21}, \mu_{i22}, \cdots, \mu_{i2K} \\ \vdots \quad \vdots \quad \cdots \quad \vdots \\ \mu_{im1}, \mu_{im2}, \cdots, \mu_{imK} \end{pmatrix}, \ \mu^i = (\mu_{i1}, \mu_{i2}, \cdots, \mu_{ik}) \quad \textbf{(7)}$$

So, μ^i is x_i's appraisal vector.

Unascertained recognition

The appraisal degree is ordinal. The number k is better than $k+1$. Therefore, the maximal measurement recognition criteria do not fit. We use fiducial degree identify criteria. Supposed fiducial degree is λ $(\lambda > 0.5)$, when

$$k_0 = \min_k \left[(\sum_{l=1}^{k} \mu_{il}) \ge \lambda, k = 1,2,\cdots K \right] \quad \textbf{(8)}$$

then x_i belongs to degree. It means that when x_i is not lower than c_k, the fiducial degree is λ, or in other word lower than c_k is $1-\lambda$.

APPRAISAL INDEX SYSTEM OF THE RESORT HOTEL DESIGNING

The resort hotel designing is constitutive of many factors, which are influential factors of experts majoring in resort hotel. The appraisal index system of the resort hotel designing is used to be the

influential factors or attributes set of experts as evaluating a product or service. This paper considered the main factors that influence the resort hotel designing in Handan as appraisal index system, as shown in TABLE 1.

TABLE 1: Appraisal index system of the resort hotel designing

General goal	The first goal	The second goal	The first goal	The second goal
Appraisal index system of the resort hotel designing	The main designing	μ_{11} Designing thought	The first impression	μ_{32} Shading effect
		μ_{12} Privacy		μ_{33} Convenience
		μ_{13} Amenity		μ_{41} Quiet
		μ_{14} Landscaping		μ_{42} Vision
		μ_{15} Theme square		μ_{43} Safety
		μ_{16} Infrastructure	The outer designing	μ_{51} Groggery;
		μ_{17} Technical equipment		μ_{52} Garden Villa
	The inner designing	μ_{21} Restaurant		μ_{53} Characteristic
		μ_{22} Botany		μ_{54} Bandstand
		μ_{23} Coffee house		μ_{55} Consciousness of the people
		μ_{24} Meeting place		μ_{56} Regional
		μ_{25} Room designing		μ_{57} Ballroom
	environment	μ_{31} Traffic		

These indexes' appraisal results to the resort hotel designing are obtained by expert's investigations. We ranked the resort hotel designing into 5 hierarchies according to rundle theory: exceeding satisfaction, satisfaction, ecumenical satisfaction, dissatisfaction, very dissatisfaction. On this basis, this paper studied the evaluation model of the resort hotel designing.

EVALUATION MODEL OF THE RESORT HOTEL DESIGNING IN HANDAN

We selected the resort hotel designing of Handan as an example to evaluate. The number of the experts participating in the investigation is 100. Appraisal index system of setting is shown in TABLE 1; and appraisal space is {exceeding satisfaction, satisfaction, ecumenical satisfaction, dissatisfaction, very dissatisfaction}, where, appraisal indexes are 25 entries, with each index calculated by 100, and distributing to 5 appraisal ranks. Each index appraisal score of this product is 100, the identification of which is the rank of each expecting appraisal. This mark principle is just, and is in accord with the measurement rule of "nonnegative and bounded nature, additive nature, and normalization". The statistic scores data of expecting appraisal object (supposed to object1) is shown in TABLE 2.

According to the statistical data in TABLE 2, we can obtain the following single index measurement matrix $\mu_{1jk} = \begin{bmatrix} \mu^1_{1jk} \\ \mu^2_{1jk} \end{bmatrix}$.

According to the (3)−(6), we can get the index weight as follows：

$W^1 = (0.0488,0.0265,0.0616,0.0317,0.0508,0.0548,0.0427,0.0529,0.0652,0.0242,0.0318,0.0207,$ $0.0647,0.0606,0.0626,0.0411,0.0442,0.0319,0.0404,0.0242,0.035,0.0314,0.0221,0.0201,0.0102)$ the ：

$$\mu^1 = W^1 \cdot \mu_{1jk} = (0.219232,0.473214,0.188095,0.089895,0.029664)$$

take $\lambda = 0.6$， According to the (8), we can get：

when $k_0 = 2$, $0.219232 + 0.473214 = 0.692446 > 0.6 = \lambda$

So, the resort hotel designing of Handan is evaluated as satisfaction, and is near exceeding satisfaction. It is in accord with the real situation.

TABLE 2: Statistic scores table of expecting appraisal object

index	exceeding satisfaction	satisfaction	ecumenical satisfaction	dissatisfaction	very dissatisfaction
μ11	18	45	27	10	0
μ12	20	40	25	10	5
μ13	20	60	10	5	5
μ14	27	40	20	10	3
μ15	30	50	10	5	5
μ16	25	50	15	10	0
μ17	30	45	15	7	3
μ21	21	48	25	5	1
μ22	21	54	20	5	0
μ23	25	40	15	15	5
μ24	25	36	27	10	2
μ25	15	40	25	10	10
μ31	25	55	10	10	0
μ32	20	55	15	10	0
μ33	18	45	22	10	5
μ41	20	50	18	8	4
μ42	22	50	18	6	4
μ43	25	45	15	9	6
μ51	24	47	18	8	3
μ52	15	40	25	15	5
μ53	20	45	18	15	2
μ54	18	42	25	12	3
μ55	15	35	30	15	5
μ56	20	35	28	10	7
μ57	18	25	32	15	10

CONCLUSIONS

With the booming of the resort hotel designing, the hotel will face more and crueler competition. If the hotel wants to gain some benefits in competition, the designing should develop its items. From the above analysis, we can get a clear result that the hotels are of first class. In a word, the result gives the hotel a standard to select the method to design and get the inspection results, thus some actions can be taken effectively and efficiently to deal with the problems of the hotel. This appraisal model can bring the hotel a great deal of benefits and wealth. It has very high practical application value. But it should be noticed that because this research content lies on underway stage, the appraisal indexes about this content are very optional, which are not scientific and systematic. Therefore, when using this method, it is necessary to perfect the index system. Moreover, the index system should be changed according to the specific situation of the hotel.

ACKNOWLEDGMENTS

This work is supported by Hebei Social Science Funds (HB13YS044). The authors also gratefully acknowledge the helpful comments and suggestions of the reviewers, which have improved the presentation.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this article.

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