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# Revising Importance-Performance Analysis combined with Regression Model: Applied to Seniors' Travel Motivations

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## ABSTRACT

*This study proposed a revised Importance-Performance Analysis (IPA) approach that combines with a regression model due to the strong relationships between the 15 paired variables regarding seniors' importance of motivations and perceived performance of experiences. Findings suggest that a combination of the traditional IPA results and predicted values (lines) from a linear regression analysis makes better understandings of the customers' perceptions and behaviours in the target market, which is the senior travel market in this study. Future research should be undertaken to validate the revised IPA model suggested in this study using different constructs/variables in different markets.*

**Keywords:** *importance-performance analysis, linear regression model, seniors' motivations.*

## INTRODUCTION

Importance-performance analysis (IPA) has been adopted as an effective tool of evaluating a firm's competitive position in the market and for developing marketing strategies (Hawes and Rao 1985; Martilla and James 1977; Myers 2001), and it has been used in tourism and hospitality research for many years. IPA is a simple and effective technique that can assist marketers in prioritizing customer attributes when building maintainable strategies, and enhance service quality and customer satisfaction. IPA, first introduced by Martilla and James (1977), identifies which product or service attributes a firm should focus on to enhance customer satisfaction (Matzler, Sauerwein, and Heischmidt 2003). In spite of its popularity and ease of application, few studies have critically considered the conceptual validity, relationships among variables, and practical issues (Oh 2000).

The primary purpose of this study is to attempt to revise the traditional IPA approach by combining with regression model. The revised IPA model in this study was essentially based on one of the suggestions by many prior studies. This study focuses on the strong relationships among the paired variables (Deng 2007; Oh 2001) (e.g., seniors' importance of motivations and perceived performances in this study).

## RESEARCH METHOD

### Data Collection

The primary data were collected by personal interviews using a self-administered questionnaire. A convenience sampling procedure, which is the lack of availability of a known sampling frame, was used because of the number of people available for interviewing and the inability to use a probability sample (Parasuraman, 1986). The sample used in this study was

collected from May 12 to 25, 2011. An on-site survey was administered to domestic senior travellers (+55) who were leaving Jeju Island from the Jeju International Airport. A total of 350 surveys were distributed and 336 were collected during the survey period. After performing multiple missing-value analysis, 18 surveys were discarded. As a result, 318 samples were used for further data analysis.

### **Survey Instrument**

Two main constructs were used to analyze the data in this study: importance of motivations for a pleasure trip, and perceived performance of experience while in Jeju Island. Fifteen motivational items relevant to pleasure travel were selected from previous studies in the travel and tourism literature (Chen and Hsu 2000; Crompton 1979; Dann 1981; Echtner and Ritchie 1993; Kozak 2002; Pyo, Mihalik, and Uysal 1989; Uysal and Jurowski 1994; Yuan and McDonald 1990). These were used to measure the perceived importance of motivations and the perceived performance of experience while travelling in Jeju Island. Responses were measured on 5-point Likert-type scales where 1=not at all important and 5=very important for importance measures, and where 1=strongly disagree and 5=strongly agree for performance measures.

### **Data Analysis**

Descriptive statistics were performed for all items related to motivations and perceived performance of experience to provide characteristics of the sample and offer general information regarding the variables. Simple correlation analysis with reliability tests was carried out to identify the relationships between individual variables while Cronbach's alpha was used to determine the internal consistency of the construct. A series of paired samples *t*-tests were analyzed on study variables (importance of motivations vs. perceived performance of experience) to determine whether the means of two variables differed.

On the basis of the placement of each attribute on an importance-performance grid for motivations, accomplished by using the means of importance-performance as the coordinates (Hudson, Simon, and Shephard 1998; Martilla and James 1977; Go and Zhang 1997; Joppe, Martin, and Waalen, 2001; Zhang and Chow 2004; Vaske, Beaman, Stanley, and Grenier 1996), a perceptual map was created. Once these calculations had been performed, they were plotted on a two-dimensional grid. Further, fitted regression lines based on the predicted values for perceived performance against the level of importance of motivations were added in the IPA perceptual map for pursuing a better interpretation and understanding of the results.

