
Articles

An Empirical Investigation of the Relationships Between Service Quality, Satisfaction and Behavioral Intentions among Visitors to a Wildlife Refuge

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A model was developed in which quality of performance and quality of experience were conceptualized as direct antecedents of overall service quality and visitor satisfaction, which influence behavioral intentions. Eight hypotheses postulating the interrelationships between these five constructs were tested using structural equation modeling. Data for the study were collected from 282 visitors to a wildlife refuge. Seven of the eight hypotheses were supported. Results verified the existence of service quality and visitor satisfaction at both the transaction and global levels. At the transaction level, service quality (i.e. quality of performance) contributed to visitor satisfaction (i.e. quality of experience); while at the global level, visitor satisfaction influenced service quality. Both overall service quality and overall visitor satisfaction were found to directly influence visitors' future behavioral intentions, and were confirmed as being different constructs.

KEYWORDS: *Quality of performance, quality of experience, service quality, visitor satisfaction, behavioral intentions, structural equation modeling*

Introduction

A primary goal of park and recreation agencies is to provide opportunities from which users may derive satisfaction. This goal stems from a belief that users who are highly satisfied with their experience are likely to be repeat visitors, to be loyal users, to disseminate positive word-of-mouth communications to others, and to be supporters of the providing agency. The centrality of satisfied users to an agency accomplishing its mission and securing its future well-being, accounts for the substantial literature on satisfaction research in the leisure field which dates back at least to the 1960s (Manning, 1986).

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More recently a related stream of research in the leisure field has emerged in the area of service quality (Crompton & Love, 1995; Crompton & MacKay, 1989; Crompton, MacKay, & Fesenmaier, 1991; Fick & Ritchie, 1991; Filiatrault & Ritchie, 1988; LeBlanc, 1992; MacKay & Crompton, 1988, 1990; Ostrowski, O'Brien & Gordon, 1993; Vogt & Fesenmaier, 1995). This research stream stems from the pioneering work of Parasuraman, Berry and Zeithaml (1985, 1988, 1994) in the marketing field. They were the first to conceptualize and operationalize the concept of service quality in 1985 and have remained prominent contributors to the service quality literature as it has grown exponentially in the last decade.

The dominant theory used in the conceptualization of both service quality and satisfaction has been the expectancy-disconfirmation paradigm. This paradigm is derived from two processes: the development of expectations of outcomes, and the disconfirmation judgment that results from comparison of the perceived outcomes against these expectations. Confirmation results when the actual performance matches initial expectations. When performance exceeds or falls short of expectations, positive or negative disconfirmation results. Positive disconfirmation leads to satisfaction or perceptions of high service quality, while negative disconfirmation leads to dissatisfaction or perceptions of low service quality.

This common theoretical basis has resulted in considerable confusion in differentiating the satisfaction and service quality constructs. The literature is replete with reports that use the two terms interchangeably as synonyms and do not recognize them as distinctively different constructs. For example, Howat et al. (1996) evaluated visitor satisfaction by using indicators based on Parasuraman et al.'s (1988) five dimensions of service quality. Despite this confusion there is a consensus that satisfaction and service quality are different constructs. The purpose of this study was to empirically explore the relationship between the two constructs and their impact on behavioral intentions.

Conceptual Framework and Hypotheses

The conceptual framework which guided development of the study's hypotheses is shown in Figure 1. The framework examines service quality and satisfaction at two levels: the transaction level and the global level. At the global level, the model depicts overall service quality and overall visitor satisfaction as two different constructs which influence behavioral intentions. At the transaction level, the concepts of quality of performance and quality of experience are conceptualized as direct antecedents of overall service quality and overall satisfaction. Quality of performance refers to visitors' perceptions of the attributes of a facility that are controlled by management. Quality of experience is defined as the psychological outcomes which visitors derive from visiting a facility. It reflects visitors' perceived benefits they obtain from the experience (MacKay & Crompton, 1988).

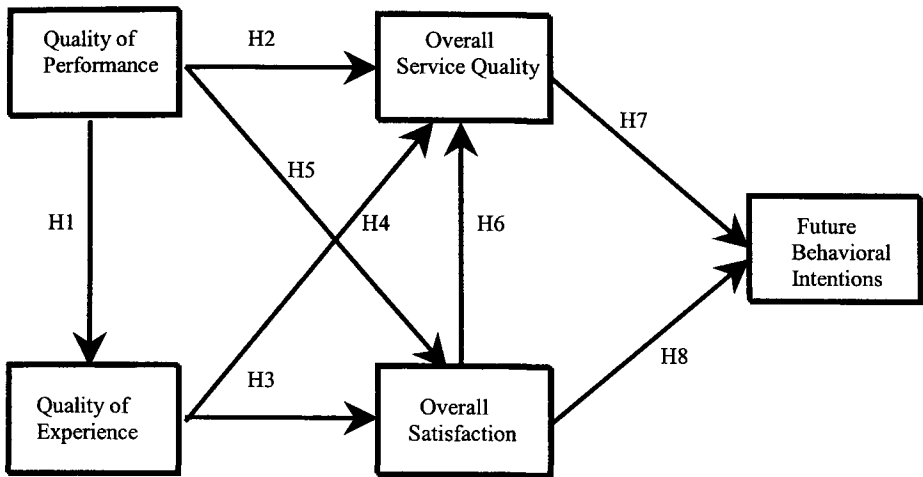


Figure 1. Hypotheses tested in the study

Oliver (1993) notes that visitors are likely to use more dimensions to form quality of experience judgments than quality of performance judgments. He maintains that the dimensions underlying quality judgments are rather specific, whether they are cues or attributes. Satisfaction judgments, however, can result from any dimension, quality-related or not. Quality of performance is only one dimension that influences quality of experience, which is influenced by a broader array of inputs. The two constructs are likely to be positively correlated, but the relationship is unlikely to be linear (Crompton & Love, 1995). It has been pointed out that a high quality experience may result even when quality of performance is perceived to be low because, for example, social group interactions are sufficiently positive to offset the low quality service (Crompton & MacKay, 1989). The opposite can also occur when a low quality of experience results, even though perceived quality of performance is high. For example, visitors may recently have had a bad experience while traveling to the site, such as receiving a speeding ticket, so they are not in a receptive mood to enjoy the experience. Thus, there are likely to be occasions when the quality of experience has relatively little to do with the quality of an agency's performance in delivering the service.

