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Subash Lonial P.S. Raju , (2015),"Impact of service attributes on customer satisfaction and loyalty in a healthcare context", Leadership in Health Services, Vol. 28 Iss 2 pp. 149 - 166
Permanent link to this document:
http://dx.doi.org/10.1108/LHS-12-2013-0045

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# Impact of service attributes on customer satisfaction and loyalty in a healthcare context

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Received 24 March 2014
Revised 7 August 2014
Accepted 20 October 2014

## Abstract

**Purpose** – The purpose of this paper is to examine the role of perceived service attributes in the development of overall customer satisfaction (OCS) and customer loyalty (CL) in a health-care setting. This paper also sheds light on the role of hospitalist physicians (HPs) and offers suggestions to improve patient satisfaction and loyalty.

**Design/methodology/approach** – A telephone survey was used to collect data from recently hospitalized patients with respect to their HP. Structural equations modeling (SEM) was used to confirm the overall relationships between perceived service quality (PSQ), OCS and CL. The sample was then divided into customer relationship groups (CRGs) based on satisfaction and loyalty measures. Discriminant analysis was used to determine which attributes differentiated most between high and low satisfaction and loyalty groups.

**Findings** – Overall relationships among PSQ, OCS and CL were in conformity with the conceptual model. Findings also revealed that service attributes played an important role in distinguishing between high and low satisfaction and loyalty groups, although some attributes were more important than others and different attributes emerged as being key influencers for satisfaction and loyalty.

**Research limitations/implications** – The conceptual model used is a fairly straight forward model, and we have not considered the impact of individual factors such as expectations and value perceptions or involvement levels and demographic characteristics on service quality and overall satisfaction. The data for this study were provided by a major health maintenance organization (HMO), and there is room for improvement in the manner in which certain constructs were measured. For example, OCS, recommendation and retention all used single item measures, and it might have been preferable to use multiple item measures for these constructs.

**Practical implications** – The study shows that organizations can benefit by identifying and focusing on critical attributes as part of their customer relationship management program.

**Social implications** – The SEM results provide strong support for the overall model linking service quality, OCS and CL in a health-care setting. As one would expect, PSQ has a strong impact on OCS, which, in turn, has a fairly strong impact on CL. However, there is also a significant direct linkage between PSQ and CL. This linkage shows that at least a certain portion of CL could evolve independent of the satisfaction level with the HP. This shows that, in addition to trying to improve satisfaction, organizations should also explore influencing loyalty directly, perhaps by the strategic use of service attribute perceptions.

**Originality/value** – The study shows that customer perceptions at the service attribute level can often be the key to the generation and management of customer satisfaction and loyalty. It also has significance for how satisfaction and loyalty with HPs can be improved in a hospital setting.

**Keywords** Healthcare, Customer satisfaction, Customer loyalty, Customer relationship management, Hospitalist physician

**Paper type** Research paper

Leadership in Health Services
Vol. 28 No. 2, 2015
pp. 149-166
© Emerald Group Publishing Limited
1751-1879
DOI 10.1108/LHS-12-2013-0045

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## Introduction

Both overall customer satisfaction (OCS) and customer loyalty (CL) are generally considered to be important constructs in the literature on services, as they are intimately tied to the profitability of services (Anderson *et al.*, 1994; Reichheld and Sasser Jr, 1990; Rust and Zahorik, 1993). These two constructs are also instrumental in characterizing the strength of the relationship that the customer has with the organization. As a result, organizations are constantly looking for ways to manage customer relationships in ways that lead to increases in both OCS and CL. In this paper, we examine whether service attribute perceptions might provide a means to impact both OCS and CL. Such an examination can help us better understand the nature and strength of customer relationships with organizations. If service attribute perceptions have a significant impact on OCS and CL, it would imply that service organizations can manage the strength of customer relationships by identifying critical service attributes and influencing customer perceptions on these key attributes.

Past studies have shown that both OCS and CL are influenced by customer perceptions of service attributes (Gustafsson and Johnson, 1997; Pizam and Ellis, 1999). Often, researchers have aggregated individual attribute perceptions into the construct of perceived service quality (PSQ), or something similar, using a variety of paradigms (Corbin *et al.*, 2001; Donabedian, 1980; Gronroos, 1984; Lehtinen and Lehtinen, 1991; Mittal and Lassar, 1998; Parasuraman *et al.*, 1988). Additionally, researchers have often characterized the strength of the customer relationship with an organization using a combination of the OCS and CL constructs (Gemme, 1997; Kirkby and Murphy, 2001; Knox, 1998; Kranhold, 2006). For instance, a high degree of customer satisfaction accompanied by a high degree of CL would indicate a very strong bond between the customer and the service provider. Some researchers have characterized this as a state of "customer delight" or "complete satisfaction" (Corbin *et al.*, 2001; Jones and Sasser Jr., 1995). If the attainment of this state of "delight" is dependent on the performance of the organization on certain "critical" service attributes, gaining a deeper understanding of this process could be the key to effectively managing customer relationships. Improving customer satisfaction and loyalty could be instrumental to the profitability and ultimate survival of the organization. One way an organization can use attribute perceptions to manage customer relationships is to divide customers into customer relationship groups (CRGs) based on their OCS and CL scores and characterize these CRGs based on their attribute perceptions. Redesigning and promoting services on the basis of these critical attributes would enable overall service perceptions to be changed over time. This, in turn, would allow customers to be gradually moved from less profitable CRGs to more profitable CRGs. In summary, understanding the role of service attributes could be a significant step in the customer relationship management (CRM) process and enable organizations to improve the lifetime value of their customers. This paper uses such an approach to examine whether attribute perceptions can provide a better understanding of CRGs in terms of their satisfaction and loyalty.