## **RESULTS**

### **Analysis of Differences between the Paired Variables**

Table 1 reports the results of paired *t*-tests undertaken on the mean scores for each item on both the importance of motivations and perceived performance of experience. Statistically significant differences were found in only two of the fifteen items when comparing the mean scores of the importance of motivations with the paired variables (perceived performance of experience). Importance scores of "rest and recuperate" and "release or reduce some buildup tensions" are significantly higher than performance scores. Overall, senior respondents were less likely to perceive their performance items highly, compared to the importance level of motivational desires.

**Table 1**  
**Results of Paired Samples *T*-test between the Importance of Motivations and Perceived Performance of Experience While Travelling in Jeju Island**

No.	Attribute Description	Mean of Importance Rating <sup>a</sup>	Mean of Performance Rating <sup>b</sup>	Mean Difference	<i>t</i> -value
1	Escape from everyday routine life	4.25	4.20	.05	1.190
2	Rest and recuperate	4.29	4.15	.14	3.004**
3	Release or reduce some buildup tensions	4.23	4.11	.12	2.578**
4	Feel exhilaration	4.21	4.15	.06	1.139
5	Improve physical health	4.12	4.07	.05	0.830
6	Have good times with my spouse, family or friends	4.18	4.10	.08	1.649
7	Meet people with similar interests	4.06	4.02	.05	0.873
8	See or do something new and different	4.09	4.00	.09	1.587
9	Experience local culture	4.08	4.05	.02	0.534
10	Meet people with different styles or interests	3.94	3.97	-.03	-0.571
11	Learn more about the world	3.83	3.92	-.09	-1.520
12	Enrich my perspective on life	3.97	4.06	-.08	-1.756
13	Re-discover myself	4.10	4.04	.06	0.914
14	Gain a sense of accomplishment	3.96	4.04	-.08	-1.524
15	Tell others about the trip after I return home	4.04	4.02	.03	0.529

Note: While <sup>a</sup> mean values of importance were measured on a 5-point Likert-type scale where 1 = not at all important and 5 = very important, <sup>b</sup> mean values of performance measured on a 5-point Likert-type scale where 1 = strongly disagree; 5 = strongly agree; \*\*  $p < .01$ .

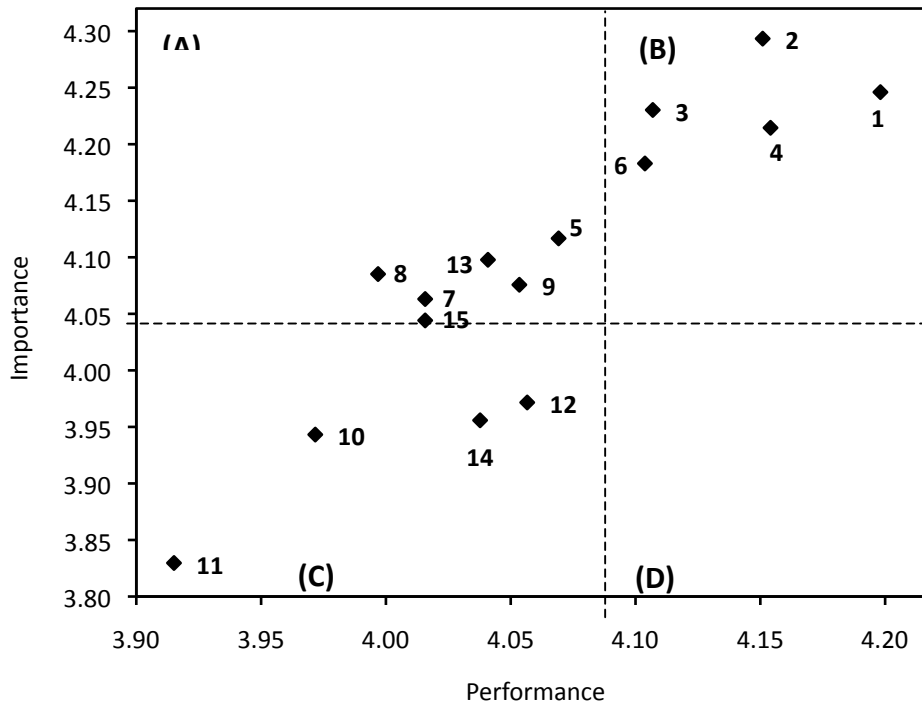
### Perceptual Mapping based on Importance-Performance and Regression Analyses

