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2. Hasil review 1

Industrial Engineering & Management Systems - Decision on Manuscript ID IEMS-2016-0034

From:chjun@postech.ac.kr
To:jimgozaly@yahoo.com
Wed, Jun 8, 2016 at 4:01 PM
08-Jun-2016

Dear Mr. Gozaly:

Manuscript ID IEMS-2016-0034 entitled "Consumer Analysis for Increasing Occupancy Rates of Tourism Hotel" which you submitted to the Industrial Engineering & Management Systems, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

The reviewer(s) have recommended publication, but also suggest some minor revisions to your manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript.

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When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

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Because we are trying to facilitate timely publication of manuscripts submitted to the Industrial Engineering & Management Systems, your revised manuscript should be submitted by 07-Sep-2016. If it is not possible for you to submit your revision by this date, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to the Industrial Engineering & Management Systems and I look forward to receiving your revision.

Sincerely,
Dr. Chi-Hyuck Jun
Editor-in-Chief, Industrial Engineering & Management Systems
chjun@postech.ac.kr

Associate Editor Comments to Author:

Area Editor
Comments to the Author:
(There are no comments.)

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
This manuscript was aimed to determine the factors that influence consumer decision whether for stay back at the studied hotel. The idea of this manuscript is of interesting. The goal is clear and the methodology is appropriate. A number of concerns were raised during the evaluation. Revision is needed to make the manuscript valuable.
The specific comments are as below.
Page 2.
In the Section 2 (Literature study or should be “literature review”), the current knowledge or relative research in service quality of tourism should be included.

Page 3. (Section 3-1. Data collection)
In this research, consumers are classified based on their decision for staying back. To increase the reliability of the survey, rationally the foreign consumers should be excluded. However, the characteristics or criterion of the participants were not mentioned in the text.

Page 3.
Line 36, typing error. … “dan process”, should be corrected as “and process”

Page 8.
The discriminant analysis yields functions to classify the consumer accordingly. However, the correct classification rate (54.6%) is low. Is there any possible reason for the result? For example, whether the invalid questionnaires was not excluded or the investigated problem is too complex to explain. Please try to explore the reason for the low correct classification rate to have good practical value.

Reviewer: 2

Comments to the Author
1. The contents of abstract and introduction are almost same. It is verbose.
2. Some prepositions are deleted in the sentences. So there are possibilities of misunderstands.
3. Explain the result deeply as research paper
4. There are not enough the explanations for each table
5. The scale in Figure 2 is shifted and insufficient
6. Wi-Fi facility is expressed in Conclusion, it is not mentioned in the text. It is better to give it in Result.

3. Submit revisi 1

Consumer Analysis for Increasing Occupancy Rates of Tourism Hotel

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Abstract. Tourism is a sector that plays an important role in the economic growth of Indonesia. Bandung as the capital of West Java province is known as the city with diverse tourism potential, both in the attractiveness of the city and surrounding natural beauty. Dago Highland Resort is a three stars resort hotel in the city with a strategic location. As a three stars resort hotel, Dago Highland Resort has been experiencing occupancy rate problems, consequently, it cannot often reach the set targets, both during high season and low season. The purpose of this study is to identify the factors of hotel performance that influences consumer staying back decision in the future. Questionnaires have been distributed to hotel guests to gather information regarding their interest and the performance assessment of the hotel services and facilities, and staying back decision in the future. Discriminant Analysis and Hypothesis Testing are used to determine which hotel performance variables will directly affect consumer staying back decision. The result of this study provide marketing strategy that should be implemented by the hotel management in order to increase its occupancy rate.

Keywords: *Tourism, marketing strategy, discriminant analysis, hypothesis testing*

1. INTRODUCTION
Dago Highland Resort is a hotel in the city which located not far from the city, yet it has a beautiful natural environment. With 75 rooms in traditional architecture of West Java, the atmosphere of the mountains, and complete facilities, the hotel has a potential as a promising tourist destination. However the hotel has been experiencing occupancy rate problems, which often cannot achieve the set targets, both during high season and low season.

To overcome the problem, hotel management have to know the level of consumers satisfaction for the hotel performance, and which factors will directly influence their staying decision. The study is conducted to provide inputs for the hotel management about things that need to be considered in relation to increase the level of consumer satisfaction.

2. LITERATURE REVIEW

2.1 Customer Satisfaction

Customer Satisfaction is the internal feelings of every individual which may reflect their satisfaction or dissastifaction resulting from the assesment of service provided to an individual in context to customer's anticipation by an organization (Leisen & Vance, 2001). Satisfied customers are produced when the service provided (as perceived by the guest) is more than that expected by the guest (Mill, 2002). When customers are satisfied , they remain loyal with the hotel and hence it will affects the purchasing behavior (Saleem & Raja, 2014). Enterprises which are able to rapidly understand and satisfy customer's needs, make greater profits than those which fail to understand and satisfy their customers (Barsky & Nash, 2003).Providing high quality services and improving customer satisfaction are widely recognized as fundamental factors boosting the performances of companies in the hotel and tourism industry (Barsky & Labagh, 1992).