The analysis in this paper is performed within a health-care sector, and the service context used is that of "hospitalist physicians" (HPs). The term "hospitalist" was coined by Wachter and Goldman (1996). HPs usually work closely with the patient's primary care physician (PCP) to help manage medical care during the period of the patient's hospital stay. These physicians have a significant impact on the quality of care provided by a hospital, and their service performance can often determine patient satisfaction and

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loyalty with respect to the hospital. Since 1996, the number of HPs in the USA has grown significantly. Recent estimates put the number at 30,000 nationwide, and there are many factors responsible for this growth (Jungerwirth *et al.*, 2014). Improving the quality of care provided by HPs and patient satisfaction with HPs is, therefore, strategically very important for hospitals. By using the context of HPs, this study has the added benefit that it sheds light on the important role of HPs in fostering patient satisfaction and loyalty and how improvements can be made in this aspect of health-care delivery. Data relating to attribute perceptions and evaluations of their HP provided by recently hospitalized patients form the basis of this paper. Overall relationships among PSQ, OCS and CL are first examined using the technique of structural equations modeling (SEM). The relationships among these three constructs have been examined in prior studies and, although this is not the primary focus of this paper, they are reexamined here primarily to confirm that the results are consistent with prior findings. This would provide validation that the health-care context used in this study is representative of the general service environment. The primary focus of this paper, as outlined above, is to examine the role of service attribute perceptions in determining the strength of customer relationships. For this part of the analysis, customers are divided into CRGs based on their OCS and CL scores. Discriminant analysis is used to examine whether these CRGs exhibit significant differences in terms of their service attribute perceptions. The results are used to identify whether certain service attributes play a critical role in determining the strength of the customer relationships based on the extent of customer satisfaction and CL. The paper concludes with a discussion of the implications of these findings for future research. In addition, based on the findings, specific recommendations are offered as to how HPs could be instrumental in improving patient satisfaction and loyalty.

## Theoretical background

### *Relationships among PSQ, OCS and CL*

Several past studies support the notion that PSQ is an antecedent to OCS (Corbin *et al.*, 2001; Cronin and Taylor, 1992; de Ruyter *et al.*, 1997; Spreng and Mackoy, 1996; Sureshchandar *et al.*, 2002). There is also considerable support for the linkage between OCS and CL. Woodside *et al.* (1989) collected service quality, customer satisfaction and behavioral intention data from patients of two different hospitals. They found that OCS was strongly associated with the intent to return to the same service provider. Other studies, both in a general marketing context and specifically in the health-care context, have also suggested a strong association between customer satisfaction and CL (Anderson and Sullivan, 1993; Bearden and Teel, 1983; Fisk *et al.*, 1990; Gerpott *et al.*, 2001; Mittal and Kamakura, 2001; Rust and Zahorik, 1993; Singh, 1990). Therefore, past research provides strong support for a sequential PSQ–OCS–CL linkage (Pollack, 2009). From a theoretical viewpoint, the rationale for this sequential linkage would be similar to that found in the attitude literature between the cognitive, affective and conative components. PSQ, being an aggregate of attribute perceptions, would be similar to the cognitive component; OCS would be like the emotional affective component; and CL would be akin to the behavioral conative component.

In addition to the sequential linkages among PSQ, OCS and CL, some research (Boulding *et al.*, 1993; Cole and Illum, 2006; Peyrot *et al.*, 1993; Wong and Sohal, 2003) suggest that there might also be a direct link between PSQ and CL, although this direct link appears to be relatively weak (Headley and Miller, 1993). From the theoretical

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viewpoint, this direct link might provide a means to explain why CL is sometimes high even when overall satisfaction is low and vice versa. In other words, customer satisfaction might not always be a necessary prerequisite for CL, and loyalty could sometimes be determined more by specific attributes.

With respect to the measurement of CL, several alternative measures have been proposed in the literature. These measures have been based on primary behavior (such as the recency, frequency and amount of actual purchase), intentions to engage in primary behavior, such as buying, and other secondary behaviors (such as customer referral, endorsements and positive word-of-mouth). Of the many hard and soft metrics that have been suggested to measure CL (Lain *et al.*, 2000), measures of recommendation (REC; positive word-of-mouth communication) and retention (RET; willingness to return to the same service provider) appear to be two of the best indicators of CL (Anderson and Sullivan, 1993; Fisk *et al.*, 1990; Gemme, 1997; Gerpott *et al.*, 2001; Kranhold, 2006; Mittal and Kamakura, 2001; Reichheld, 2003; Rust and Zahorik, 1993; Singh, 1990; Woodside *et al.*, 1989). In fact, companies like GE have found that the likelihood of recommending the organization (which GE measures with a "net promoter score") is one of the most significant predictors of growth and profitability (Kranhold, 2006). Therefore, in this paper, we use REC and RET measures as the two indicators of CL. The overall conceptual model of the relationships among the various constructs is shown in Figure 1.