Figure 1 provides a perceptual map on the basis of the conventional IPA approach. For the IPA, paired attribute ratings (mean values) from Table 1 were first plotted on a two-dimensional grid. The dotted horizontal and vertical axes were positioned by using grouped median values rather than mean scores or midpoints of the measurement scale (Martilla and James 1977). These axis lines divide the figure into four sections: (A) attributes in the top left quadrant are rated very important, but the level of perceived performance of experience is rated below average; (B) attributes in the top right quadrant are rated very important, and the level of performance is above average; (C) attributes in the bottom left quadrant are considered less important, and performance is below average; and (D) attributes in the bottom right quadrant are rated above average on performance but are rated below average on importance.

As seen in Figure 1, many of the attributes are located at the upper right-hand (B) and lower left-hand (C) quadrants except for “improve physical health (5),” “meet people with similar interests (7),” “see or do something new and different (8),” “experience local culture (9),” and “re-discover myself (13),” based on the horizontal axis. Five attributes including “escape from everyday routine life (1),” “rest and recuperate (2),” “release or reduce some buildup tensions (3),” “feel exhilaration (4),” and “have good times with my spouse, family or friends (6)” are located in the upper right-hand quadrant (high performance, high importance). In contrast, five attributes including “meet people with different styles or interests (10),” “learn more about the world (11),” “enrich my perspective on life (12),” “gain a sense of accomplishment (14),” and “tell others about the trip after I return home (15)” were rated below average for both importance and satisfaction (lower left-hand quadrant). Meanwhile, “improve physical health (5),” “meet people with similar interests (7),” “see or do something new and different (8),” “experience local culture (9),” and “re-discover myself (13)” were considered above average for importance but below average on performance (located in the upper left-hand

quadrant). However, none of the attributes were perceived as higher than average on performance but below average on importance (lower right-hand quadrant).

**Figure 1**  
**Result of the Importance of Motivations and Performance of Experience: IPA Model**



Note: The dotted horizontal and vertical axes were based on grouped median values rather than mean values or midpoints of the measurement scale; The numbers refer to the attributes listed in Table 1.