The production of a recreational experience involves both visitors and resources (Brown, 1988). Management can only provide opportunities such as services and facilities. How visitors avail themselves of those opportunities determines the quality of experience they receive. Since visitors' participation is involved in delivering the service it means that a recreation experience can be influenced, both by the services provided by suppliers and the emotional states brought to the site by visitors. The quality of performance pro-

vided by recreation suppliers can be controlled by management, while factors brought to the site by visitors are outside a supplier's control (Brown, 1988; Williams, 1988; Crompton & MacKay, 1989).

H1: Quality of performance positively influences visitors' quality of experience.

Figure 1 suggests that visitors' perceptions of performance quality on each attribute strongly influence their overall perceptions of service quality, while quality of experience which is comprised of a set of specific psychological benefits leads to overall visitor satisfaction. Like quality of experience and overall satisfaction, quality of performance and overall service quality are two distinct constructs. Quality of experience refers to the specific benefits people obtain, while overall satisfaction is visitors' levels of satisfaction towards their total experience with the recreation service, i.e., it is the summation of the specific benefits. Quality of performance relates to evaluation of specific service attributes, while overall service quality is the evaluation of the quality of the service in general, rather than that of particular attributes.

Perceptions of individual attributes and specific benefits are conceptualized as being compensatory. The compensatory nature of attributes was tested by Lue, Crompton and Stewart (1996) in the context of multi-destination travel behavior. Lue et al. reported that destinations could offset negative attributes, if they were perceived to provide other attributes that visitors preferred. Thus, the authors concluded that service attributes were compensatory and cumulative. Visitors can have perceptions of high overall quality or high levels of overall satisfaction, even though they perceive specific service attributes to have low quality or they are not satisfied with particular benefit dimensions of the experience. Over time, the summation of visitors' evaluative beliefs about individual service attributes will contribute to their overall evaluation of service quality of the recreation service. Likewise, visitors' overall satisfaction is a summation state of the psychological outcomes they have experienced over time. As Bitner and Hubbert (1994) pointed out, multiple positive/negative experiences, which occur within a visit, are likely to lead to a high/low level of overall satisfaction.

H2: Perceptions of the quality of performance of individual attributes influence perceptions of overall service quality.

H3: Perceptions of the quality of experience relating to individual benefits influence overall satisfaction.

The model postulates that quality of performance has impact not only on overall service quality, but also on overall visitor satisfaction. Likewise, visitors' quality of experience influences their perceptions of overall service quality. When visitors perceive a leisure service's attributes to be high quality, they are likely to experience higher levels of overall satisfaction with the service. At the same time, the stronger the psychological benefits that visitors obtain from their visits, the more positive attitude they are likely to have towards overall service quality.

- H4: Quality of experience positively impacts visitors' perceptions of overall service quality.
- H5: Quality of performance positively impacts visitors' levels of overall satisfaction.

Figure 1 indicates that visitors' levels of overall satisfaction contribute to their attitudes towards overall service quality. This follows the conceptualization of the relationship between service quality and satisfaction suggested by Parasuraman, Berry and Zeithaml (1994) and Teas (1993). It suggests that high levels of overall satisfaction lead to perceptions of high overall service quality, while low levels of overall satisfaction result in perceptions of low overall service quality.

The direction of this flow derives from the recognition that overall satisfaction is experience specific while overall service quality is not (Oliver, 1993, 1997). Since overall service quality is visitors' perceptions of overall performance, visitors can have a general impression towards the quality of a recreation site even if they have never been there. This can occur when visitors have acquired knowledge of the site from external sources such as word-of-mouth communication, television programs, or newspaper or magazine articles. For example, based on their knowledge of Yellowstone National Park, potential visitors may have a general impression of the quality of the park, even though they have never visited it. However, they cannot express their levels of overall satisfaction with it because this impression can only be formed after visiting and experiencing the benefits the park offered at least once. Levels of overall satisfaction can only be derived from first-hand experience.

- H6: Overall satisfaction positively influences overall service quality.

Once visitors form an overall evaluation toward service quality and toward overall satisfaction, the model indicates that these judgments are likely to influence visitors' future behavioral intentions. Thus, when a visitor perceives an attraction to have high overall service quality, the individual is likely to say positive things about the attraction and to come back and visit it again in the future. Likewise, if a visitor's level of overall satisfaction is high with the attraction, the individual is likely to disseminate positive word-of-mouth about the attraction and to visit it again in the future.

- H7: Overall service quality is positively associated with visitors' behavioral intentions.
- H8: Overall satisfaction is positively associated with visitors' behavioral intentions.

The Sample

To test the hypotheses in the study, data were collected from visitors to Aransas National Wildlife Refuge in Texas. During a two-weekend period, one adult member from each of the 355 visitor groups entering the interpretive center in this time period was given a questionnaire, a pre-paid envelope

and a cover letter explaining the purpose and the importance of the study. Participants were requested to complete and return the questionnaire in the enclosed pre-paid envelope. A drawing for a \$500 US savings bond was used as an incentive to encourage response.

A modified Dillman (1978) approach was used to collect the data. It involved one postcard reminder and two other follow-ups, which included replacement questionnaires, to those who did not respond. These procedures resulted in the return of 282 completed instruments (81% response rate).

There was almost an equal proportion of male (50.3%) and female (49.7%) respondents, and 62.5% of the sample were aged between 40 and 69. Over 83% had at least one college degree and 34% were retired. Almost half of the respondents (47%) had an income in the \$30,000 to \$60,000 range, while 18.4% reported incomes over \$90,000. First time visitors to the refuge constituted 51.6% of the sample while 53.1% resided within the state of Texas.

Construct Measures

Five constructs were included in the hypotheses that were tested. They were: quality of performance, quality of experience, overall service quality, overall visitor satisfaction, and visitors' future behavioral intentions.

