Importance of mutual relations on customer satisfaction in industries with no/low direct contact with customers

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Although customer satisfaction is a key indicator of quality of services provided by a company, it is not easily definable, in its conventional form, for the companies which have no direct contact with customers. Electrical Power Distribution Company is a case of service provider which has indirect contact with customers. Thus, the assessment of customers' satisfaction in such companies should vary in one way or another. The present empirical research intends to explore the relationship between service aspects and customers' satisfaction in the case of electricity distribution company. Since electricity distribution service has few tangible factors, its aspects differ from other services'. To determine the new factors that explain customers' satisfaction in electricity distribution company, we asked 2627 customers, since April through July in 2010, to respond to the questionnaire. Then we used factor analysis to determine structure and path analysis to study the factors affecting customer satisfaction. Finally, three dimensions were identified by factor analysis. These factors were referred to as performance, relation and announcing. Using path analysis, the role of them and their correlation with perceived value and customer satisfaction was examined. Results showed that positive direct effect between relation and satisfaction was significant.

Key words: Service aspects, customer satisfaction, perceived value, customer relation.

INTRODUCTION

The provision and maintenance of customer satisfaction is a demanding task of management in service industries which has required undertaking of a body of studies, both in service marketing researches and in the broader research environment (Iacobucci et al., 1995; Oliver, 1980; Rekettle and Heties, 2003; Szymanski and Henard, 2001; Yeung et al., 2002). Although, meeting the customers' expectations is a main constituent of the marketing concept (Spreng et al., 1996), what catches the research interest in customer satisfaction is its pertinence to business performance, which precedes recurring purchase behavior (Oh and Parks, 1997; Wirtz, 2003; Yeung et al., 2002; Machirori and Fatoki, 2011).

There have been many debates over paradoxical issue of customer satisfaction with services and its interaction with service quality in the marketing literature (Lee et al., 2000). However, all have a consensus on the essentiality of service quality and customer satisfaction as determinant factors in striving for competitive differentiation and customer maintenance. Every mature and highly competitive industry requires the satisfaction of customers as a sine qua non of customer retention (Clow and Vorhies, 1993; Oliver, 1999; Pizam and Ellis, 1999; Szymanski and Henard, 2001; Wirtz, 2003; Yuksel and Rimmington, 1998) and survival (Bloemer and de Ruyter, 1998; Bowen and Shoemaker, 1998; Pizam and Ellis, 1999; Zeithaml et al., 1998).

As Kondo (2001) declared, customer satisfaction is considered as the ultimate goal of total quality management. To provide customers with great satisfaction, companies should devote attention to offering excellent quality that attracts customers and clear up all
problems that customers complain about. Almost all the researchers in all studies undertaken on customer satisfaction refer to same common features that are noted by some authors (Oliver, 1981; Peterson and Wilson, 1992; Westbrook, 1980; Yi, 1990).

Most researchers have agreed that there is an interconnection between service quality and customer satisfaction (Buttle, 1996; Caruana, 2002; Cronin et al., 2000; Oh, 1999; Parasuraman et al., 1988; Zafar et al., 2011; Tamayo, 2011), consumer loyalty and customer satisfaction (Bloemer and Kasper, 1995; John, 2011; Buttle, 1996; Caruana, 2002; Chiou, 2004; Hu et al., 2011; McDougall and Levesque, 2000; Oliver, 1980). Furthermore, a positive relationship has been explored between consumer loyalty and company profitability in many studies (Bowen and Chen, 2001; Buttle, 1996; Hallowell, 1996; Kandampully and Suhartanto, 2000; Oliver, 1999; Tepeci, 1999). However, the researchers have not been preoccupied with the investigation of customer satisfaction in the case of intangible services.

The objective of this article is to achieve a model to improve quality of services. This approach is closely in line with constructivist ontology and permits managers and researchers to gain deep insight into customers' perceptions of the service environment for improving service quality design in electricity distribution company.

Our study proposes a significantly different conceptual framework for proposing a model of customer satisfaction in electricity distribution company; we aim at recognizing fundamental elements of satisfaction that some of them may belong equally to most of sectors' customers and others can be redefined based on the sector's specific conditions. After characterizing some basic aspects, they can be implemented to improve service recoveries in terms of increasing customer satisfaction, and may be base view for customer satisfaction in main business sectors.

Model and hypothesis

Previously, the emphasis of marketing activities have been on success in the product marketplace by scrutinizing the physical aspects of products and services such as quantity, quality, functionality, availability, accessibility, delivery, price and customer support. Lately, the shift of marketing managers’ focus, have been towards creation of value for their customers (Clutterbuck and Goldsmith, 1998; McAlexander et al., 2002). The preceding models have made their attempt to support customer satisfaction in any environment, but they could not be generalized to any settings, and be relevant to all customer satisfaction aspects. For instance, SERVQUAL (Parasuraman et al., 1988), as a customary measurement instrument for gaining customers’ perceptions of quality, (Ryan, 1997; Wuest, 2001; Buttle, 1996) was recommended as the best instrument for assessing service environments closer to its original service settings of appliance repair, retail banking and long distance telephone (Robinson, 1999), and the constructs may not be appropriate to all sectors. The SERVQUAL approach has the limitation of providing insights into improving service quality design (Fache, 2000; Schmitt, 2003). SERVQUAL addresses the quality of service delivery on particular attributes and addresses the general question: “Are we doing things right?” (Fache, 2000). This approach is effective in incremental changes to improve quality, which can be judged within the narrow outcomes pertaining to universal attributes (Fache, 2000). Despite the fact that SERVQUAL has drawn forth conflicting theories (Carman, 1990; Cronin and Taylor, 1992; Brown et al., 1993), it has continued to be the cornerstone of almost all theories on service quality.