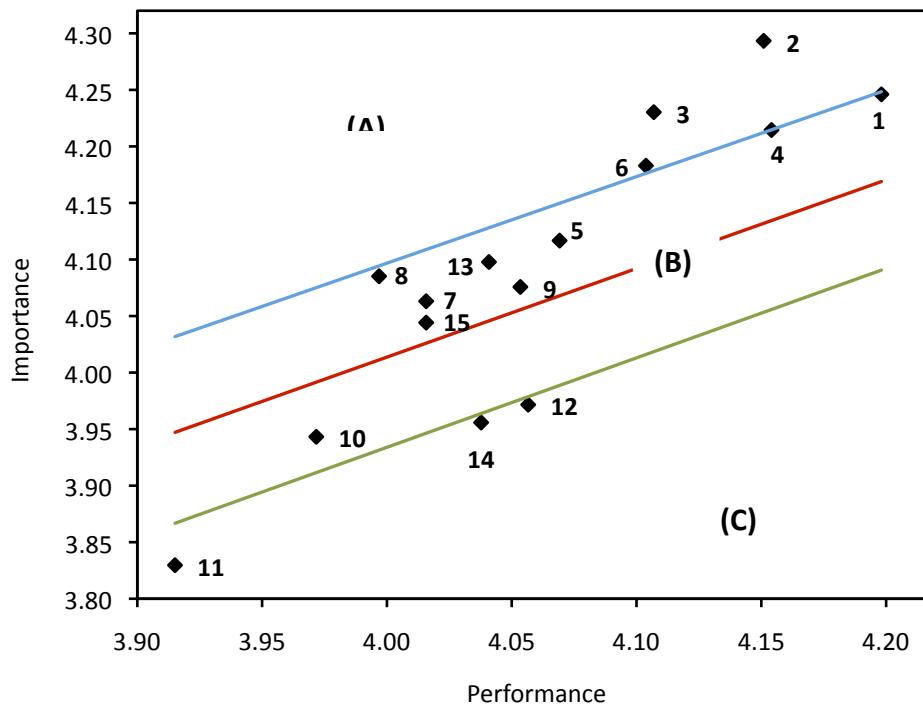
Figure 2 indicates the result from a perceptual map of the regression analysis based on the level of importance of motivations and perceived performance of experience while traveling in Jeju Island. To obtain the predicted slope (red) line in Figure 2, predicted values were estimated using the results of linear regression models where overall performance is the dependent (endogenous) variable. In addition, upper and lower 95% of confidence intervals for each of the predicted values were displayed to determine whether the variables are acceptable with respect to the differences between level of the importance and performance.

Interpretation of the result based on the regression model could be considered for three classifications: (A) items placed above the upper 95% predict (blue) line; (B) variables positioned in between the upper 95% predict (blue) and the lower 95% predict (green) lines; and (C) items located below the lower 95% predict (green) line. Variables (B) positioned between the upper 95% predict (blue) and the lower 95% predict (green) lines indicate that they are suitable performance items compared to the level of motivational desires before travel. Whereas items (C) located below the lower 95% predict (green) line indicate that they performed highly compared to the level of importance, variables (A) positioned above the upper 95% predict (blue) line indicate that they performed low compared to the level of performance.

The results indicate that while senior respondents tended to be less satisfied with “resting and recuperating (2),” “releasing or reducing some buildup tensions (3),” and “having good times with my spouse, family or friends (6),” they tended to be more satisfied with “learning more about the world (11),” “enriching my perspective on life (12),” and “gaining a sense of accomplishment (14)” compared to their levels of importance. In contrast, variables including “escape from everyday routine life (1),” “feel exhilaration (4),” “improve physical health (5),” “meet people with similar interests (7),” “see or do something new and different (8),” “experience local culture (9),” “re-discover myself (13),” and “tell others about the trip after I

return home (15)” were perceived by senior tourists as the suitable items regardless of the levels of importance and performance.

**Figure 2**  
**Result of the Importance of Motivations and Performance of Experience: Regression Model**



Note: Three slope lines are related to the result of regression analysis: while the red slope line indicates fitted linear regression line based on predicted values for perceived performance of experience against the level of importance of motivations for pleasure trips, the blue and green lines are confidence intervals for each of the predicted values, indicating upper 95% predict and lower 95% predict, respectively; The numbers refer to the attributes listed in Table 1.