Quality of performance was operationalized by a list of attributes of the wildlife refuge selected from a pool developed from previous literature and from extended discussions with refuge managers. They were categorized into six domains and an expert panel, which included the researchers and refuge managers, was used to select five items from those assigned to each domain to represent the dimensions of that domain. The six domains were Education and Conservation, Staff/Volunteers, Comfort Amenities, Cleanliness, Information, and Wildlife. A pretest using a sample of university students was conducted to examine the validity and reliability of these scales. Responses to the items were measured on 7-point Likert-type scales anchored by "very poor" (1) and "excellent" (7). A factor analysis on the pretest sample resulted in the number of items being reduced from a total of 30 to 25, and in some reassignment of items and re-titling of the domains.

To evaluate the factor structure in the scales for the construct of quality of performance, data from the study's respondents were subjected to a principal components factor analysis of the six scales (not the individual items) to see if the six scales were unifactorial (i.e. if the six scales were measuring the same construct). The analysis confirmed that they were, but a low communality estimate and low reliability resulted in one factor, Wildlife, being dropped. The scales used to measure the quality of performance construct, with their factor loadings and reliabilities, are shown in Table 1. The identification code in the left-hand column of Table 1 (V1 to V5) is the label given to each scale in the measurement model which is discussed in the next section.

TABLE 1
Communalities and Reliabilities of Quality of Performance Domains

Variable Symbol	Scale	Factor Loading	Weighted Communality	Cronbach's Alpha
V1	Education and Conservation	.79	2.67	.82
V2	Staff/Volunteers	.76	2.41	.89
V3	Comfort Amenities	.74	2.24	.79
V4	Cleanliness	.72	2.07	.75
V5	Information	.77	2.50	.86
(deleted)	Wildlife	.56	1.46	.61
	Total Communality	7.35		

The benefit items used to operationalize quality of experience were adapted from the Recreation Experience Preference scales (REP) that have been used in past benefits research (Manfredo, Driver, and Tarrant, 1996). Manfredo et al. (1996) demonstrated the reliability and validity of 19 REP scales using a meta-analysis of 36 studies. The expert panel used in the current study judged that 15 of the 19 REP scales potentially could be relevant to a refuge visitation experience. Items were measured on 7-point Likert-type scales anchored by "strongly disagree" (1) and "strongly agree" (7). After a pretest with the university student sample, the 51 items drawn from the 15 domains were reduced to 39 items, which were assigned to 8 domains. The eight domains were: Nature Appreciation/Learning, Achievement, Introspection/Nostalgia, Escape, Similar People, Physical Fitness, Family Togetherness and New People. A factor analysis using principal component factor analysis was also conducted on the sample data to examine the factor structure of the scales measuring the construct. The factor analysis resulted in 2 factors. As Table 2 shows, six of the eight scales loaded on Factor 1 while Similar people and Family Togetherness loaded on Factor 2. As a result, a decision had to be made regarding whether to treat the second factor as a separate variable distinctively different from the latent quality of experience variable, or just to delete the second factor. Since the objective of the present study was to test the proposed theoretical model rather than to explore an additional latent construct, and there was no theoretical rationale for adding a second dimension into the structural model, it was decided to delete the two scales Similar People and Family Togetherness from the study.

Overall service quality was measured on a 10-point scale with a single item that asked respondents their perceptions of overall quality of the refuge's attributes. The anchors on the scale were, extremely low quality (1) and extremely high quality (10). Responses ranged from 4 to 10, but 89% were in the 7 to 10 range and the mean was 8.2. This manifest variable is labeled V19 in the measurement model.

Overall satisfaction was measured with a 4-item, 7-point modified semantic differential scale (Table 3). This scale was originally adapted by Chil-

TABLE 2
Factor Loadings, Communalities and Reliabilities of Quality of Experience Domains

Variable Symbol	Scales	Factor Loading		Weighted Communality	Cronbach's Alpha
		Factor 1	Factor 2		
V7	Achievement	.96	-.09	6.10	.83
V8	Introspection/Nostalgia	.90	-.01	4.91	.91
V10	Physical Fitness	.67	.17	2.55	.80
V9	Escape	.66	.20	2.67	.90
V11	New People	.51	.06	1.42	.87
V6	Nature Appreciation/Learning	.45	.33	1.90	.91
(deleted)	Similar People	.01	.89	5.02	.83
(deleted)	Family Togetherness	.06	.50	1.40	.83
	Total Communality			17.98	

dress and Crompton (1997) from Crosby and Stephens (1987). Since there were no pre-determined domains among the items measuring overall satisfaction, a factor analysis was conducted on the four individual items. As expected, the principal component method extracted only one factor, meaning that the scale was unifactorial (Table 3). The Cronbach's alpha reliability score for the scale was .97.

The final construct, behavioral intentions, was measured with a seven-item, 7-point scale derived from Zeithaml, Berry and Parasuraman (1996). Respondents were requested to indicate how likely they were to take each of the seven actions (1 = not at all likely and 7 = extremely likely). The seven items were not unifactorial because two factors were extracted from the principal component factor analysis on the 7 items. The loadings of the items are listed in Table 4. One item was deleted because it did not have a salient loading above .40 on either factor. The two items loaded on Factor 2 were also deleted for the same reason as the two items in quality of experience

TABLE 3
Factor Loadings, Communalities and Mean Scores of Overall Satisfaction Items

Variable Symbol	Factor Items	Weighted Loading	Communality	Mean
V14	Favorable—Unfavorable	.97	15.26	6.00
V12	Satisfied—Dissatisfied	.94	8.91	5.96
V13	Pleased—Displeased	.93	7.35	5.98
V15	Positive—Negative	.92	6.46	6.04
	Total Communality		33.97	

TABLE 4
Factor Loadings, Communalities and Mean Scores of Behavioral Intentions Items

Variable Symbol	Scales	Factor Loading		Weighted Community	Cronbach's Alpha
		Factor 1	Factor 2		
V18	Encourage friends and relatives to go to this refuge	.91	.02	2.41	6.08
V17	Visit the refuge again in the future	.75	.02	6.10	5.73
V16	Say positive things about the refuge to other people	.66	.17	2.26	6.23
deleted	Continue to visit the refuge if the admission price was increased	.55	-.21	1.32	4.76
deleted	Pay a higher price than other recreation sites in the area charge	.12	.90	3.75	3.83
deleted	I will not come back to this refuge	.15	.72	2.78	2.09
deleted	If this refuge was not available, I would just go to another refuge	-.07	.35	1.12	4.46
Total Community				12.72	

were deleted. One of the items from Factor 1 was also deleted to improve the reliability measure of behavioral intentions (reliability score increased from .78 to .84 after deleting the item).