*Customer relationship groups*

In the literature, researchers have suggested different ways to categorize customers into loyalty groups. Knox (1998) introduced the notion of the diamond of loyalty and classified customers into four groups – loyals, variety seekers, habituals and switchers – based on their involvement and purchasing portfolio. GE Capital Solutions group categorizes customers into proponents, detractors and passives based on their willingness to recommend the company to a friend (Kranhold, 2006). Kirkby and Murphy (2001) divide customers into four types – advocates, mercenaries, hostages and terrorists – based on the strength of their relationship with an organization. Similarly, Gemme (1997) has grouped customers in a managed care market into four categories – safe, high risk, unhappy but static and happy but mobile. The precise definitions of the CRGs proposed by various scholars are not relevant to this paper. However, it is important to note that most of these definitions have used some combination of

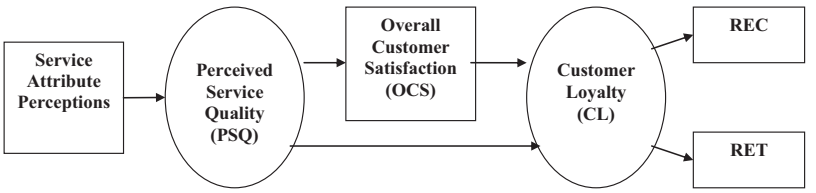


**Figure 1.**
Relationships between service quality, OCS and CL

**Notes:** The figure is shown using shapes traditionally used in SEM; ovals indicate latent variables, whereas boxes indicate measured variables; indicators of PSQ are the service attribute perceptions; indicators of CL are REC and RET; PSQ impacts CL through OCS but also has a direct effect on CL

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customer satisfaction and/or loyalty measures to characterize the strength of the customer relationship with an organization.

The rationale for categorizing customers into CRGs is that it provides an organization with the capability to manage each group differently based on the strength and nature of the relationship the group has with the organization. It is not sufficient any more for organizations to merely satisfy their customers. In fact, customers are often willing to switch providers even when satisfaction levels are relatively high. For example, in the auto industry, 90 per cent of the customers typically report high satisfaction levels, even though only 30-40 per cent buy the same vehicle again (Gemme, 1997). Similarly, Mittal and Lassar (1998) found, in a study of two service industries, that one-third to one-half of the customers who had been identified as being "satisfied" were still willing to switch service providers. Jones and Sasser (1995) observe that in markets where customers have choices, there is a tremendous difference in the loyalty of customers who are "merely satisfied" and those who are "completely satisfied." They also note that the actions required to turn "neutral" customers into "satisfied" customers are often different from the actions required to turn "satisfied" customers into "completely satisfied" customers. Enterprise, the car rental company, uses the Enterprise Service Quality Index to represent the percentage of customers who are completely satisfied (Kazanjian, 2007). Their research reveals that "completely" satisfied customers are three times more likely to do business with the company than those who are only "somewhat" satisfied. All this points to the fact that organizations have to examine customer relationships more carefully and cannot take the loyalty of customers for granted merely because they are satisfied. They have to go beyond satisfaction and effectively manage customer relationships to increase profitability.

Although researchers have provided interesting terminology and ways to characterize the different relationship groups as noted earlier, there has been no systematic research to show how the variables behind these categorizations can form the basis for CRM programs. Should CRGs be differentiated merely on the basis of overall satisfaction or loyalty levels or should we try to gain a deeper understanding of what is behind these satisfaction and loyalty levels? Many factors such as attribute perceptions, accessibility, choice restrictions due to monetary and other reasons and lack of information on competing alternatives could play a role in determining the satisfaction and/or loyalty levels of customers with respect to specific service providers. In this paper, we focus on the role played by service attribute perceptions, in determining customer satisfaction and loyalty levels. If an organization can identify the critical attributes that are instrumental in determining customer satisfaction and/or loyalty levels, it can implement strategies to improve customer perceptions on these critical attributes. Over time, this could lead to stronger relationships with customers and, consequently, improve the financial performance and profitability of the organization.

### *The context of HPs*

As this study uses the context of HPs, it might be useful to provide a brief overview of the role of HPs in health-care delivery. As mentioned earlier, the role of HPs within hospitals has recently seen considerable growth. Most HPs are board certified in internal medicine, and many residency programs have developed hospitalist tracks to focus on this area. HPs are generally employed either by hospitals, hospital management

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companies, hospitalist-only medical groups or insurance companies. No matter who employs the HP, there is a general consensus that these physicians have a significant impact on the quality of care provided by a hospital, and their performance can, therefore, determine patient satisfaction and loyalty levels. More general information on HPs is available at the Web site of the Society of Hospital Medicine.