2.2 Discriminant Analysis (Hair *et al*. 2006)

Discriminant Analysis is an appropriate statistical techniques when a research problem involves a single categorical dependent variable and several metric independent variables. The results of discriminant analysis can assist in profiling the intergroup characteristics of the subjects and in assigning them to their appropriate groups. Discriminant analysis involves deriving a variate. The discriminant variate is the linear combination of the two or more independent variables that will discriminate best between the objects in the groups defined a priori.

$$Z_{jk} = a + W_1X_{1k} + W_2X_{2k} + ... + W_nX_{nk} \quad (1)$$

where :

Z_{jk} : discriminant Z score of discriminant function j for object k
a : intercept
W_i : discriminant weight for independent variable i
X_{ik} : independent variable i for object k

2.3 Two-Sample Test of Hypotesis: Independent Samples (Lind, Marchal, Wathen 2008)

Hypothesis testing is a procedure based on sample evidence and probability theory to determine whether the hypothesis is a reasonable statement.
After stating the null hypothesis (H_o) and the alternate hypothesis (H_1), select a level of significance (□), and select the appropriated test statistic, then decision can be made based on decision rule.
Testing for two-independent samples are :

$$Z = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{S_1^2/n_1 + S_2^2/n_2}} \quad (2)$$

3. RESEARCH METHODOLOGY

The study aims to determine the factors that influence consumer staying back decision. Datas are collected through the questionnaires which are compiled and based on the model of "Seven Ps" (Product, Price, Promotion, Place, Physical Evidence, People, Process). There are three groups of consumer who are involved in the research, namely a group of consumer who decided to stay back, a group of consumers who might decide to stay back, and a group of consumers groups who decide not to stay back. Proposed improvements are given based on factors that simultaneously affect all three groups and are still considered unsatisfied.

3.1 Data Collection

Consumer information is obtained through questionnaires distributed to 130 local hotel guests. Foreign hotel guests are excluded in this survey with a consideration of differences in their assesment standard. Consumer are asked to rate the performance of the hotel based on the marketing mix variables, and a decision to stay back or not.

3.2. Research Model

The model used in this study is seen as follows:

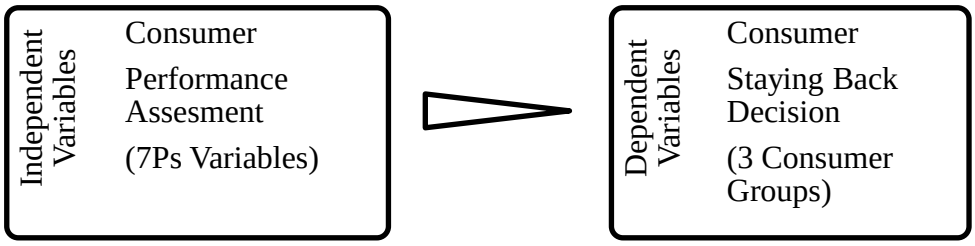

Figure 1: Research Model

3.2.1. Consumer Performance Assessment and Interest Rate

Consumer performance assessment and interest rate for the hotel are done by using variables that are developed and based on the model 7Ps (Product, Price, Place, Promotion, People, Physical Evidence, and Process). (Zeithaml *et al*. 2013).

The variables are :

VAR01: Diversity of room type
VAR02: Adequate room facilities
VAR03: Room facilities are functioning properly
VAR04: Other supporting facilities (meeting room, beauty spa, etc.)
VAR05: Food and beverages quality
VAR06: Hotel is easily reached with the help of GPS / signpost
VAR07: Ease in terms of transportation
VAR08: Adequate parking area
VAR09: Prices fit for a three-star resort hotel
VAR10: Discount for several rented rooms
VAR11: Promotion through print media
VAR12: Room cleanliness
VAR13: Good air circulation
VAR14: Security in the hotel
VAR15: Leisure in the hotel
VAR16: Beauty of surrounding
VAR17: Employee appearance
VAR18: Good room lighting

VAR19: Sports facilities
VAR20: Interesting interior design
VAR21: Recreational facilities
VAR22: Hotel landscaping
VAR23: Employee hospitality
VAR24: Employee responsiveness
VAR25: Ease of payment process
VAR26: Ease of booking process
VAR27: The speed of check in and check out process

The scales used for this question are:

Performance Assesment			Interest Rate		
1	:	Very Bad	1	:	Very Not Important
2	:	Bad	2	:	Not Important
3	:	Good	3	:	Important
4	:	Very Good	4	:	Very Important

3.2.2. Consumer Stay Back Decision

The data of consumer decision to stay back 1s obtained through the following questions:
Do you want to stay back at Dago Resort Hotel?
The scale used for this question is:
1: Not interested
2: Probably
3: Assuredly

3.3. Data Processing

3.3.1 Discriminant Analysis

This method aims is to find independent variables that significantly affect and distinguish between groups of dependent variable.
Variables used in Discriminant Analysis is as follows:

- Independent Variables consisting of 27 variables on hotel performance assessment by consumer.
- Dependent Variable is decision to stay back from the consumer.

The data will be processed by using SPSS software.

3.3.2 Hypotesis Testing

Interest rate datas and Dago Resort Hotel's level of performance are processed together with two sample hypothesis testing to determine consumer's satisfactory level for each variable that is derived from Discriminant Analysis process.

4. RESULT

4.1 Assessing Variables' Feasibility for Discriminant Analysis

Initial Discriminant Analysis processing, will be find out any independent variables that significantly affect and distinguish between groups of consumer (not interested to stay back, probably stay back, and assuredly stay back). To assess the feasibility of independent variables used in Discriminant Analysis, tests are carried out as follows:

Table 1: Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
VAR01	1.000	.000	2	127	1.000
VAR02	**.933**	**4.565**	**2**	**127**	**.012**
VAR03	.988	.747	2	127	.476
VAR04	.995	.299	2	127	.742
VAR05	.994	.361	2	127	.698
VAR06	.983	1.099	2	127	.336
VAR07	.986	.898	2	127	.410
VAR08	.984	1.062	2	127	.349
VAR09	.999	.075	2	127	.928
VAR10	**.908**	**6.447**	**2**	**127**	**.002**
VAR11	.984	1.065	2	127	.348
VAR12	.999	.068	2	127	.934
VAR13	.959	2.684	2	127	.072
VAR14	.994	.399	2	127	.672
VAR15	.998	.144	2	127	.866
VAR16	.987	.810	2	127	.447
VAR17	.999	.073	2	127	.929
VAR18	.989	.710	2	127	.494
VAR19	.999	.043	2	127	.958
VAR20	.999	.094	2	127	.911
VAR21	.993	.456	2	127	.635
VAR22	.996	.271	2	127	.763
VAR23	.968	2.104	2	127	.126
VAR24	.992	.493	2	127	.612
VAR25	.987	.810	2	127	.447
VAR26	.989	.701	2	127	.498
VAR27	.989	.674	2	127	.511

The results in Table 1 show that only two of independent variables (VAR02, VAR10) have Sig.value < 0.05, which means that those variables are feasible for further processing due to significantly differentiate groups of consumer stay interest. The Wilks' Lambda value show the importance of independent variable to the discriminant function (a smaller value indicate more important).