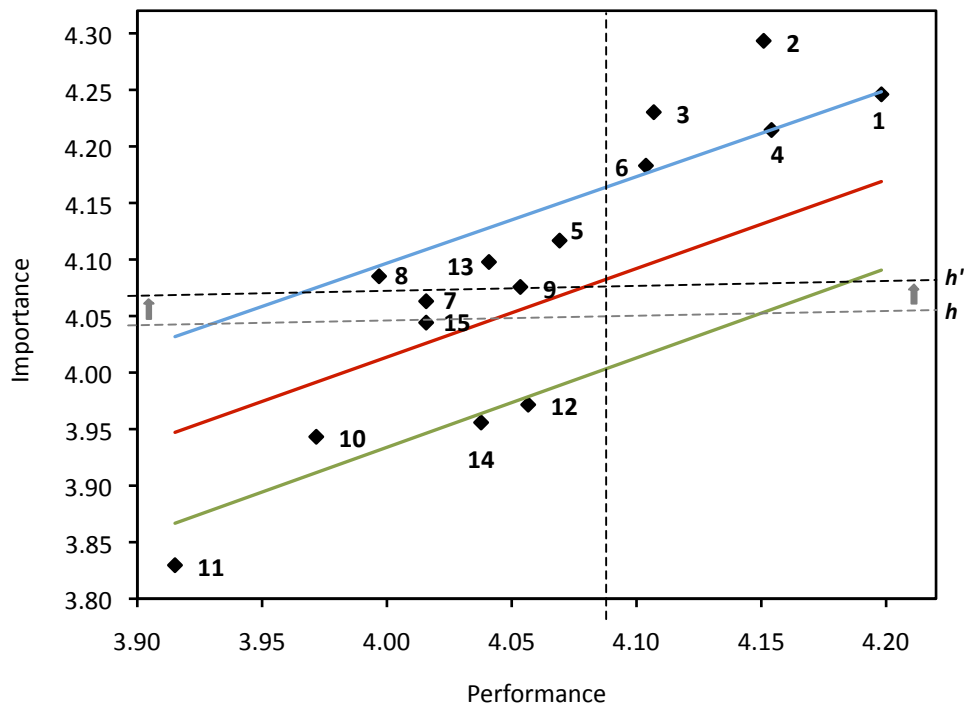
Figure 3 shows a perceptual map on the basis of a combination of the importance-performance analysis and the regression model indicating that the horizontal (moved up to  $h'$ ) and vertical axes are needed to be modified for better interpretation of the results. This study provides only predicted performance scores (lines) regressed by the level of importance due to technical challenges in drawing in Figure 3, implying that predicted importance line(s) regressed by the level of performance are also available to add in the IPA perceptual map, moving the vertical axis down or up. The previous four quadrants were revised. As a result, based on the new horizontal axis of ' $h$ ', “meet people with similar interests (7),” and “experience local culture (9)” and five other items were re-positioned to below average for both importance and satisfaction (lower left-hand quadrant) from the lower right-hand quadrant. Other items remained in the same quadrants.

## CONCLUSION

This study proposed a revised IPA model that combines with regression analysis. Unlike the traditional IPA, this study demonstrated that the horizontal and vertical axes can be moved down or up (to right or left) without adding new variables and the typical four quadrants in IPA can also be modified into the three spaces on the basis of the results of regression model. It is expected that this makes better understandings of the customers’ perceptions and behaviours in the target market, which is the senior travel market in this study. For building pragmatic destination marketing or promotional strategies in the real world environment, improved research methods including proper measurement scales, sampling issues, normalization of variables, etc. should be requested. Future research should be undertaken to validate the revised IPA model

suggested in this study using different constructs/variables in different markets. The results of this study should also be substantiated by further research.

**Figure 3**  
**Result of the Importance of Motivations and Performance of Experience: Combined Model**



Note: The dotted horizontal and vertical axes were based on grouped median values rather than mean values or midpoints of the measurement scale; Three slope lines are related to the result of regression analysis: while the red slope line indicates fitted linear regression line based on predicted values for perceived performance of experience against the level of importance of motivations for pleasure trips, the blue and green lines are confidence intervals for each of the predicted values, indicating upper 95% predict and lower 95% predict, respectively; The numbers refer to the attributes listed in Table 1.

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