The growth in HPs has been fueled by three major trends. First, the restrictions on the duty hours of house staff in hospitals have greatly reduced the inpatient care provided by residents, and this gap is being increasingly filled by HPs. Second, PCPs often feel that their time is better spent by seeing patients in their office as opposed to making hospital rounds. As HPs are hospital-based, they can be more readily available to the patient during the day as compared to the PCPs who might only make hospital rounds once a day. Despite their different roles, HPs usually work closely with the PCPs to manage patient care during the patient's time in the hospital, and so, the patient benefits from both types of care. Finally, as they specialize in the hospital care of patients, HPs have more intimate knowledge of the unique aspects of patient needs during a hospital stay and can, thus, provide better quality care to the patient continually from the time of admission to the time of discharge. All of these advantages of using HPs improve hospital efficiency by reducing the length of stay of patients and maximizing bed use, thereby resulting in higher profitability for hospitals. The use of HPs, however, is not without disadvantages. Some of the major disadvantages are patient dissatisfaction at being treated by someone other than their PCP, concerns with discontinuity of care and patient hand-offs in transitioning between the PCP and HP and concerns with the higher workloads (Elliott *et al.*, 2014) and poor institutional support for HPs within hospitals.

Although it is the subject of some debate in the literature, the use of HPs in hospitals does not seem to be associated with any significant negative care outcomes for patients (Goodrich *et al.*, 2012; Jungerwirth *et al.*, 2014; Yousefi and Chong, 2013). However, there seem to be lingering questions concerning how patient satisfaction measures relate to the use of HPs. Satisfaction with the discharge process (Chen *et al.*, 2013), continuity of care (Turner *et al.*, 2014) and communication with the patient (O'Leary *et al.*, 2013) appear to be some of the major areas where patient dissatisfaction is likely to be the highest. As the issue of patient satisfaction with HPs continues to be an area of interest for health-care researchers and practitioners, the present study provides further insights into this by examining key relationships between PSQ, OCS and CL.

## Methodology

### *Sample*

Data for this study were collected from the insurance participants of a major Health Maintenance Organization (HMO) by means of a telephone survey to measure their evaluation of their HP. The survey was conducted in seven regional markets. Screening questions were used to identify respondents who had been recently admitted to a hospital. A total of 2,044 completed questionnaires were used for the data analysis. Occasional missing data on variables was handled by substituting with the variable mean.

### *Survey instrument*

OCS with the HP, probability of recommending the HP to a friend or family member and the likelihood of choosing the same HP in the future were measured with five-point

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Likert scales. These constituted the OCS (ranging from "very dissatisfied" to "very satisfied"), REC (ranging from "definitely would not recommend" to "definitely would recommend") and RET (ranging from "definitely would not choose again" to "definitely would choose again") measures used in the study. PSQ was measured in terms of ratings with respect to 14 specific attributes relating to the patient's hospitalization experience using five-point scales ranging from "very dissatisfied" to "very satisfied". These attributes dealt with the role of the HP in relation to patient transition (i.e. admitting and discharge procedures) and the role of the HP in relation to patient care. Of the 14 attributes, 4 were patient transition attributes (PTAs), and the other 10 were patient care attributes (PCAs). The exact wording of these attributes can be seen in Tables I and II.

| Service attributes | Standardized discriminant coefficients[a] | Discriminant loadings[b] |
|---|---|---|
| *PTA* | | |
| 1. Explanation from the HP that he/she would be serving in place of the PCP during the hospitalization | **0.369** | **0.716 (3)** |
| 2. Verbal directions from the HP during discharge | NE | 0.547 (13) |
| 3. Written directions from the HP during discharge | NE | 0.535 (14) |
| 4. Instructions given to you by your HP during discharge concerning medications and follow-up care | **0.255** | **0.627 (7)** |
| *PCA* | | |
| 5. Frequency of the HP's visits | NE | 0.635 (5) |
| 6. Amount of time HP spent with you | **0.374** | **0.805 (1)** |
| 7. HP's familiarity with your case | NE | 0.558 (12) |
| 8. HP's explanation of your condition and treatment | NE | 0.659 (4) |
| 9. HP's explanation of expected outcomes from your treatment | NE | 0.620 (9) |
| 10. The courtesy and respect shown to you and your family by the HP | NE | 0.563 (11) |
| 11. HP's willingness to include you and your family in decisions about your care and treatment | NE | 0.625 (8) |
| 12. The thoroughness of care by the HP | **0.355** | **0.777 (2)** |
| 13. HP's willingness to answer questions | NE | 0.613 (10) |
| 14. Medical skills and judgment of the HP | NE | 0.634 (6) |

**Notes:** [a]NE indicates variables not entered in the analysis. Entered variables are in bold; [b]Numbers in parentheses below the loadings show the relative rank ordering of the variables; eigen value = 0.826, canonical correlation = 0.673, 'Wilks' lambda = 0.548; chi-square = 268.574, df = 4, $p = 0.000$