4.2 Forming Variables for Discriminant Analysis

At the next stage of datas processing it appears that the discriminant function is only formed by two variables, namely VAR10 and VAR02 (Table 2) , with significant value 0.002 and 0.001 (<0.05) (Table 3).

Table 2: Variables Entered

Step	Entered	Wilks' Lambda			
		Statistic	df1	df2	df3
1	VAR10	.908	1	2	127.000
2	VAR02	.864	2	2	127.000

Table 3: Variables Significance

Step	Wilks' Lambda			
	Exact F			
	Statistic	df1	df2	Sig.
1	6.447	2	127.000	.002
2	4.783	4	252.000	.001

4.3 Discriminant Function for Discriminant Analysis

At this stage the model will be obtained and discriminant validity of the model determined.

Table 4: Chi Square

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.864	18.513	4	.001
2	.987	1.648	1	.199

The results in Table 4 show that two discriminant functions are formed with Chi-square value of 18.513 and Sig. 0.001, which indicate there is a significantly differences in performance assesment for VAR02 and VAR 10 between 3 groups of consumer with different staying back decision.

Table 5: Canonical Discriminant Function Coefficients

	Function	
	1	2
VAR02	.796	1.168
VAR10	1.056	-.963
(Constant)	-5.475	-.573

Unstandardized coefficients

The results in Table 5 show that two discriminant functions are formed, which are :
ZScore _1 = -5,475 + (0,796VAR02) + (1,056VAR10)
ZSscore_2 = -0,573 + (1,168VAR02) + (-0,963VAR10)

The two functions above can be used to predict consumers decision to stay back based on their performance assesment for VAR02 and VAR10. Higher variable value in each function shows how strong those variables in discriminating the groups. For the first function, VAR10 is stronger than VAR02, and for the second function VAR02 is stronger than VAR10.

4.4 Territorial Map for Discriminant Analysis

The Discriminant analysis results indicates that there are two variables that influence consumer staying back interest, which are VAR02 (adequate room facilities) and VAR10 (discount for several rented rooms).
Territorial map (Figure 2) showed the mapping of the boundaries of each consumer group by the Function 1 (X axis) and Function 2 (Y axis), and it can be used to predict consumer group based on their performance assessment score.
To determine the consumer group in territorial map, ZScore 1 will be plotted on the X axis and ZScore 2 will be plotted on the Y axis in the territorial map.

