

A METHODOLOGICAL COMPARISON OF CUSTOMER SERVICE ANALYSIS TECHNIQUES

James Absher, USDA Forest Service-Pacific Southwest Research Station

Alan Graefe, Pennsylvania State University

Robert Burns, University of Florida

Abstract: Techniques used to analyze customer service data need to be studied. Two primary analysis protocols, importance-performance analysis (IP) and gap score analysis (GA), are compared in a side-by-side comparison using data from two major customer service research projects. A central concern is what, if any, conclusion might be different due solely to the analysis technique employed. Although the results of the methodological comparisons rely on generally similar patterns in the data, strong differences in managerial decision recommendations are shown. This directs researchers' and managers' attention to the form of analysis as much as the data gathering instruments themselves. Such a methodological comparison also allows for a deeper understanding of the strengths and weaknesses of the two techniques, and leads to a discussion of the methodological issues underlying customer service analysis.

Introduction

Many recreational visitor studies, particularly those that are customer service focused, have given rise to the use of analysis techniques known as importance-performance analysis (IP) and gap analysis (GA). Methodological work to date has focused on the development of the measurement instruments and not the analysis form and presentation itself. This paper compares these two techniques directly using the same data. This will illustrate how different these two techniques can be for making management decisions and begin a dialogue about the strengths and weaknesses of either method.

The IP concept was brought into recreation management from the broader marketing literature by Guadagnolo (1985) and others (e.g., Hollenhorst, Olson & Fortney 1992). It is closely based on the work of Martilla and James (1977), wherein items are chosen for their relevance to the individual's experience or as part of a known list of attributes or benefits likely to be part of the recreation visit. Also labeled as "action grid" analysis, the procedure requires two measures of each construct deemed significant. The first measures the importance to the respondent and the second its performance. Importance would ideally be measured pre-visit and the second must be measured post-visit, but in practice it is usually done as a post-experience questionnaire with a cross sectional design. However obtained, results are calculated as mean scores for each item with the IP pair used as a graphical

(x,y) pair in a grid with importance and performance axes. The grid is then subdivided based on the scale mid-points (high/low) which then results in grouping the pairs into four action quadrants (1 - 4) with an associated management action (Figure 1). This is the classic IP, or IPc for short

A variant of IP that has come into common practice is to divide the scale on the grand mean of all items for each axis rather than the numerical mid-point. Although the quadrants are variable in size in the IP grid the analysis and action recommendations follow the original pattern. This is referred to as alternative IP, or IPa for short

Another variant of IP analysis in practice has been to reverse the axes so that the quadrants 1 and 4 are reversed in sequence to a counter clockwise flow (2 and 4 are reversed in position). This has no bearing on anything substantive and represents only a difference in data presentation. Finally, there have been numerous ways introduced to measure the axes. For instance importance has been variously scaled as expectation, desirability or relevance, and performance has been scaled as satisfaction or outcome. These are significant and substantive variations as they have substantial implications for theory and make different assumptions about the phenomenon of interest and the behaviors in question. They are not the focus of this paper. Even though the data used below only represents one way to measure IP, all of these variant forms are likely to face similar methodological issues and may be considered as co-equal representations of IP analysis.

A second, significant variation of customer service analysis is called Gap Analysis. GA has been also brought into recreation management from the services marketing literature, albeit somewhat more recently, by Crompton, MacKay and Fesenmaier (1991), Wright, Duray and Goodale (1992) and Howat, Absher, Crilley and Milne (1996). It is based on the conceptual work of Parasuraman, Zeithaml and Berry (1985, 1988) which showed that consumers assess service quality through a series of comparisons, notably performance against an expectation or desired standard. GA sacrifices the graphical ease of IP and focuses on the difference in scores between the individual measures of salience (importance, etc.) and performance. These differences are then analyzed, usually in aggregate with a simple arithmetic ranking by size of the "gap," to obtain results for management recommendations. In practice the largest negative scores are considered the biggest "problems" as these are the ones for which performance is far less than importance. Again, the variations in measurement scales are not the focus herein, only the arithmetic difference (gap) itself as a measure.

In summary, there are two main measurement techniques in use: IP and GA. And IP has two variations of interest as well: means (IPa) versus scale midpoints (IPc) as the graphing "cross hairs."