In as much as the majority of servicing in companies like electricity distribution company is presented in an indirect way, the customer satisfaction factors resting on previous models might not have high generalizability. In the present study, therefore, a model is proposed in which reciprocal/two-way relation between customer and service provider is not resorted (Figure 1).

Our experimental study relies on four hypotheses, which are based on our conceptual and theoretical framework, as well as the empirical findings of survey. Specifically, we argue that:

$H_1$: Announcing (A one-way relation from company to customer without receiving feedback) has a positive effect on perceived value.

$H_2$: Performance has a positive effect on perceived value.
The questionnaire for this study included three main sections. The first section of the questionnaire consisted of customer's demographic item. One attribute “supplier guarantied me if a problem happens” was considered as a factor with one single item on which 0.718 was loaded. This factor was indicated that there were 5 underlying dimensions of the variables were determined. The exploratory factor analysis appears to be the appropriate approach (Kline, 1994). With respect to the indefiniteness of customer satisfaction variables in electricity distribution companies, primarily, using exploratory factor analysis, various dimensions of the variables were determined.

Appropriateness of factor analysis was determined by examining the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and the Bartlett’s test of sphericity. Both tests indicated that it was appropriate to perform a factor analysis. The perceived 18 attributes were factor-analyzed, using principal component analysis with VARIMAX rotation, to identify the underlying dimension factors. The exploratory factor analysis was conducted in order to gain a better understanding of the underlying structure of the data (Pitt and Jeannot, 1994).

The result of the principal component factor analysis indicated that there were 5 underlying dimensions (factors). One attribute “supplier guarantied me if a problem happens” was considered as a factor with one single item on which 0.718 was loaded. This factor was deleted and thus, 4.117% of variance presentation was lost. The results of the factor analysis are shown in Table 1. Prior to factor analyzing, the KMO measure of sampling adequacy and the Bartlett test of Sphericity were performed to test the fitness of the data.

The KMO was 0.963, which was greater than 0.5. The

**Table 1.** Profile of respondents.

<table>
<thead>
<tr>
<th>Demographic item</th>
<th>Valid percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>58.3</td>
</tr>
<tr>
<td>Female</td>
<td>41.7</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>13.9</td>
</tr>
<tr>
<td>26-30</td>
<td>25.2</td>
</tr>
<tr>
<td>31-35</td>
<td>24.1</td>
</tr>
<tr>
<td>36-45</td>
<td>23.8</td>
</tr>
<tr>
<td>46-50</td>
<td>10.1</td>
</tr>
<tr>
<td>Over 50</td>
<td>2.9</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>33.6</td>
</tr>
<tr>
<td>Married</td>
<td>66.4</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>High school or less</td>
<td>46.7</td>
</tr>
<tr>
<td>University</td>
<td>47.7</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>5.6</td>
</tr>
</tbody>
</table>

**H₃:** Relation has a positive effect on perceived value.

**H₄:** There is direct positive relationship between perceived value and customer satisfaction.

**METHODOLOGY**

This paper examines a specific model of customer satisfaction for electricity distribution services which satisfy customers in Ardabil province. By comparing the different scales of service quality and selecting items derived from other researches (Woodruff and Gardial, 1996; Szymanski and Henard, 2001; Robinson, 1999; Oliver, 1996, 1997; McDougall and Levesque, 2000; Johnson et al., 1995; Fornell, 1992; Anderson and Sullivan, 1993; Parasuraman et al., 1988) a questionnaire was prepared to evaluate service quality and customers’ perceptions.

Taking into regard the particular form of servicing in companies such as electricity distribution, compared to service companies with direct customer contact, an initial questionnaire, derived from the prior studies on customer satisfaction, were distributed among the managers and the experts in order for the dimensions of quality in electricity distribution co to be determined. In this questionnaire, the experts were asked to specify the pertinence of the items to customer satisfaction in electricity distribution company. The result of the principal component factor analysis indicated that there were 5 underlying dimensions (factors). One attribute “supplier guarantied me if a problem happens” was considered as a factor with one single item on which 0.718 was loaded. This factor was deleted and thus, 4.117% of variance presentation was lost. The results of the factor analysis are shown in Table 1. Prior to factor analyzing, the KMO measure of sampling adequacy and the Bartlett test of Sphericity were performed to test the fitness of the data.