Calibration of the Models

The Measurement Model

The initial measurement model is shown in Figure 2. The naming of its components follows Bentler's (1989) convention. Since overall service quality was measured by a single item scale, it was a manifest variable (V19), labeled with the letter "V" for variable. Quality of performance (F1), quality of experience (F2), overall satisfaction (F3) and behavioral intentions (F4) are latent variables prefaced by the letter "F" for factor.

Figure 2 shows that the quality of performance construct (F1) was measured by the five manifest variables V1 through V5 that are shown in Table 1. The quality of experience construct (F2) was measured by manifest variables V6 through V11, which are listed in Table 2. The overall satisfaction construct (F3) was measured by manifest variables V12 to V15, which are listed in Table 3. The behavioral intention construct (F4) was measured by manifest variables V16 through V18 which are keyed in Table 4.

V1 through V5 represent the five scales that measured the quality of performance construct. Each of these variables was calculated as the grand mean score of respondents' ratings of each item in the individual scale. For example, in the first scale "Education and Conservation" (V1) there were

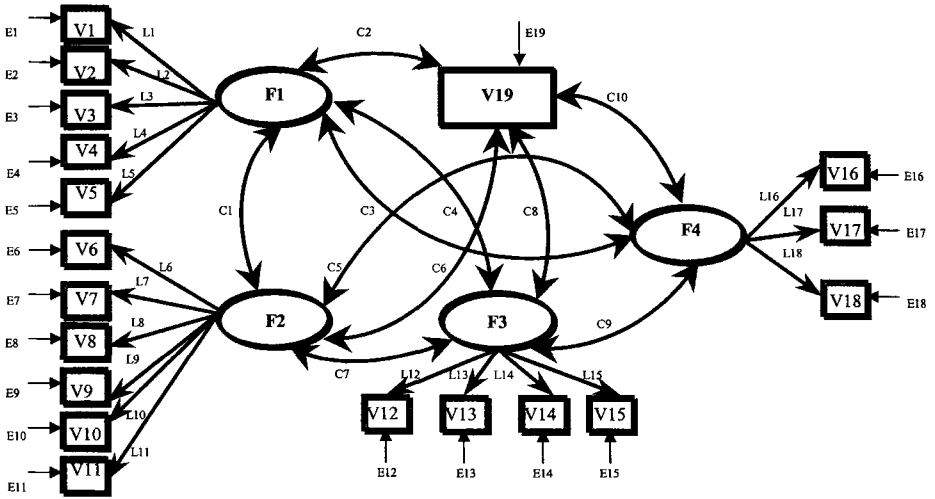


Figure 2. The initial measurement model with parameters to be estimated

TABLE 5
Fit Indices of the Measurement Models

Fit Index	Initial Measurement Model Value	Revised Measurement Model Value
Non-normed Fit Index (NNFI)	0.89	.93
Comparative Fit Index (CFI)	0.91	.94
Goodness of Fit Index (GFI)	0.82	.86
Adjusted Goodness-of-Fit Index (AGFI)	0.76	.81
Initial Measurement Model Chi-square Test	$\chi^2 = 411.54$ $df = 143$ $p = .0001$	
Revised Measurement Model Chi-square Test	$\chi^2 = 290.51$ $df = 126$ $p = .0001$	

five items. V1 is the average score of respondents' ratings on these five items. The same method was applied to V6 through V11. However, V12 through V19 were the respondents' actual responses to each individual item.

The measurement model posits no unidirectional paths between latent variables. Instead, a covariance is estimated to connect each latent variable with every other latent variable. In Figure 2, this is indicated by the curved, two-headed arrow connecting each F variable and V19 to every other F variable. Letter "L" represents the coefficients of the "V" variables to "F" factors. Letter "E" represents measurement errors for each manifest variable. Letter

“C” represents covariance between latent factors and the manifest variable V19.

The measurement model was estimated using the maximum likelihood method, and the goodness of fit indices are displayed in Table 5. It has been recommended that the model chi-square test be used as a goodness of fit index, with a smaller chi-square value (usually non-significant chi-square test) indicating a better model fit (Joreskog & Sorbom, 1993). The chi-square value for the initial measurement model was statistically significant. However, the chi-square test usually is not considered as the absolute standard by which the goodness of fit of the model is judged because it is sensitive to sample size (Hayduk, 1987; Bollen, 1989; Joreskog & Sorbom, 1993). Other tests, such as goodness of fit index (GFI), adjusted goodness of fit index (AGFI), Bentler’s comparative fit index (CFI) and Bentler and Bonett’s non-normed fit index (NNFI), should also be used to judge the goodness of fit of the model. Values over .9 on these indices indicate an acceptable fit (Bollen, 1989; Hatcher, 1994). The indices in Table 5 provided mixed support for the initial measurement model because only the CFI was larger than .90. It was thus concluded that there was a problem with the model’s fit.

To identify the problem, the patterns of normalized residuals, parameter significance tests, and LaGrange multiplier tests were examined. All coefficients were significant, indicating the indicators were good measures of the underlying latent factors. However, of the ten largest standardized residuals, nine of them were related to V6, which is the variable “Nature Appreciation/Learning” measuring quality of experience (F2). Nine of the ten largest LaGrange multipliers tests were also related to V6. The researchers’ interpretation of this problem was that nature appreciation and learning about nature is so pervasive in a visit to a wildlife refuge that it permeates into all aspects of the experience. Given the premise that to experience nature was such a dominant pervasive theme in the process of visiting the refuge, it would be represented in the model even if it was excluded as an explicit variable. Thus, V6 was eliminated from the measurement model, and the model was re-calibrated.