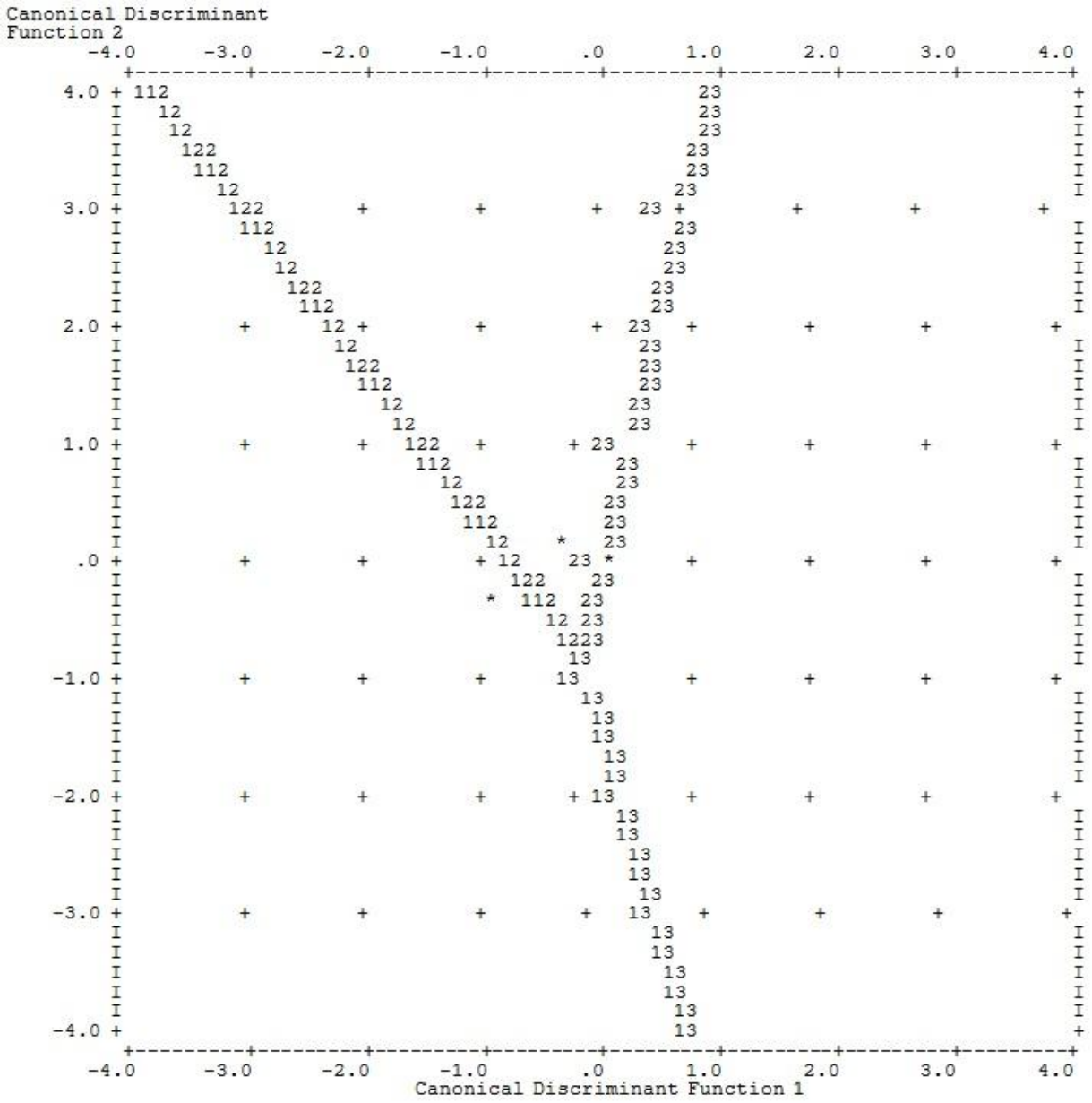

Figure 2: Territorial Map

Symbols used in territorial map

Symbol	Group	Label
1	1	Not Interested
2	2	Possibly
3	3	Assuredly
*		Indicates a group centroid

Example :

A consumer who assesses the performance of VAR02 Very Good (4) and VAR10 Good (3), will generate discriminant score as follows:

ZScore _1
= -5,475 + (0,796VAR02) + (1,168VAR10)
= -5,475 + (0,796*4) + (1,168*3) = 1,213

ZScore_2
= -0,573 + (1,168VAR02) + (-0,963VAR10)
= -0,573 + (1,168*4) + (-0,963*3) = 1,21

Based on territorial map, consumer is included in area 3 (assuredly stay back).

4.5 Model Validity for Discriminant Analysis

Table 6: Classification Results

		Stay Interest	Predicted Group Membership			Total
			NI	P	A	
Original	Count	NI	5	0	2	7
		P	14	13	25	52
		A	12	6	53	71
	%	NI	71.4	0	28.6	100.0
		P	26.9	25.0	48.1	100.0
		A	16.9	8.5	74.6	100.0

NI=Not Interested
P=possibly A=Assuredly

The results in Table 6 show how well the discriminant function work for each group of dependent variable. Cases classified correctly is 71,4% for Not Interested group, 25% for Possibly group, and 74,6 % for Assuredly group. Overall, 54,6 % of the cases are correctly classified. The lowest correct classification result is for “Possibly” group, thus resulting in a low overall classified value. Ideally, only middle value of VAR02 and VAR10 performance assesment should generate “Possibly” stay back decision, but there are some customers with a low or high assesment values who cannot decide whether to stay back or not in the future, so they choose “Possibly” answer. This consumers hesitancy will cause the low value of “Possibly” group classification result.

4.6 Group Statistics

Table 7: Group Statistics

Stay Interest	**VAR**	**Mean**	**Standard Deviation**
Not Interested	**VAR02**	**2.2857**	**.48795**
	VAR10	**2.5714**	**.53452**
Possibly	**VAR02**	**2.8462**	**.72449**
	VAR10	**2.7500**	**.73764**
Assuredly	**VAR02**	**3.0704**	**.72356**
	VAR10	**3.1690**	**.69664**
Total	**VAR02**	**2.9385**	**.73404**
	VAR10	**2.9692**	**.73599**

The results in Table 7 show that consumer with low stay back interest tends to have low performance assessment result. The Total of 3 groups mean values both for VAR02 and VAR10 still are less than 3 (good category), which shows that both of variables must be improve by the hotel management.

4.7 Two-Sample Test of Hypotesis

The level of consumer satisfaction is known by comparing the average rate of interest with the average performance level for each variable derived from Discriminant Analysis process.

The hypotheses are :
Ho : $\mu_1 = \mu_2$
(No difference between consumer performance level with interest level, so that visitors are satisfied)
Hi : $\mu_1 < \mu_2$
(Consumer performance level lower than interest level. so that visitors are dissatisfied)

Level of significance (α) : 0.05
Formula:

$$Z = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{S_1^2/n_1 + S_2^2/n_2}}$$

Region of rejection: Z < - 1.645 (taken from Normal distribution table)

Table 8: Results of Hypothesis Testing

Stay Interest	VAR	Z Value	Satisfaction
Not Interested	VAR02	-4,178	Dissatisfied
	VAR10	-1,732	Dissatisfied
Possibly	VAR02	-1,731	Dissatisfied
	VAR10	-2,394	Dissatisfied
Assuredly	VAR02	0,000	Satisfied
	VAR10	1,355	Satisfied

The results of Hypothesis Testing in Table 8 show that consumers in Not Interested group and Possibly group feel disstastified regarding with VAR02 and VAR10, yet only consumer in Assuredly group feel satisfied about those variables.

5. CONCLUSION

The research shows that there are two hotel performance factors (adequate room facilities and discount for several rented rooms) that influence customer decision to stay back in the future. Customer decision can be predicted by using two function formed by discriminant analysis which are : ZScore _1 = -5,475 + (0,796VAR02) + (1,168VAR10) and ZScore_2= -0,573 + (1,168VAR02) + (-0,963VAR10). Based on validation results, the model validity is 54,6%, therefore discriminant function formed is considered quite appropriate to classify customers based on the performance assessment.

There is a clear difference between the performance assesment results from the three group of consumers (not interested in staying back, probably staying back, and assuredly staying back), consumer with high interest to stay back ("Assuredly" group) tend to have a higher assesment value and feel satisfied regarding the two variables of hotel performance, even though the average value of performance assesment from the three groups is still slightly below the expectedly good limit.