Below we compare these two main analysis strategies (IP and GA) by presenting customer satisfaction measures from two rather large scale surveys in order to:

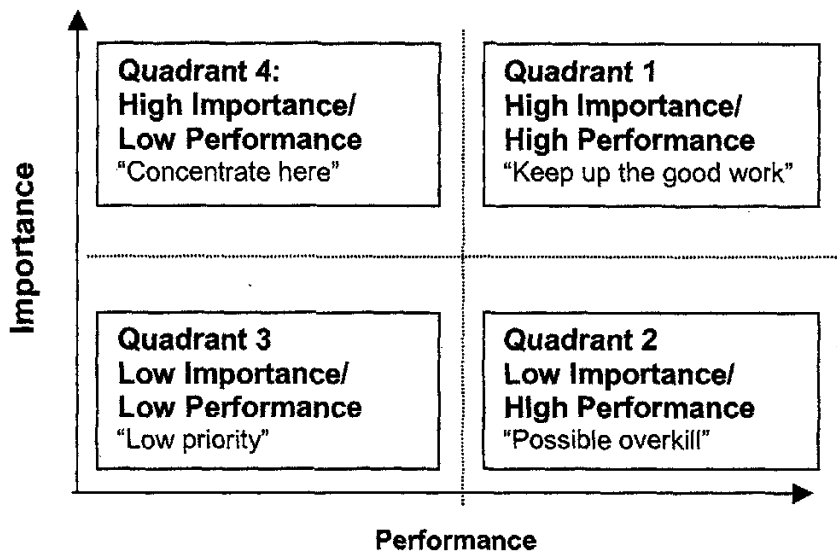


Figure 1. Importance – Performance Action Grid

- (1) Compare and contrast IP and GA analyses, and
- (2) Explore some of the assumptions and implications of the two analysis strategies relative to marketing and decision making tasks.

Methods

Data come from two surveys. One is a nationwide sample and contains 2,933 face-to-face interviews conducted at 10 Corps of Engineers Lakes (ACOE) during the summer of 1997 (Graefe, Burns, Titre & Absher 1999). Study sites were located in ten different states dispersed across the US, and were intended to be representative of the diverse population of Corps recreation users. Campers, day users and boaters were all sampled in a stratified, random selection design. Respondents were given an on-site survey and asked to rate both importance and satisfaction with 19 experience attributes (service quality items) on a 5-point scale, where 1= not at all important (or satisfied) and 5= extremely important (or satisfied). Due to missing data and pairwise deletion of incomplete responses the items presented below have 1,675 to 2,878 cases.

The other dataset represents summer use at the Mono Basin Scenic Area (MBSA), which is located in the Inyo National Forest just east of Yosemite National Park. On-site contact with a mailback survey was used. Respondents were contacted at various sites around the lake in a probability proportional to estimated size sampling scheme. Two hundred and sixty-eight respondents from summer 2000 rated 12 experiential attributes on both importance and performance, also using 5-point response scales of importance and satisfaction as above (Absher, Graefe & Kyle 2001).

The data contain similar attribute sets, and in fact the later one (MBSA) was based on the earlier work for the ACOE.

Data were analyzed in the same manner for each survey using SPSS10.1 software.

Results

The basic data from both importance and performance items for each survey are presented in Table 1. The ACOE survey had 19 attributes representing four main service domains (facilities, service, information and recreation experience) and the MBSA survey included 12 items representing a similar range of experiential attributes. In general the ratings are moderate to high (mid-3s to mid-4s) suggesting that the items are generally very important and that performance levels are high as well. For simplicity the gap scores are also included. These will be addressed after the IP analysis results.

IP results

A classic IP analysis would place these attributes on a grid with quadrant boundaries defined by the scale mid-point of 3.0. Figure 2 shows this basic analysis (IPc) for each survey separately. Clearly the items tend to cluster in the upper right quadrant (Q1), due to the generally high importance and performance ratings. In aggregate, only one of the 31 items falls outside Q1. They are not labeled but it is, in fact, due to MBSA's accessibility importance rating. Yet even this item is only marginally low on importance. As a result this form of IP analysis would lead overwhelmingly to the management recommendation to "keep up the good work." Both ACOE and MBSA managers might be led into a false sense of security over how well things were going. In fact, this form of IP analysis supports no recommendation for management change or service quality improvement.