Goodness of fit indices for the re-specified measurement model are also presented in Table 5. The *t* values for the coefficients of the standard factor loadings were still all significant ($p < .0001$). Moreover, NNFI now exceeded .9, and the GFI improved to .86. The results indicated that the revised measurement model had a reasonable fit to the data. Therefore, this measurement model was tentatively accepted as the study’s “final” measurement model.

Reliability and validity of the constructs and their indicators were assessed. The reliability of an indicator variable is the square of the correlation between a latent factor and that indicator. In this case, the R-square values are indicator reliabilities which indicate the percent of variance in the indicator that is explained by the common factor that it is supposed to measure (Hatcher, 1994). Reliabilities for each indicator are listed in Table 6. Overall satisfaction indicators had very high reliabilities (from .83 to .93), while re-

TABLE 6
Reliability Scores of the Measurement Scales

Variable	Composite R-Squared	Reliability
QUALITY OF PERFORMANCE		.79
Education and Conservation	.66	
Staff/Volunteers	.63	
Comfort Amenities	.50	
Cleanliness	.46	
Information	.62	
QUALITY OF EXPERIENCE		.83
Achievement	.79	
Introspection/Nostalgia	.81	
Escape	.59	
Physical Fitness	.62	
New People	.24	
OVERALL SATISFACTION		.96
Satisfied – Dissatisfied	.88	
Pleased – Displeased	.85	
Favorable – Unfavorable	.93	
Positive – Negative	.83	
BEHAVIORAL INTENTION		.81
Say positive things about the refuge to other people	.66	
Visit the refuge again in the future	.59	
Encourage friends and relatives to go to this refuge	.77	

liabilities for quality of performance indicators (from .46 to .66), quality of experience indicators (from .24 to .81) and behavioral intention indicators (from .59 to .77) were relatively low.

A composite reliability index for each latent factor was calculated to measure the internal consistency of the indicators measuring a given factor (Hatcher, 1994). This procedure is similar to the use of Cronbach's alpha for measuring the scale reliability of multiple items in a scale. The composite reliability for latent factor overall satisfaction was .96. Although indicator reliabilities for quality of performance, quality of experience and behavioral intentions were relatively low, the composite reliabilities for these factors were .79, .83 and .81, respectively, which all exceeded the minimally acceptable level of .70 reliability for scale instruments (Nunnally, 1978). The relatively high composite reliabilities suggested that the individual scales, when taken as a group, performed fairly well in the model (Hatcher, 1994).

Convergent validity and discriminant validity of the constructs were assessed to see if the indicators were measuring what they were intended to measure. Convergent validity is demonstrated when different scales are used to measure the same construct, and scores from these different scales are strongly correlated. In the confirmatory analysis, convergent validity was ex-

amined by reviewing the t tests for the factor loadings. Hatcher (1994) states: "if all factor loadings for the indicators measuring the same construct are statistically significant (greater than twice their standard errors) this is viewed as evidence supporting the convergent validity of those indicators" (p. 79). In the present model testing, all t tests were significant ($p < .001$) providing evidence to support the convergent validity of the indicators.

Discriminant validity is demonstrated when different scales are used to measure different constructs and the correlations between the measures are relatively weak. Discriminant validity for the latent factors was assessed by performing confidence interval tests. The confidence interval was calculated by adding or subtracting two standard errors around the correlation between two factors. If this confidence interval includes the value of 1.0, then it is very likely that, for the actual population, the two factors are perfectly correlated (Hatcher, 1994). In the present model testing, none of the confidence intervals approached 1.0, demonstrating the discriminant validity of all measures used in the study.

The Structural Model

The theoretical model that was tested in the study is shown in Figure 3. It differs from the model in Figure 2 in that Figure 3 depicts the causal relationship among exogenous and endogenous variables. An exogenous variable is an independent variable whose causes lie outside the model. In this case, quality of performance is the only exogenous variable in the structural model. In contrast to exogenous variables, the postulated causes of endogenous variables are included in the model. In the current model, quality of

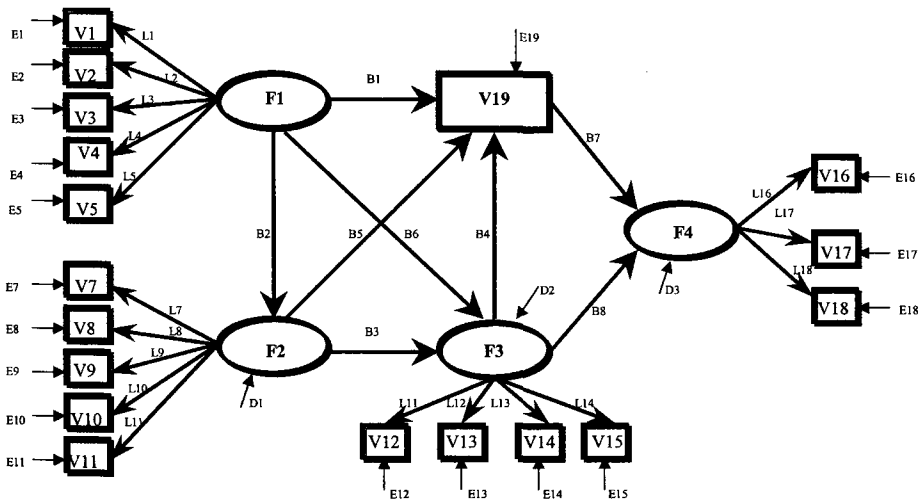


Figure 3. The initial structural model with parameters to be estimated

experience, overall service quality, overall satisfaction and behavioral intentions are all endogenous variables. In Figure 3, letter "B" is used to represent coefficients of paths among latent factors and V19, while the letter "D" illustrates errors of endogenous latent factors.

The standard errors for the factor loadings and path coefficients in the initial structural model were not near zero, and none of them appeared to be unacceptably small. All factor loadings that were tested had *t* values greater than 1.96. All of the path coefficients were significant (.05 level) except for the path from F2 to V19.