**Table I.** Discriminant analysis between HS and LS groups

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| Service attributes | Standardized discriminant coefficients[a] | Discriminant loadings[b] |
|---|---|---|
| *PTA* | | |
| 1. Explanation from the HP that he/she would be serving in place of the PCP during the hospitalization | NE | 0.390 (14) |
| 2. Verbal directions from the HP during discharge | **0.433** | **0.659 (3)** |
| 3. Written directions from the HP during discharge | NE | 0.508 (9) |
| 4. Instructions given to you by your HP during discharge concerning medications and follow-up care | NE | 0.449 (13) |
| *PCA* | | |
| 5. Frequency of the HP's visits | NE | 0.634 (4) |
| 6. Amount of time HP spent with you | **0.458** | **0.751 (1)** |
| 7. HP's familiarity with your case | **0.522** | **0.709 (2)** |
| 8. HP's explanation of your condition and treatment | NE | 0.579 (5) |
| 9. HP's explanation of expected outcomes from your treatment | NE | 0.571 (6) |
| 10. The courtesy and respect shown to you and your family by the HP | NE | 0.489 (11) |
| 11. HP's willingness to include you and your family in decisions about your care and treatment | NE | 0.497 (10) |
| 12. The thoroughness of care by the HP | NE | 0.527 (7) |
| 13. HP's willingness to answer questions | NE | 0.450 (12) |
| 14. Medical skills and judgment of the HP | NE | 0.524 (8) |

**Table II.**
Discriminant analysis between HL and LL groups

**Notes:** [a] NE indicates variables not entered in the analysis. Entered variables are in bold; [b] Numbers in parentheses below the loadings show the relative rank ordering of the variables; eigen value = 0.167, canonical correlation = 0.378, Wilks' lambda = 0.857; chi-square = 40.422, df = 3, $p = 0.000$

*Analysis*

The SEM model results for the overall relationships among the constructs and the discriminant analysis results for differentiating among CRGs based on service attribute perceptions are discussed below.

*SEM results.* AMOS software was used for the SEM analysis (Arbuckle and Wothke, 1999). The three major constructs in Figure 1 are PSQ, OCS and CL. As PSQ is conceptualized as an aggregate of the perceptions of individual attribute ratings, it was represented in the SEM as a latent construct with the indicators being the 14 individual attribute ratings. A similar approach was used by Churchill and Suprenant (1982). CL was also conceptualized as a latent construct with the indicators being REC and RET.

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OCS, on the other hand, was an observed endogenous construct and measured with the five-point scale mentioned earlier.

As PSQ was based on multiple attribute ratings, the construct measurement was validated in a number of different ways. The correlations among the 14 attribute ratings ranged from 0.467 to 0.725, and the Cronbach's alpha value was 0.953, indicating a high degree of internal reliability among the attributes. A factor analysis of the 14 attributes extracted only one dimension (using eigen value > 1 criterion), explaining 62.62 per cent of the variance, and all 14 attributes had loadings of greater than 0.70 on this one dimension. These results provide strong support that all 14 service attribute perceptions represent a single construct at a broader level.

Measurement models were also run at the individual construct level for the PSQ construct and at the aggregate level using all three major constructs (PSQ, OCS and CL) along with the indicators for PSQ and CL. The two indicators for CL, as mentioned earlier, were REC and RET. For the aggregate measurement model, as handling 14 indicators for PSQ was quite unwieldy, they were split randomly into three parcels, following the approach recommended by Bagozzi and Heatherton (1994), and attribute scores aggregated within each parcel. Using standard goodness of fit statistics, both measurement models yielded very good results, providing further validation for the measurements of the constructs. Because of space limitations, these results are not elaborated upon here.

For the main SEM model, the chi-square value of 13.841 with 7 degrees of freedom was only marginally significant ($p = 0.054$). The CMIN/df value was 1.977, and the goodness of fit indices were uniformly excellent (goodness of fit index (GFI) = 0.998, incremental fit index (IFI) = 0.999, tucker lewis index (TLI) = 0.999 and root mean square error of approximation (RMSEA) = 0.022). Standardized regression coefficients (path coefficients) for this model are shown in Figure 2. The path coefficient between PSQ and OCS was 0.75 and that between OCS and CL was 0.49. The direct path coefficient between PSQ on CL was 0.46, which is a bit weaker than the path coefficient between OCS and CL, but this is not surprising and has been confirmed by other researchers (Olorunniwo *et al.*, 2006). All $t$ values were statistically significant at the $p < 0.05$ level. It can be seen that the relationship between PSQ and OCS is much stronger than between OCS and CL, suggesting that loyalty might be a more elusive construct than satisfaction. These relationships generally conform to expectations and provide strong support for the linkages proposed in the conceptual model (Figure 1). The next part of the analysis delves into these relationships further by examining the impact of service attribute perceptions on both OCS and CL. This is accomplished by dividing the respondents into CRGs based on their OCS, REC and RET scores and, then, examining differences in attribute perceptions among the CRGs.

*Dividing respondents into CRGs.* To form CRGs based on the OCS, REC and RET scores, the five-point scales for these three measures were first collapsed into three-point scales by combining the two end points on each scale. In the case of OCS, the three collapsed categories were 1 = very dissatisfied and dissatisfied, 2 = somewhat dissatisfied and 3 = satisfied and very satisfied. Similarly, for the REC and RET scales, the collapsed categories were 1 = definitely or probably would not, 2 = might or might not and 3 = probably or definitely would recommend (for REC) or return to the same HP in the future (for RET). Although a median or tertiary split of the respondents on each scale could have also been used, the method of collapsing the scales was chosen, as it