This research suggest enhancing the level of customer satisfaction for room facilities and discount rooms in order to increase consumers in "Assuredly" group. Based of field study, several marketing strategies that can be proposed to hotel management are : provide television with good image quality and variety channel selection in all room types; improve the speed and easiness of internet connection in all rooms and hotel environments; increase the number of rooms with connecting facilities, provide special discounts for several rented rooms by classifying discounts according to the number of rented rooms. Hotel management must constantly observe the level of customers satisfaction to provide the best service quality for them. Satisfied customers most likey will stay back and increase the occupancy rate of the hotel.

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4. Hasil review 2

Industrial Engineering & Management Systems - Decision on Manuscript ID IEMS-2016-0034.R1

Industrial Engineering & Management Systems

From:
onbehalfof+chjun+postech.ac.kr@manuscriptcentral.com
To:
jimgozaly@yahoo.com

Mon, Oct 3, 2016 at 2:03 PM

03-Oct-2016
Dear Mr. Gozaly:

It is a pleasure to accept your manuscript entitled "Consumer Analysis for Increasing Occupancy Rates of Tourism Hotel" in its current form for publication in the Industrial Engineering & Management Systems. The comments of the reviewer(s) who reviewed your manuscript are included at the foot of this letter.

Thank you for your fine contribution. On behalf of the Editors of the Industrial Engineering & Management Systems, we look forward to your continued contributions to the Journal.

Sincerely,
Dr. Chi-Hyuck Jun
Editor-in-Chief, Industrial Engineering & Management Systems
chjun@postech.ac.kr

Associate Editor Comments to Author:

Area Editor
Comments to the Author:
(There are no comments.)

Reviewer(s)' Comments to Author:

Reviewer: 2

Comments to the Author
There are some trifling grammatical errors. Native check will be necessary.

Reviewer: 1

Comments to the Author
The idea of this manuscript is of interesting and is worth to investigate. I proposed some comments in the last review, and was modified in the revised version. I think the authors spent much effort to make the manuscript more valuable.

5. Submit revisi 2

Consumer Analysis for Increasing Occupancy Rates of Tourism Hotel

Jimmy Gozaly†
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Tel: (+62) 22 2012186, Email : jimgozaly@yahoo.com

Abstract. Tourism is a sector that plays an important role in the economic growth of Indonesia. Bandung as the capital of West Java province is known as the city with diverse tourism potentials, both in the attractions of the city and its surrounding natural beauty. Dago Highland Resort is a three-star resort hotel in the city with a strategic location. As a three-star resort hotel, Dago Highland Resort has been experiencing occupancy rate problems; consequently, it cannot often reach the set targets, both during the high season and low season. The purpose of this study is to identify the factors of hotel performance that influences consumer staying back decision in the future. Questionnaires have been distributed to hotel guests to gather information regarding their interest and the performance assessment of the hotel services and facilities, and the staying back decision in the future. Discriminant Analysis and Hypothesis Testing are used to determine which hotel performance variables will directly affect consumer staying back decision. The result of this study provides a marketing strategy that should be implemented by the hotel management in order to increase its occupancy rate.

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1. INTRODUCTION

Dago Highland Resort is a hotel in the city located not far from the city, yet it has a beautiful natural environment. With 75 rooms in traditional architecture of West Java, the atmosphere of the mountains, and complete facilities, the hotel has a potential as a promising tourist destination. However, the hotel has been experiencing occupancy rate problems, which often cannot achieve the set targets, both during the high season and low season.

To overcome the problem, the hotel management has to know the level of consumer satisfaction for the hotel performance, and which factors will directly influence their staying decision. The study is conducted to provide inputs for the hotel management about things that need to be considered in relation to the level of consumer satisfaction.

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$$Z_{jk} = a + W_1X_{1k} + W_2X_{2k} + ... + W_nX_{nk} \quad (1)$$

where :

Z_{jk}	:	discriminant Z score of discriminant function j for object k
a	:	intercept
W_i	:	discriminant weight for independent variable i
X_{ik}	:	independent variable i for object k

2.3 Two-Sample Test of Hypotesis: Independent Samples (Lind, Marchal, Wathen 2008)

Hypothesis testing is a procedure based on sample evidence and probability theory to determine whether the hypothesis is a reasonable statement.

After stating the null hypothesis (H_o) and the alternate hypothesis (H_1), a level of significance (α) and the appropriated test statistics are selected, then a decision can be made based on a decision rule.

Testing for two-independent samples are :

$$Z = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{S_1^2/n_1 + S_2^2/n_2}} \quad (2)$$

3. RESEARCH METHODOLOGY

The study aims to determine the factors that influence consumer staying back decision. Datas are collected through questionnaires which are compiled and based on the model of "Seven Ps" (Product, Price, Promotion, Place, Physical Evidence, People, Process). There are three groups of consumers who are involved in the research, namely a group of consumers who decide to stay back, a group of consumers who might decide for stay back, and a group of consumers who decide not to stay back. Proposed improvements are given based on factors that simultaneously affect all three groups and are still considered unsatisfied.

3.1 Data Collection

Consumer information is obtained through questionnaires distributed to 130 local hotel guests. Foreign hotel guests are excluded in this survey with a consideration of differences in their assesment standard. Consumers are asked to rate the performance of the hotel based on the marketing mix variables, and a decision to stay back or not.