Table 1. Customer service attributes Importance, performance and gap score measures for ACOE and MBSA

ATTRIBUTES	Mean Importance	Mean Performance	Gap Score
ACOE SURVEY (n=1,675 to 2,878)			
Accessibility for Persons With Disabilities	3.80	3.87	.07
Availability of Recreation Areas	4.25	4.04	-.21
Appearance of Recreation Areas	4.47	4.26	-.21
Value for Fee Paid	4.10	4.19	.09
Availability of Staff to Answer Questions	3.67	3.97	.30
Staff Visibility	3.73	4.02	.29
Safety/Security	4.50	4.28	-.22
Friendly and Courteous Staff	4.25	4.34	.08
Opportunity to offer Suggestions to Staff	3.63	3.97	.33
Adequate Ranger Patrols	4.15	4.20	.06
General Information about Area	3.58	3.89	.31
Nature/historical Information	3.32	3.73	.40
Safety Information	3.99	3.93	-.06
Ease of Obtaining Information	3.87	4.03	.16
Current and Accurate Information	3.93	4.04	.11
Opportunity to Recreate without Crowding	4.22	4.09	-.13
Opportunity to Recreate without Interference	4.16	4.11	-.04
Compatibility of Recreation Activities	3.88	4.11	.23
Places to Recreate without Conflict	4.35	4.26	-.10
MBSA SURVEY (n=268)			
Accessibility for disabilities	2.86	3.64	.78
Information about the natural and cultural history	4.00	4.18	.18
Appearance and maintenance of the area	3.89	4.38	.49
Value for fee paid	3.56	3.99	.43
Staff knowledge and ability to answer questions	4.06	4.25	.19
Safety and security at the area	3.65	4.37	.72
Information about permits, services and recreation	3.55	4.27	.72
Staff friendliness and courtesy	4.07	4.49	.42
Roadside signs and directions	3.84	4.05	.21
Ease or convenience of paying the fee	3.25	4.16	.91
Bathroom cleanliness	3.70	4.25	.55
Information about the fees charged at the area	3.25	3.22	-.03

IP scores are on a five point scale where 1= "Not at all important" to 5= "Extremely important," For performance "satisfied" is used instead of "important."

The alternative form of IP analysis (IPa) would lead to a very different outcome. By shifting the quadrant boundaries to the grand mean of each variable (3.99 and 4.07 for ACOE; 3.68 and 4.10 for MBSA) a few items fall outside Q1, notably in Q3, where the low-low combination also suggests that no real change for management is needed. However, it is the off-diagonal items, especially in Q4, where high importance is not being matched with correspondingly high performance ratings, that suggest some managerial action might be in order. For the ACOE setting the two in Q4 are "availability of recreation areas" and "safety information." For MBSA they are "information about permits, services and recreation" and "ease or convenience of paying the fee." In general there are reasons to suggest that this provides better feedback in a relative sense. That is, assuming you want a comparative

analysis where the "best/worst" or "top few" are highlighted, IPa gives such a result.

GA results

When using GA (see Table 1 again) there will be a somewhat different set of management recommendations than obtained by either IPc or IPa. In general, positive gap scores suggest that the visitor's expectations have been exceeded and other than a possible overkill (as in IP quadrant 2) they are a positive outcome and will not be analyzed here. The negative gap scores are the main concern: they represent conditions that did not meet expectations or led to low achievement ratings relative to their importance. For the ACOE survey seven of the 19 attributes had negative gap scores. Of these, three are significantly large to warrant management attention based

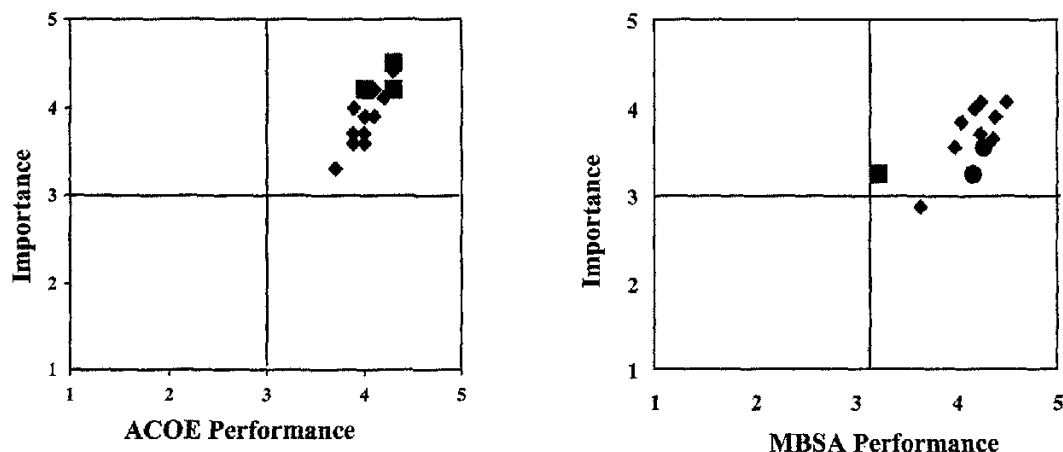


Figure 2. ACOE and MBSA Importance-Performance Grids, IPc Version.