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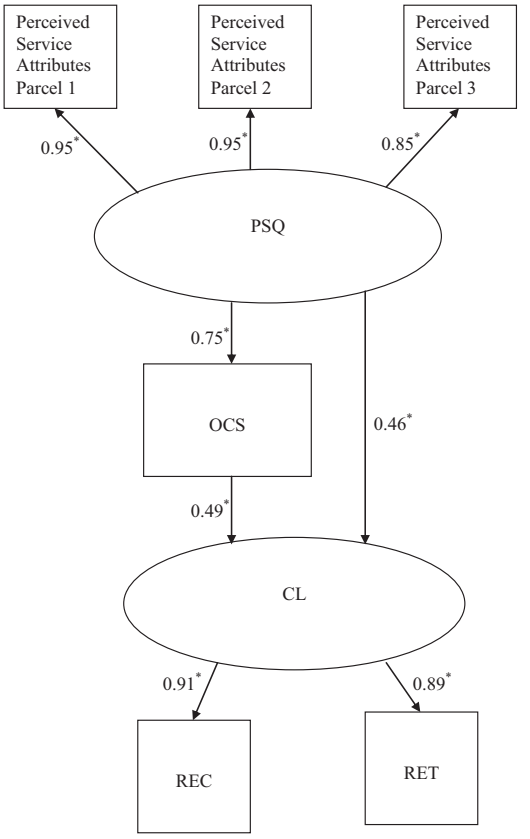


**Note:** * Indicates significance at the $p < 0.05$ level

**Figure 2.**
Path coefficients for SEM

allowed for easier conceptual interpretation of the discriminant analysis results. Two groups were first formed on the basis of the OCS score. Those with a score of 3 were classified as the "High Satisfaction" group, and those with scores of 2 or 1 were classified as the "Low Satisfaction" (LS) group. The "High Satisfaction" (HS) group was further split into two categories on the basis of the REC and RET scores. Those at the highest level, i.e. scores of 3, for both REC and RET were classified as the "High Satisfaction-High Loyalty" (HS-HL) group. Those with lower scores for either REC or RET, or both, were classified as the "High Satisfaction-Low Loyalty" (HS-LL) group. The low satisfaction group was not further subdivided. Even though theoretically some customers could exhibit high loyalty without high satisfaction, such loyalty is generally considered "spurious" loyalty without a deeper psychological basis. From a strategic standpoint, this is the reason organizations generally work on raising customer satisfaction levels before trying to build loyalty levels. In essence, individuals were assigned to one of the three relationship groups based on their scores for OCS, REC and RET, i.e. HS-HL, HS-LL and the LS group. Most respondents fell into the HS-HL group, which had a size of 1,714, and this was much larger than the HS-LL group (size of 145)

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and the LS group (size of 185). The latter two groups comprised only about 16 per cent of the total sample, but this skewed nature of the group sizes is not really unusual. Most successful organizations typically have a large proportion of their customers falling into the HS-HL group, and researchers have reported high levels of satisfaction and loyalty for services in general (Gerpott *et al.*, 2001; Peyrot *et al.*, 1993). Given the skewed nature of the group sizes, one might wonder whether it is worth trying to distinguish among the different CRGs. Why not focus on just catering to the HS-HL group, which is likely to be more profitable, and let the other customers switch to competing organizations? It is important to recognize that the real challenge for a successful business is often in converting the smaller percentages of customers with lower satisfaction or loyalty levels into satisfied and/or loyal customers in the long-term. These smaller percentages of customers are the ones who are likely to switch to your competitors, as their satisfaction and loyalty levels are lower. If you can move your own customers from lower satisfaction and loyalty levels to higher levels, you will probably also stand a better chance of building your base by drawing away additional customers from your competitors. This provides a strong rationale for understanding the role of factors such as attribute perceptions in determining customer satisfaction and loyalty.

*Discriminant analysis results.* From the SEM results, it is clear that attribute perceptions (as represented by PSQ) should have a fairly strong impact on OCS, although it is not clear exactly which specific service attributes have the greatest impact. Also, as PSQ has both a direct and an indirect (through OCS) impact on CL, it is not easy to discern just how much impact the perceived service attributes have on CL and whether particular service attributes are more dominant. Discriminant analyses, using the CRGs, enable us to examine these issues.

Two separate discriminant analyses were performed. The first discriminant analysis was performed to see which service attributes contributed to higher satisfaction, and the second discriminant analysis examined service attributes in relation to loyalty levels. Given the skewed sizes of the CRGs in this study, a random sample of 120 respondents was selected from the HS-HL group for these discriminant analyses to provide a better balance among the sizes of the three groups.

For the first discriminant analysis, the two HS groups were combined into one HS group (N = 120 + 145 = 265), and a two group discriminant analysis was performed between the HS and LS groups. A stepwise procedure was used with the F value cutoffs for including and removing variables set at $p$ values of 0.05 and 0.10, respectively. Results are shown in Table I. The discriminant function was statistically significant, and the canonical correlation coefficient of 0.67 translates into 45.29 per cent of the variance between HS and LS groups being explained by the attribute perceptions. The jack-knife method of classification showed that 80.9 per cent of the grouped cases were correctly classified. Only four service attributes of the 14 were entered in the stepwise analysis. Two of these attributes were PTAs, and the other two were PCAs. The two PTAs entered were the explanation from the HP of his/her role in place of the primary physician during the hospitalization period, and the quality of instructions for follow-up care given during the patient discharge process. The two PCAs were the amount of time the HP spent with the patient and the thoroughness of the HP in providing patient care. It should be noted that even though only four attributes were entered into the analysis, all 14 discriminant loadings for the attributes (the structure matrix) exceeded 0.40 and ranged from a low of 0.535 to a high of 0.805. This shows that