3.2. Research Model

The model used in this study is seen as follows:

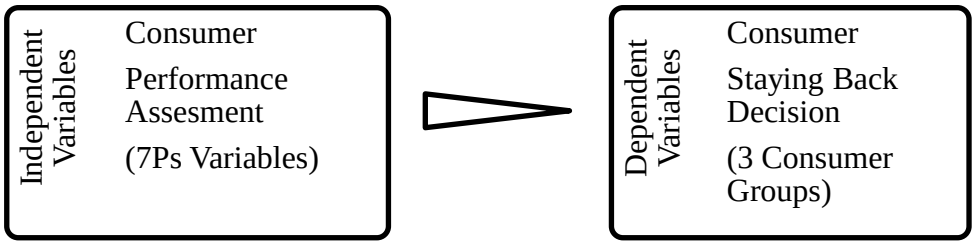

Figure 1: Research Model

3.2.1. Consumer Performance Assessment and Interest Rate

Consumer performance assessment and interest rate for the hotel are done by using variables that are developed and based on the model 7Ps (Product, Price, Place, Promotion, People, Physical Evidence, and Process). (Zeithaml *et al*. 2013).
The variables are :
VAR01: Diversity of room type
VAR02: Adequate room facilities
VAR03: Room facilities are functioning properly
VAR04: Other supporting facilities (meeting room, beauty spa, etc.)
VAR05: Food and beverages quality
VAR06: Hotel is easily reached with the help of GPS / signpost
VAR07: Ease in terms of transportation
VAR08: Adequate parking area
VAR09: Prices fit for a three-star resort hotel
VAR10: Discount for several rented rooms
VAR11: Promotion through print media
VAR12: Room cleanliness
VAR13: Good air circulation
VAR14: Security in the hotel
VAR15: Leisure in the hotel
VAR16: Beauty of surrounding
VAR17: Employee appearance
VAR18: Good room lighting
VAR19: Sports facilities
VAR20: Interesting interior design
VAR21: Recreational facilities
VAR22: Hotel landscaping
VAR23: Employee hospitality
VAR24: Employee responsiveness
VAR25: Ease of payment process
VAR26: Ease of booking process
VAR27: The speed of check in and check out process

The scales used for this question are:

Performance Assesment			Interest Rate		
1	:	Very Bad	1	:	Very Not Important
2	:	Bad	2	:	Not Important
3	:	Good	3	:	Important

4 : Very Good 4 : Very Important

3.2.2. Consumer Stay Back Decision

The data of consumer decision to stay back is obtained through the following questions:
Do you want to stay back to Dago Resort Hotel?
The scale used for this question includes:
1: Not interested
2: Probably
3: Assuredly

3.3. Data Processing

3.3.1 Discriminant Analysis

This method aims to find independent variables that significantly affect and distinguish between groups of dependent variable.
Variables used in Discriminant Analysis is as follows:

- Independent Variables consisting of 27 variables on hotel performance assessment by consumers.
- Dependent Variable is decision to stay back from the consumers.

The data will be processed by using SPSS software.

3.3.2 Hypotesis Testing

Interest rate data and Dago Resort Hotel level of performance are processed together with two sample hypothesis testings to determine the consumer satisfactory level for each variable that is derived from Discriminant Analysis process.

4. RESULT

4.1 Assessing Variables' Feasibility for Discriminant Analysis

Initial Discriminant Analysis processing will find out any independent variables that significantly affect and distinguish between groups of consumers (not interested to stay back, probably stay back, and assuredly stay back). To assess the feasibility of independent variables used in Discriminant Analysis, tests are carried out as follows:

Table 1: Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
VAR01	1.000	.000	2	127	1.000
VAR02	**.933**	**4.565**	**2**	**127**	**.012**
VAR03	.988	.747	2	127	.476
VAR04	.995	.299	2	127	.742
VAR05	.994	.361	2	127	.698
VAR06	.983	1.099	2	127	.336
VAR07	.986	.898	2	127	.410
VAR08	.984	1.062	2	127	.349
VAR09	.999	.075	2	127	.928
VAR10	**.908**	**6.447**	**2**	**127**	**.002**
VAR11	.984	1.065	2	127	.348
VAR12	.999	.068	2	127	.934
VAR13	.959	2.684	2	127	.072
VAR14	.994	.399	2	127	.672
VAR15	.998	.144	2	127	.866
VAR16	.987	.810	2	127	.447
VAR17	.999	.073	2	127	.929
VAR18	.989	.710	2	127	.494
VAR19	.999	.043	2	127	.958
VAR20	.999	.094	2	127	.911
VAR21	.993	.456	2	127	.635
VAR22	.996	.271	2	127	.763
VAR23	.968	2.104	2	127	.126
VAR24	.992	.493	2	127	.612
VAR25	.987	.810	2	127	.447
VAR26	.989	.701	2	127	.498
VAR27	.989	.674	2	127	.511

The results in Table 1 show that only two independent variables (VAR02, VAR10) have Sig.value < 0.05, which means that those variables are feasible for further processing due to the significantly differentiate groups of consumer stay interest. The Wilks' Lambda value shows the importance of independent variable to the discriminant function (a smaller value indicates more important).

4.2 Forming Variables for Discriminant Analysis

At the next stage of data processing, it appears that the discriminant function is only formed by two variables, namely VAR10 and VAR02 (Table 2) , with a significant value of 0.002 and 0.001 (<0.05) (Table 3).

Table 2: Variables Entry

Step	Entered	Wilks' Lambda			
		Statistic	df1	df2	df3
1	VAR10	.908	1	2	127.000
2	VAR02	.864	2	2	127.000

Table 3: Variables Significance

Step	Wilks' Lambda			
	Exact F			
	Statistic	df1	df2	Sig.
1	6.447	2	127.000	.002
2	4.783	4	252.000	.001

4.3 Discriminant Function for Discriminant Analysis

At this stage, the model will be obtained while the discriminant validity of the model determined.

Table 4: Chi Square

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.864	18.513	4	.001
2	.987	1.648	1	.199

The results in Table 4 show that two discriminant functions are formed with Chi-square value of 18.513 and Sig. 0.001, which indicates that there is a significantly difference in the performance assesment for VAR02 and VAR 10 between 3 groups of consumers with different staying back decisions.