The goodness of fit indices for the structural model that are shown in Table 7 indicated the model has a relatively good fit to the data. However, these indices represent the overall fit of the measurement model and the structural model combined. The current theoretical model consists of a relatively small number of latent variables and a relatively large number of indicator variables. This suggests that indices of overall model fit may be more influenced by the fit of the measurement model than by the fit of the structural model. However, the present study is more concerned with the fit of the structural model than the fit of the measurement model. Therefore, the relative normed-fit index (RNFI) was calculated to evaluate the fit of only the structural model when free from the influence of the fit of the measurement model. The RNFI for the structural model was .94, indicating a reasonably good fit of the theoretical model without considering how well the latent variables were measured by their indicators.

TABLE 7
Fit Indices for the Structural Models

Fit Index	Initial Structural Model Value	Revised Structural Model 1 Value	Revised Structural Model 2 Value
Non-Normed Fit Index (NNFI)	0.91	.92	.92
Comparative Fit Index (CFI)	0.93	.93	.94
Goodness of Fit Index (GFI)	0.85	.85	.86
Adjusted Goodness-of-Fit Index (AGFI)	0.80		
Parsimony Normed-Fit Index (PNFI)	0.72	.73	.73
Relative Normed-Fit Index (RNFI)	0.94	.94	.99
Initial Structural Model Chi-Square Test		$\chi^2 = 310.58$ $df = 124$ $p = .0001$	
Revised Structural Model 1 Chi-Square Test		$\chi^2 = 310.67$ $df = 125$ $p = .0001$	
Revised Structural Model 2 Chi-Square Test		$\chi^2 = 291.74$ $df = 124$ $p = .0001$	

Since both the measurement model and the structural model had relatively good fit to the data, it was necessary to perform a chi-square difference test to determine whether there was a significant difference between the fit provided by the structural model and that provided by the measurement model. This test provides evidence for the nomological validity of the structural model (Anderson & Gerbing, 1988). The difference chi-square value between the structural and the measurement model was 20.07, which was greater than the critical value of 13.82 with $df = 2$. Thus, there was a significant difference (.001) between the fit provided by the measurement model and the fit provided by the structural model. In other words, the fit of the structural model was significantly poorer than the fit of the measurement model (Hatcher, 1994). This result suggested that the structural model contained some mis-specifications that needed to be modified.

To identify sources of the mis-specifications in the model, the modification indices were reviewed. The multivariate Wald tests suggested the path from F2 to V19 should be deleted. This was consistent with the factor loadings' significance tests because the t-test for the coefficient of the path from F2 to V19 was found to be non-significant (.05 level). It indicated that the relationship between quality of experience and overall service quality was not significant. Thus, this path was eliminated from the model.

Goodness of fit indices for the revised structural model 1 are reported in Table 7. They were relatively similar to the initial structural model, but it was marginally more parsimonious. The chi-square difference test was conducted on the measurement model and the revised structural model to see if the structural model had a reasonable fit with the data, like the measurement model did. The test was highly significant, revealing that there were still mis-specifications in the revised model 1.

Wald tests conducted on the initial structural model did not reveal any additional causal paths between latent constructs that could be deleted without affecting the model's fit. Thus, results of LaGrange multiplier tests were reviewed to identify new causal paths that should be added to the model ($p = .001$). The results showed that paths should be added from two variables (V8 and V9) to F4, together with a path from F2 to F4. Since V8 and V9 are indicators of F2, a path from F2 to F4 should be added to the model. There was previous empirical evidence to support the direct influence of quality of experience on visitors' future behavioral intentions. This evidence is discussed later in the paper. A path from quality of experience (F2) to behavioral intentions (F4) was then added and the new model, revised model 2, was then estimated.

Table 7 shows that the fit indices for revised model 2 were all higher than those of revised model 1 and the parsimonious NF1 did not decrease, meaning that revised model 2 was as parsimonious as revised model 1. The RNFI for revised model 2 was 0.99 indicating that revised model 2 was a much better fit than revised model 1, independent of the measurement model. All of the coefficient estimates of the standard loadings were significant and in the predicted direction. The distribution of normalized residuals for revised model 2 was symmetrical and centered on zero. Only three of

the normalized residuals were greater than the absolute value of 2.0, and the largest of the three was 2.7.

The chi-square difference test between the measurement model and the revised structural model 2 resulted in a value of 1.23, which was much smaller than the critical value of 13.82. Thus, the chi-square test was not significant, indicating that the fit of revised model 2 was not significantly different from the fit of the measurement model in which the F variables were free to covary. In other words, the causal relationships described in the revised model 2 successfully explained the observed relationships between the latent constructs.

The addition of the causal path from quality of experience to behavioral intentions resulted in revised model 2 being superior to revised model 1, and this addition did not decrease the model's parsimony. Thus, this model was the final model for the study. It is shown with the parameter estimates in Figure 4.

Results

All parameter estimates in the final model were significant at $\alpha = .05$. Standardized instead of unstandardized coefficients were then used to evaluate the strength of path coefficients estimated, because the variables involved were not measured on the same scale.

Effects of Exogenous and Endogenous Variables

Figure 4 reports the standardized coefficients for each path in the model. They represented the strength of the direct effect of an exogenous variable

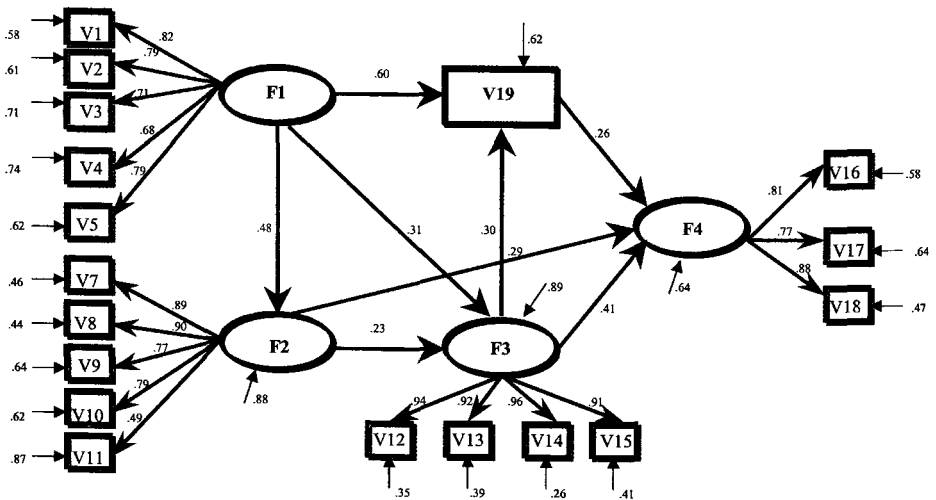


Figure 4. Final structural model and standardized parameter estimates

on an endogenous variable, and that of one endogenous variable on another. The direct effect refers to the influence of one variable on another that is not mediated by any other variables in the model. Bollen (1989) noted that the direct and indirect effects can help to answer important questions regarding the influence of one variable on another, but "it is the total effect that is more relevant" (p. 376). He explained that the direct effect could be misleading when the indirect effect has an opposite sign, for in such cases the total effect may not be as strong as the direct effect shows.