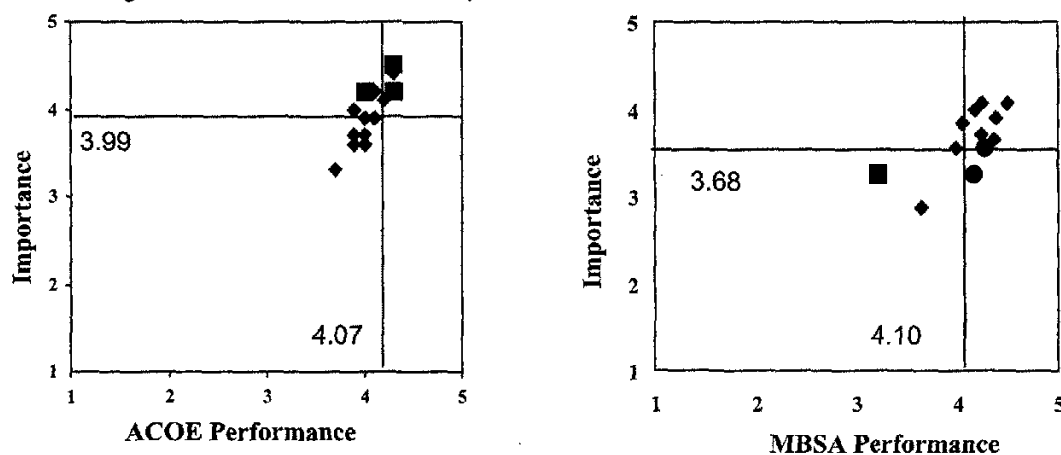


Figure 3. ACOE and MBSA Importance-Performance Grids, IPa Version.

on a statistical test of the scores (details in Graefe, et al. 1999) and are shown in the IP grids" as squares. The attributes represented are "availability of recreation areas" (-.21), "appearance of recreation areas" (.21), and "safety/security" (-.22). As can be seen in Figure 2 and Figure 3 these would be in the "keep up the good work" quadrant under IP analysis, except for one which would be in Q4 under IPa analysis. Thus, at best, only one of the three gap score identified recommendations would be congruent with an IP analysis. Similarly, in the MBSA data presentation only one attribute would yield a negative gap score ("information about the fees charged at the area," -.03) and it is not statistically significant and thus is indistinguishable from zero or even a small positive gap score. It too is shown as a square on the IP grids in Figures 2 and 3. It would be no problem under IPc (Q1) and in Q3 ("low priority") under IPa action grid. Again, the management recommendations are rather different depending on the form of the analysis.

Conclusions

The three forms of customer service analysis, all from the exact same data, are presented. They yield different, and at times conflicting, outcomes. As a result the form of the analysis alone may be shown to lead to very different management actions. Moreover, there is no consistency in the differences based on the two data sets analyzed. IP and GA are simplified forms of analysis designed to make data reduction easy and lead to results that are useful to managers. Researchers and managers should question both the assumptions about the items being measured and the limitations of the type of analysis used before coming to firm recommendations.

For instance, if the lists of attributes that are selected for inclusion on the questionnaire are known to be of high importance to the surveyed group it is expected that IPc will yield almost all items in Q1 or Q4. In our examples, Q4 was vacant. Perhaps here IPa is a better form of

analysis because it forces some items to be relatively "less important."

However, if the items are variable across subpopulations some differences will be obscured by IPA's use of grand means as an evaluative standard. GA seems better in this case. It will allow for calculations at the individual level if desired, making it easier with GA to check for the homogeneity of subgroups with respect to each experiential or service attribute. As such GA may be better when skewed or other non-normal (e.g., bimodal) distributions are expected.

On the other hand GA relies on a mathematical difference. Because there may be no linear relationship between importance and performance, and without prior testing and benchmarking, GA may lead to a false sense of security when outcome scores are high due to factors not measured by the attributes, or even lead to an emphasis on weakly preferred (less important) items. Management recommendations based on such an analysis may be tragic if truly important attributes are ignored.

Neither method deals well with individual behaviors such as response to setting conditions at a particular place and time. Where such conditions are variable, e.g. weekend crowds, low water, or differential pricing, then repeated IP grid or GA analyses with market segment breakouts will yield better results.

Finally it is often the case that attributes are close to the quadrant boundaries, especially in IPA, due to the use of central tendency as an evaluative standard. More needs to be done to tease out the significant differences beforehand and to look at the effects of variation (e.g., ANOVA, z-score tests) to assess the "true" strength and thus importance of a given IP placement or GA score. In so doing, the use of IP and GA would be more robust and establish better linkages to other concerns such as land management planning, market positioning, product development or communication plans.

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