Table 5: Canonical Discriminant Function Coefficients

	Function	
	1	2
VAR02	.796	1.168
VAR10	1.056	-.963
(Constant)	-5.475	-.573

Unstandardized coefficients

The results in Table 5 show that two discriminant functions are formed, namely :

ZScore _1 = -5,475 + (0,796VAR02) + (1,056VAR10)
ZSscore_2 = -0,573 + (1,168VAR02) + (-0,963VAR10)

The two functions above can be used to predict consumer decision to stay back based on their performance assesment for VAR02 and VAR10. Higher variable value in each function shows how strong those variables in discriminating the groups. For the first function, VAR10 is stronger than VAR02, and for the second function VAR02 is stronger than VAR10.

4.4 Territorial Map for Discriminant Analysis

The Discriminant analysis results indicate that there are two variables that influence consumer staying back interest, which are VAR02 (adequate room facilities) and VAR10 (discount for several rented rooms).
Territorial map (Figure 2) shows the mapping of the boundaries of each consumer group by the Function 1 (X axis) and Function 2 (Y axis), and it can be used to predict consumer group based on their performance assessment score.

To determine the consumer group in territorial map, Z Score 1 will be plotted on the X axis and Z Score 2 will be plotted on the Y axis in the territorial map.

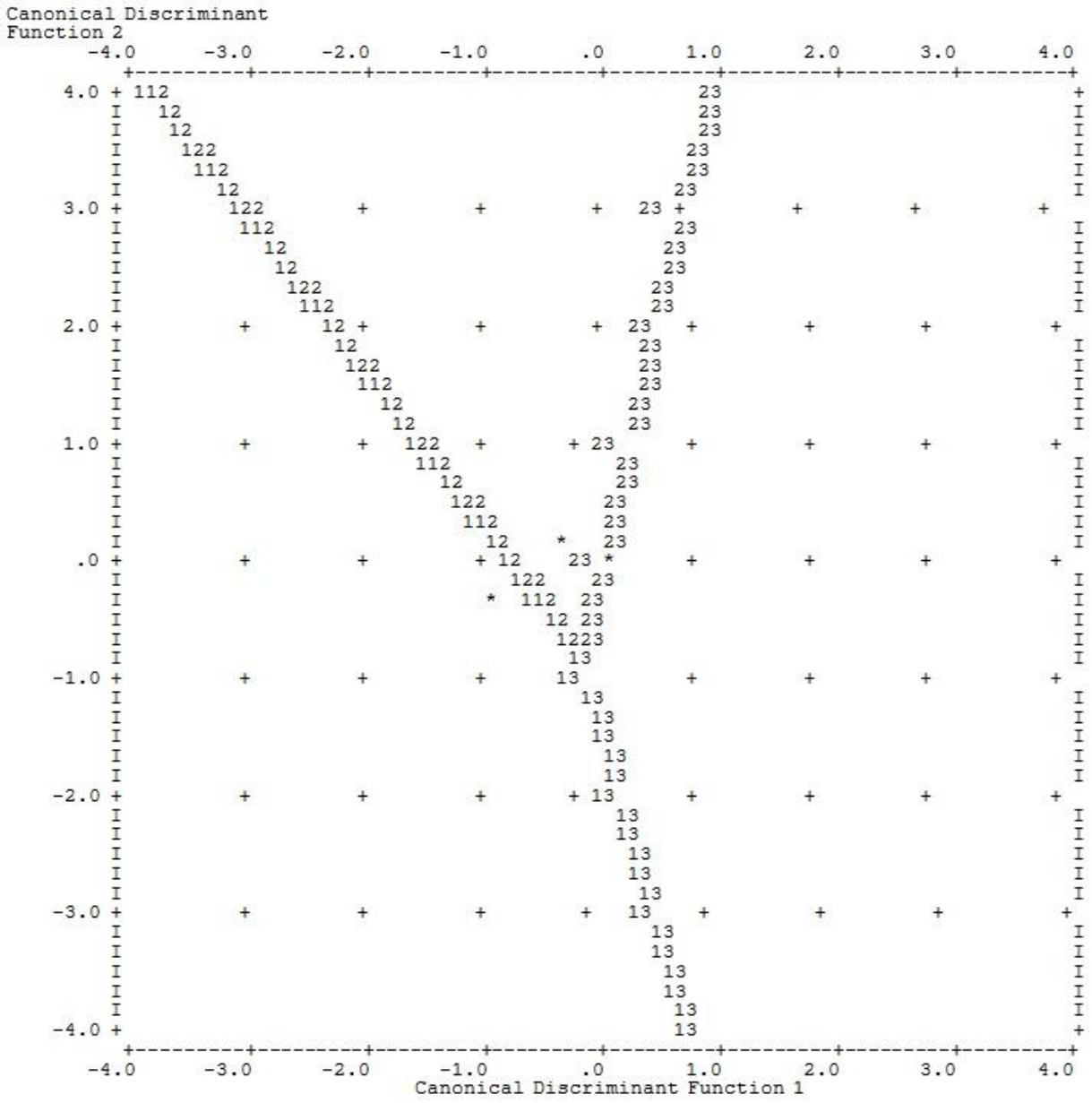

Figure 2: Territorial Map

Symbols used in territorial map are:

Symbol	Group	Label
1	1	Not Interested
2	2	Possibly
3	3	Assuredly
*		Indicates a group centroid

Example :

A consumer who assesses the performance of VAR02 Very Good (4) and VAR10 Good

(3), will generate discriminant score as follows:

ZScore _1
= -5,475 + (0,796VAR02) + (1,168VAR10)
= -5,475 + (0,796*4) + (1,168*3) = 1,213

ZScore_2
= -0,573 + (1,168VAR02) + (-0,963VAR10)
= -0,573 + (1,168*4) + (-0,963*3) = 1,21

Based on the territorial map, consumers are included in area 3 (assuredly stay back).