The direct, indirect and total effects of all endogenous and exogenous variables in the final model are reported in Table 8. Direct effects, according to Bollen (1989), "are the influences of one variable on another that are not mediated by any other variable. . . Indirect effects are ones that are mediated by at least one other variable, and the total effects are the sum of direct and indirect effects" (p. 376). While direct effects are shown in Figure 4 as the values of direct path coefficients, indirect effects are calculated by multiplying all the path coefficients for each route of indirect influence. If an independent variable has more than one route of indirect influence on a dependent variable, then the indirect effects for each route are summed to calculate the overall indirect effects of the independent variable on the dependent variable (Bollen, 1989).

Table 8 indicates that quality of performance (F1) had a positive direct effect on quality of experience (F2) (.48). Quality of performance had a stronger direct effect (.31) on overall satisfaction, than did quality of experience (.23). In addition, quality of performance also indirectly influenced overall satisfaction through quality of experience (indirect effects of $.11 = .48 \times .23$). Thus, the total effects of quality of performance on overall satisfaction (.42) were stronger than those of quality of experience (.23).

Overall service quality is directly and/or indirectly influenced by quality of performance, quality of experience and overall satisfaction. Quality of performance not only directly contributed to overall service quality, but it also indirectly influenced overall service quality through two routes. One route was through quality of experience \rightarrow overall satisfaction \rightarrow overall service quality, while the second route was through overall satisfaction \rightarrow overall service quality (see Figure 4). Thus, quality of experience had total

TABLE 8
Direct, Indirect and Total Effects of Exogenous and Endogenous Variables

	F2			F3			V19			F4		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
F1	.48	—	.48	.31	.11	.42	.60	.13	.73	—	.62	.62
F2				.23	—	.23	—	.07	.07	.29	.11	.40
F3							.30	—	.30	.41	.08	.59
V19										.26	—	.26

effects of .73 on overall service quality, with a direct influence of .60 and an indirect influence of .13 ($.13 = .48 \times .23 \times .30 + .31 \times .30$). The direct influence of overall satisfaction on overall service quality was .30. Since the direct path from quality of experience to overall service quality was not supported by the data, quality of experience only had an indirect influence of .07 ($.07 = .23 \times .30$) on overall service quality through overall satisfaction. Thus, of the three independent variables that impact overall service quality, quality of performance had the highest degree of influence on overall service quality.

Visitors' future behavioral intentions were either directly or indirectly influenced by quality of performance, quality of experience, overall service quality and overall satisfaction. Quality of performance had the strongest total effect (.62) on behavioral intentions even though it did not have any direct effect on this variable. While overall satisfaction had the second strongest total effects (.59) on behavioral intentions, its direct effect was the highest (.41). Quality of experience both directly (.29) influenced behavioral intentions, and indirectly (.11) influenced it through overall satisfaction and overall service quality. Overall service quality had the lowest total effect (.26) on behavioral intentions among all variables.

Results of Hypotheses Tests

Hypothesis 1 stated that quality of performance has a positive direct influence on quality of experience because perception of service attributes can contribute to the benefits visitors receive from their visiting experience. This hypothesis is shown as the path from F1 to F2 in Figure 4. The standardized coefficient of this path was .48. The t value was 7.29, which was significant at $\alpha = .001$. The significant coefficient provided evidence of support for hypothesis 1.

Hypothesis 2 explored the relationship between visitors' perceptions of individual attributes' performance and their perceptions of overall service quality and is shown as the path from F1 to V19. Hypothesis 2 was supported since the t -test for the path coefficient was significant (t value of 12.49), indicating that visitors' perceptions of quality of performance positively influenced their perceptions of the overall service quality of the refuge.

The specific benefits visitors received that constituted their quality of experience were expected to relate positively to their overall satisfaction level. The greater the perceived psychological benefits visitors obtained from the visit, the higher it was anticipated would be their levels of overall satisfaction with the refuge in general. This relationship, indicated by the path from F2 to F3, was found to be significant at an alpha level of .05 with a t value of 2.82, so Hypothesis 3 was supported.

It was hypothesized that quality of experience would influence overall service quality. In the initial structural model, the path coefficient from F2 to V19 was found to be non-significant, and thus was eliminated from the model, so Hypothesis 4 was not supported.

Hypothesis 5 stated that perceptions of quality of performance of the refuge's individual attributes positively influenced overall satisfaction. The higher the perceived quality of individual service attributes, the higher it was anticipated would be the levels of overall satisfaction. The significant coefficient (t value of 3.85) from path F1 to F3 enabled Hypothesis 5 to be supported.

It was postulated that the higher visitors' overall satisfaction was with the refuge, the higher would be their perceptions of overall service quality. The path from F3 to V19 was significant (t value of 5.46) so Hypothesis 6 was supported.

Visitors' future behavioral intentions were expected to be influenced positively by both overall service quality and overall satisfaction. When visitors have high perceptions of overall service quality and high levels of overall satisfaction with the refuge, they are more likely to visit the refuge again in the future or to encourage their friends to do so. The path coefficients from V19 to F4 (t value of 3.79) and from F3 to F4 (t value of 5.98) were both found to be significant, so hypotheses 7 and 8 were both supported.