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all 14 attributes have practical and strategic significance to a hospital, even though the correlations among the attributes (which ranged between 0.47 and 0.72) allowed only 4 attributes to be entered into the analysis. Examining the standardized discriminant coefficients and the discriminant loadings simultaneously for the four entered variables, it becomes apparent that the amount of time the HP spends with the patient is the most important attribute in determining overall satisfaction, and the quality of instructions for follow-up care is the least important of the four. The other two attributes fall in the middle. The implications of these findings will be elaborated upon later.

A second discriminant analysis was conducted to determine the attributes contributing most to loyalty among those patients who were highly satisfied. This analysis was also a two-group analysis between the HS-HL ($N = 120$) and HS-LL ($N = 145$) groups. A stepwise procedure was used as before. Results are summarized in Table II. The discriminant function was again statistically significant, and the canonical correlation of 0.378 shows that approximately 14.3 per cent of the difference between the groups was explained by the discriminant function. Only three variables were entered in the stepwise analysis this time. Considering both the standardized discriminant coefficients and the discriminant loadings simultaneously shed some light on the relative importance of these attributes. The first two attributes, both PCAs, are the amount of time the HP spent with the patient and the HP's familiarity with the patient's case. The third attribute, a PTA, pertains to the verbal directions from the HP during the discharge process. It is notable that the amount of time the physician spent with the patient emerged in both discriminant analyses, indicating its importance for both patient satisfaction as well as loyalty. No other common attributes emerged between the two discriminant analyses. Again, it must be noted that in this analysis also all the attributes had discriminant loadings above 0.4 (except for one, which was very close at 0.39). This signifies that, if not for the correlations among the attributes, all the attributes could be potentially useful for strategic decisions. Using the jack-knife method of classification, 68.3 per cent of the cases were classified correctly. This meets the standard of 1.25× probability of correct classification by the maximum chance criterion (Hair *et al.*, 2006, p. 324). However, the fact that this figure is much lower than for the first discriminant analysis attests to the more elusive nature of CL. In general, the combined results of the two discriminant analyses show that service attributes perceptions appear to do a much better job of distinguishing between CRGs based on satisfaction levels than on loyalty levels, although they could be strategically useful in enhancing both.

## Implications and conclusions

There are several major implications of the findings. First, the SEM results provide strong support for the overall model, linking service quality, overall satisfaction and CL in a health-care setting. As one would expect, PSQ has a strong impact on OCS, which, in turn, has a fairly strong impact on CL. However, there is also a significant direct linkage between PSQ and CL. This linkage shows that at least a certain portion of CL could evolve independent of the satisfaction level with the HP (Dick and Basu, 1994). This shows that, in addition to trying to improve satisfaction, organizations should also explore influencing loyalty directly, perhaps by the strategic use of service attribute perceptions. The discriminant analyses shed further light on the impact of service attribute perceptions on both OCS and CL.

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The SEM analysis shows that the strongest linkage is between PSQ and OCS. The logical first step in CRM should, therefore, be to use the perceived service attributes to improve overall satisfaction levels. This is also borne out by the first discriminant analysis with over 45 per cent of the variance in OCS being explained by the perceived service attributes. Although all the service attributes seem to be important based on the discriminant loadings being greater than or equal to 0.4, the four service attributes that distinguish most between the HS and LS groups can show us how to increase satisfaction levels based on these specific attributes. In other words, improvement on the basis of any of the attributes is bound to have at least some impact on overall satisfaction. However, from a strategic point of view, an organization needs to know which attributes would make the most impact. It is particularly revealing if we look at the four attributes in a temporal sequence. First, when the patient is admitted to the hospital, the HP should do a good job of explaining why he/she will be serving in place of the primary physician during the hospitalization period. Part of this explanation might involve convincing the patient that the HP has a good working relationship with the patient's PCP. In terms of the actual patient care, two attributes stand out in importance. The first is the amount of time the HP spends with the patient, and the second is the thoroughness of care provided by the HP. This indicates that patients prefer their HPs to be detail-oriented and meticulous with their treatment and care. Rushing through the care process and a general lack of concern for the patient could be detrimental to overall patient satisfaction. The fourth and final attribute, a PTA, deals with the discharge process and shows that it is important to provide adequate instructions to the patient for follow-up care. Making sure that the patient understands the instructions and providing avenues for the patient to get his/her questions answered could be important for building satisfaction.