4.5 Model Validity for Discriminant Analysis

Table 6: Classification Results

		Stay Interest	Predicted Group Membership			Total
			NI	P	A	
Original	Count	NI	5	0	2	7
		P	14	13	25	52
		A	12	6	53	71
	%	NI	71.4	0	28.6	100.0
		P	26.9	25.0	48.1	100.0
		A	16.9	8.5	74.6	100.0

NI=Not Interested
P=Possibly A=Assuredly

The results in Table 6 show how well the discriminant function works for each group of dependent variable. Cases classified correctly are 71.4% for Not Interested group, 25% for Possibly group, and 74.6 % for Assuredly group. Overall, 54.6 % of the cases are correctly classified. The lowest correct classification result is for “Possibly” group, thus resulting in a low overall classified value. Ideally, only the middle value of VAR02 and VAR10 performance assesment should generate “Possibly” stay back decision, but there are some customers with low or high assesment values who cannot decide whether to stay back or not in the future, so they choose “Possibly” answer. This consumer hesitancy will cause the low value of “Possibly” group classification result.

4.6 Group Statistics

Table 7: Group Statistics

Stay Interest	**VAR**	**Mean**	**Standard Deviation**
Not Interested	**VAR02**	**2.2857**	**.48795**
	VAR10	**2.5714**	**.53452**
Possibly	**VAR02**	**2.8462**	**.72449**
	VAR10	**2.7500**	**.73764**
Assuredly	**VAR02**	**3.0704**	**.72356**
	VAR10	**3.1690**	**.69664**
Total	**VAR02**	**2.9385**	**.73404**
	VAR10	**2.9692**	**.73599**

The results in Table 6 show that consumers with low stay back interest tend to have a low performance assessment result. The total of 3 groups means that values both for VAR02 and VAR10 still are less than 3 (good category), which shows that both variables must be improved by the hotel management.

4.7 Two-Sample Test of Hypotesis

The level of consumer satisfaction is known by comparing the average rate of interest with the average performance level for each variable derived from Discriminant Analysis process.

The hypotheses are :
Ho : $\mu_1 = \mu_2$
(No difference between consumer performance level with interest level, therefore visitors are satisfied)
Hi : $\mu_1 < \mu_2$
(Consumer performance level is lower than interest level, therefore visitors are dissatisfied)

Level of significance (α) : 0.05
Formula:

$$Z = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{S_1^2/n_1 + S_2^2/n_2}}$$

Region of rejection: Z < - 1.645 (taken from Normal distribution table)

Table 8: Results of Hypothesis Testing

Stay Interest	VAR	Z Value	Satisfaction
Not Interested	VAR02	-4,178	Dissatisfied
	VAR10	-1,732	Dissatisfied
Possibly	VAR02	-1,731	Dissatisfied
	VAR10	-2,394	Dissatisfied
Assuredly	VAR02	0,000	Satisfied
	VAR10	1,355	Satisfied

The results of Hypothesis Testing in Table 6 show that consumers in Not Interested group and Possibly group feel disstastified regarding VAR02 and VAR10, yet only consumers in Assuredly group feel satisfied with those variables.

5. CONCLUSION

The research shows that there are two hotel performance factors (adequate room facilities and discounts for several rented rooms) that influence customer decision to stay back in the future. Customer decision can be predicted by using two function formed by discriminant analysis which are : ZScore _1 = -5,475 + (0,796VAR02) + (1,168VAR10) and ZScore_2= -0,573 + (1,168VAR02) + (-0,963VAR10). Based on validation results, the model validity is 54.6%, therefore the discriminant function formed is considered quite appropriate to classify customers based on the performance

assessment.
There is a clear difference between the performance assesment results from the three group of consumers (not interested in staying back, probably staying back, and assuredly staying back), consumers with high interest for stay back ("Assuredly" group) tend to have a higher assesment value and feel satisfied regarding the two variables of the hotel performance, even though the average value of performance assesment from the three groups is still slightly below the expectedly good limit.
This research suggests enhancing the level of cusomer satisfaction for room facilities and discount rooms in order to increase consumers in "Assuredly" group. Based of the field study, several marketing strategies that can be proposed to hotel management are : provide television with good image quality and variety channel selection in all room types; improve the speed and easiness of Internet connection in all rooms and hotel environments; increase the number of rooms with connecting facilities, provide special discounts for several rented rooms by classifying discounts according to the number of rented rooms. Hotel management must constantly observe the level of customer satisfaction to provide the best service quality for them. Satisfied customers most likey will stay back and increase the occupancy rate of the hotel.

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6. Bukti penerimaan revisi 2:

From: Chi-Hyuck Jun <chjun@postech.ac.kr>
To: Jimmy Gozaly <jimgozaly@yahoo.com>
Sent: Tuesday, October 4, 2016 8:36 AM
Subject: Re: Industrial Engineering & Management Systems - Decision on Manuscript ID IEMS-2016-0034.R1
Dear Jimmy Gozaly,
Please send me the final version in MS Word file through my e-mail.
Thanks for your contribution.

Regards,
Jun, Chi-Hyuck
Professor, Industrial & Management Engineering, POSTECH
Managing Editor, Industrial Engineering & Management Systems
chjun@postech.ac.kr
054-279-2197/010-2059-2197

7. Bukti submit versi final (MS Word):

보낸 사람: Jimmy Gozaly <jimgozaly@yahoo.com>
보낸 날짜: 2016년 10월 4일 화요일 오후 6:09
받는 사람: 전치혁(산업경영공학과)
제목: Re: Industrial Engineering & Management Systems - Decision on Manuscript ID IEMS-2016-0034.R1

Dear Dr. Chi-Hyuck Jun
Herewith I submit my manuscript final version in MS Word file. Thank you very much for your kindly attention.

Best regards,
Jimmy Gozaly

8. Permintaan proofread

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Dear Professor Chi-Hyuck Jun

I have received the hardcopy of IEMS Jounal Volume 16, Number 1, March 2017. Thank you very much for all your help, hopefully I can contribute again to IEMS Journal in the future.

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