Discussion

The results provided empirical support for the conceptualization of service quality and satisfaction. However, it was found that the particular psychological benefits visitors obtained from the visit did not contribute to their perceptions of service quality in a major way. They only contributed to overall service quality indirectly through overall visitor satisfaction (indirect effect of .07). This finding of the study contradicts those who insist transaction-specific satisfaction influences overall service quality. One explanation for this contradiction lies in the different conceptualizations of satisfaction at the transaction level. The present study views satisfaction at the transaction level as the specific benefits received from a visit, while others have considered it to be evaluation of individual service attributes (Bolton & Drew, 1991), or as overall satisfaction with the service (Bitner, 1990).

While the study found that both visitors' evaluations of individual service attributes and their levels of overall satisfaction directly influenced their perceptions of overall service quality, when satisfaction was conceptualized as psychological benefits visitors receive at the transaction level, it did not contribute to overall service quality directly. This provides evidence supporting the distinction between quality of performance and quality of experience, and it also reinforces the notion that satisfaction should be specified at both the transaction level and the global level. Thus, when studying the relationship between satisfaction and service quality in general, the inter-relationship among transaction-level concepts and global-level concepts should be considered.

Hypothesis 6 supported the proposition that visitors who were satisfied with their overall experience at the refuge tended to have high evaluations of its overall quality. Although there is evidence that overall service quality

and visitor satisfaction are independent of each other, "the main issue to be resolved is whether customers distinguish between customer satisfaction and service quality in their own minds" (Dabholkar, 1995, p. 32). The present study did find discriminant validity between overall service quality and overall satisfaction. In addition, the results showed that the total effects of overall satisfaction on overall service quality were relatively low (.30 in Table 8). This implies that although they are correlated, overall service quality and overall satisfaction are not the same construct.

Support for hypotheses 7 and 8 suggests that high levels of visitor satisfaction, and/or perceptions of high service quality are likely to reinforce visitors' intentions of using the service again in the future and to engage in positive word-of-mouth communication with their family and friends. However, the influence of overall service quality on behavioral intentions was found to be much weaker than that of overall satisfaction. Indeed, the results showed that overall service quality contributed least to behavioral intentions among all four constructs examined (i.e. quality of performance, quality of experience, overall satisfaction and overall service quality).

In addition to the direct influences of overall service quality and overall satisfaction on behavioral intentions, this study also found that quality of experience directly contributed to behavioral intentions. This relationship was not hypothesized in the proposed model. The decision to add the path in the revised structural model was made because previous studies have provided empirical evidence for the influence of transaction-specific satisfaction on behavioral intentions. For example, Westbrook (1987) studied the relationship of consumption-based psychological responses and post-purchase processes. He reported that both negative and positive dimensions of psychological responses were directly related to satisfaction judgments, complaint behavior and word-of-mouth communication. These results suggest that when visitors' psychological responses to particular benefits are strong enough, they can impact their future behavioral intentions. If visitors are not satisfied with specific benefits derived from the current visit, they may not return even if overall quality of the service is considered to be good.

Implications

The issue of understanding the relationship between service quality and visitor satisfaction from a manager's perspective starts with a fundamental question: should management focus on visitor satisfaction or on perceived service quality? Thus, Dabholkar (1993) has noted that practitioners "are not interested in the difference between these concepts per se, but are interested in both concepts mainly as predictors of customer behavior" (p. 10). Thus, two aspects of the study are likely to be of especial interest to managers. First, it confirmed that improved service quality and visitor satisfaction can result in repeat visitation and positive word-of-mouth. Second, it clarified the relationship between service quality and satisfaction, and found that both constructs had an independent effect on visitors' future behavioral intentions.

Service quality and satisfaction at the global level are overall evaluations. However, the study suggests that change in overall evaluations starts with changes in perceptions of quality of performance and quality of experience. Hence, the priority of managers is at the transaction level of service quality and satisfaction.

From management's perspective, quality of performance should be viewed as the most important aspect of a service, for as Berry and Parasuraman (1991) noted: "Service quality is the foundation of services marketing" (p. 4). While the refuge's attributes are under the control of the managers, benefits visitors obtain during the trip are not. Although quality of visitors' experience is partially a response to management's performance, in part it is also a reaction to factors that are brought to the refuge by visitors themselves. Further, the subjectivity of the psychological outcome of a refuge visit experience determines that tourism managers cannot control the psychological benefits visitors obtain from each visit. Thus, at the transaction level, service quality is most important for managers. To influence visitors' future decisions, managers can improve the attributes of a refuge.

Crompton and Lamb (1986) pointed out "*Citizens don't buy programs or service; they buy the expectation of benefits*. Programs themselves are not marketable. Only their benefits have a value to client groups. A service program is simply a vehicle for the user benefits that it conveys" (p. 10). Results of the study confirmed that quality of performance is only one factor that influences visitors' benefits obtained. However, it is the most accessible means available to management to achieve the ultimate goal—realization of benefits sought by visitors.

Although structural equation modeling procedures deal with causal models, they do not establish causal relationships. Bollen (1989) asserts that "At best they show whether the causal assumptions embedded in a model match a sample of data" (p. 4). Thus, results of the study only verify that the proposed relationships among constructs in the conceptual model for the most part were supported by the sample data collected for this study. An important next step is to fit the proposed model to other samples of data so that its validity can be examined.

Findings of the study supported the influence of overall satisfaction on overall service quality which suggests that overall service quality is a higher level construct. However, this is not conclusive because structural equation modeling shows only whether the relationship conceptualized in the model has support from the sample data. Although the impact of overall satisfaction on overall service quality was conceptualized based on previous studies, there is also evidence in the literature that there may be a reciprocal effect between overall service quality and satisfaction (Dabholkar, 1995). Future research could usefully examine this possible effect in order to determine which construct is superordinate at the global level.

A related topic that awaits further research is examination of the interrelationships among dimensions of latent constructs in the model. The purpose of the present study was to test the structural model and, thus, it did

not focus on examining the dimensions of the constructs. Future studies could investigate what service attributes contribute most to visitors' quality of experience, and what benefits should be promoted to current and potential visitors. In addition, the Nature Appreciation/Learning dimension was eliminated in this study because of its overwhelming influence on the model. This may be an important issue for future studies to address, because it seems likely that one or two powerful variables may consistently overwhelm similar models in leisure contexts where respondents are highly involved users.

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