Once a hospital or HMO is successful in improving the satisfaction levels of its patients, the next step would be to build loyalty levels. The second discriminant analysis gives us some pointers on how to use service attributes to build loyalty. It should be noted that the relationship between perceived service attributes and CL is not as strong as between the perceived service attributes and overall satisfaction. Only about 14 per cent of the variance between the HL and LL groups is explained by the perceived service attributes. Nevertheless, perceived service attributes can be used strategically to increase loyalty levels. Again, although all attributes have relevance based on the discriminant loadings, two PCAs and one PTA emerged as being particularly important in this analysis. These are the ones the organization needs to focus on from a strategic viewpoint. The amount of time the HP spends with the patient and the HP's familiarity with the patient's case were the two PCAs. It should be noted that the former was also important with respect to the overall satisfaction. This shows that taking the needed time with the patient and not rushing through the examination or care could be critical for both satisfaction and loyalty. Also, it could reflect very positively on the HP if he/she took the time to familiarize himself/herself with the patient's background and confer with the PCP as needed. It could obviously be quite disconcerting for a patient when a physician seems to be unfamiliar with their background information and starts asking obvious questions during a check up. The third important attribute, a PTA, was the quality of the verbal directions from the doctor during the discharge process. Although providing instructions for follow-up care was a determinant of satisfaction in the first discriminant analysis, actual verbal instructions from the HP during discharge process

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appears to be important for building loyalty. The implication here is that it might be important for the HP to participate, at least to a degree, in providing verbal directions to the patient during the discharge process, even if more detailed instructions might be provided by a nurse or other staff member. Such personal attention from the HP during the discharge process could be instrumental in building a lasting relationship with the patient. Also, this might be the last thing that most patients remember about the HP, and a positive impression at this time might be critical to building future loyalty.

Summarizing the above discussion, there appear to be three critical stages during the hospital stay of a patient when the doctor–patient interaction could impact significantly on the overall patient satisfaction and loyalty. First, in the "pre-care (admission)" stage, it appears that it is important for the HP to take the time to familiarize himself/herself with the patient's case and to clarify his/her role in the care of the patient. The second stage would be the "hospital care" stage, and here, it would be important for the HP to spend sufficient time with the patient and be thorough with the patient care. Any indications that patient care is being compromised at this stage could be detrimental to the overall patient satisfaction and loyalty. Finally, in the "post-care (discharge)" stage, it appears that complete and clear follow-up care instructions could improve satisfaction levels. However, it might be even better for the HP to build a personal relationship with the patient by providing certain instructions verbally during the discharge process, even if other staff members are available for providing detailed instructions. These steps are outlined in Figure 3. It should be noted that these findings in general reinforce the results of past studies cited earlier in the paper with respect to the influence of dimensions such as continuity of care, communication with the patient and the

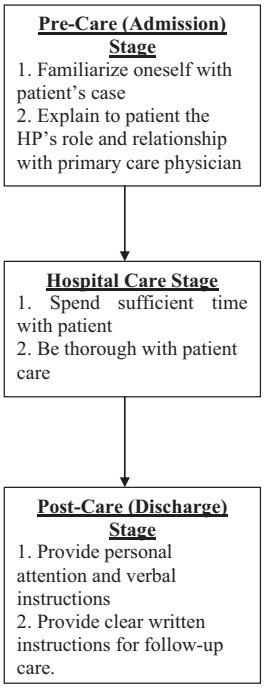


**Figure 3.**
Recommendations for HPs to improve patient satisfaction and loyalty

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discharge process on patient satisfaction with HPs. However, these findings also show how these variables can be critical in a broader sense with respect to satisfaction and loyalty and can, therefore, be strategically important to a hospital. Methods such as training HPs in specific areas, such as communication with patients, and designing specific protocols for patient care have been tried, but it is not clear how effective these methods are in ultimately improving patient satisfaction and loyalty (Fogerty *et al.*, 2013; O'Leary *et al.*, 2013). Hospitals also might need to address the overall job satisfaction of HPs themselves if they wish to improve patient satisfaction and loyalty by improving the service provided by HPs (Hinami *et al.*, 2012). In essence, the results of this study show that the relationships among service quality, patient satisfaction and CL are strong, and health-care organizations can use perceived service attributes quite effectively in their CRM process to build satisfaction and loyalty levels. Identifying the critical service attributes and knowing how to use these attributes strategically could be the key to this process and go a long way in improving the bottom line of service organizations. As part of this process, hospitals also need to address the training and job satisfaction of the service providers, namely, HPs, as a means to improving service attribute ratings.

Finally, there are some limitations in this study that must be noted. First, the conceptual model used is a fairly straightforward model, and we have not considered the impact of individual factors such as expectations and value perceptions (Anderson and Sullivan, 1993; Bolton and Drew, 1991; Jones and Sasser Jr, 1995; McDougall and Levesque, 2000) or involvement levels and demographic characteristics (Caruana, 1999; Singh, 1990) on service quality and overall satisfaction. The model could possibly be expanded in the future to incorporate these types of variables. As mentioned earlier, data for this study were provided by a major HMO, and there is room for improvement in the manner in which certain constructs were measured. For example, OCS, REC and RET all used single item measures, and it might have been preferable to use multiple item measures for these constructs. Using actual behavioral measures for REC and RET and a longitudinal design could also be beneficial in future studies. Finally, this study has examined customer satisfaction and loyalty in a specific health-care context, namely, with respect to medical care provided by HPs in a hospital setting. Although we feel that this context is representative of many other service environments, it is still important to identify the typology in which an organization's services belong and replicate the study in other service contexts (Olorunniwo *et al.*, 2006). This will help to assess the generalizability of the findings with respect to the impact of perceived service attributes on customer satisfaction and loyalty.

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