The KMO was 0.963, which was greater than 0.5. The

**STUDY FINDINGS**

Service quality aspects derived from factor analysis

As mentioned previously, in the case of complicacy of the data and vagueness of the most important variables, factor analysis appears to be the appropriate approach (Kline, 1994). With respect to the indefiniteness of customer satisfaction variables in electricity distribution companies, primarily, using exploratory factor analysis, various dimensions of the variables were determined.

Appropriateness of factor analysis was determined by examining the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and the Bartlett’s test of sphericity. Both tests indicated that it was appropriate to perform a factor analysis. The perceived 18 attributes were factor-analyzed, using principal component analysis with VARIMAX rotation, to identify the underlying dimension factors. The exploratory factor analysis was conducted in order to gain a better understanding of the underlying structure of the data (Pitt and Jeannot, 1994).

Thus, a list of 28 attributes was screened out in the first stage. The most of attributes were technical and quality aspects electricity distributed (17 questions). The questionnaire for this study included three main sections. The first section of the questionnaire consisted of customer's satisfaction and value perception. For the measurement of satisfaction, 2 items were used: "How satisfied are you with the services provided by X" and "overall, how satisfied are you with company X". Both items were on a five point scale extending from "Very dissatisfied" to "Very satisfied". For measurement of value perception two items were used “overall, the service I receive from company X is valuable" and "the service quality I receive from company X is worth my time, energy and efforts" adopted from Choi et al. (2004) and Lai et al. (2009). Both items were on five point Likert scale, ranging from "Strongly Disagree" to "Strongly agree". The second part was designed to identify the relevant attributes of quality of services provided by distributor company. Customers were asked to rate each of the 28 variables in terms of importance, on a 5-point Likert scale ranging from "extremely important" to "extremely unimportant". Most of this section's items were adopted from Parasuraman et al. (1988) SERVQUAL, but due to lack of complete insight to aspects of service in Electrical Power Distribution Company, these items first were reviewed by managers and experts of distributor company to assess their suitability. Hereupon some of its items were modified, deleted or added. The output of this step was used as service quality questionnaire for electricity distribution.

The third part of questionnaire was respondents' demographic features (Table 1). The sample chosen in this study included electrical distribution company's customers in Ardabil province since March to July 2010.

A total of 2627 questionnaires were distributed and 63 were unusable. The high rate of receiving responded questionnaires back can be ascribed to direct reference to customers.
Table 2. Results of the factor analysis (N = 2564).

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of errors in estimation of customers' costs</td>
<td>0.719</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The speed of dealing with flaws and ....</td>
<td>0.739</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The fee of consumed electricity</td>
<td>0.729</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity oscillations and voltage decrease</td>
<td>0.786</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Servicing in due time</td>
<td>0.796</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The amount of light in passages</td>
<td>0.751</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The way of paying the bills</td>
<td>0.674</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The time of reference of electricity access to customers' homes</td>
<td></td>
<td>0.744</td>
<td></td>
</tr>
<tr>
<td>The way of electricity-meter readers reference</td>
<td></td>
<td>0.808</td>
<td></td>
</tr>
<tr>
<td>The neat and modest appearance of electricity-meter readers</td>
<td></td>
<td>0.831</td>
<td></td>
</tr>
<tr>
<td>The possibility of posing problems and requests via internet/ email or telephone</td>
<td></td>
<td>0.771</td>
<td></td>
</tr>
<tr>
<td>The appropriate response of staff to correspondence or phone calls</td>
<td></td>
<td>0.755</td>
<td></td>
</tr>
<tr>
<td>The reliability of electricity meter readers</td>
<td></td>
<td>0.725</td>
<td></td>
</tr>
<tr>
<td>The way of bills distribution among customers</td>
<td></td>
<td>0.566</td>
<td></td>
</tr>
<tr>
<td>Announcing outages or probable repairs</td>
<td></td>
<td></td>
<td>0.723</td>
</tr>
<tr>
<td>The way of announcing the new services</td>
<td></td>
<td>0.704</td>
<td></td>
</tr>
<tr>
<td>Announcing customers' rights</td>
<td></td>
<td>0.667</td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>16.160</td>
<td>3.734</td>
<td>2.269</td>
</tr>
<tr>
<td>% of variance explained</td>
<td>27.963</td>
<td>24.508</td>
<td>15.539</td>
</tr>
<tr>
<td>Cronbach's alpha</td>
<td>0.944</td>
<td>0.936</td>
<td>0.859</td>
</tr>
<tr>
<td>The Bartlett's test of sphericity (significance level)</td>
<td></td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>The Kaiser–Meyer–Olkin measure of sampling adequacy</td>
<td></td>
<td></td>
<td>5055.4</td>
</tr>
</tbody>
</table>

Figure 2. Component plot in rotated space.

Bartlett test of Sphericity was found to be 5055.4, with significance level lower than .0001. Both statistical data supported the use of factor analysis for these items (Table 2 and Figure 2).

Three factors were named: 1- Performance, 2- Relation, 3- Announcing. An interesting point in factor analysis of data was that, the two-way contact between company and customer (that is, relation) and one-way relation from company part to customer (that is, announcing) were in a form of two distinguished factors, whereas, other variables associated with voltage changes, repairs, and technical affairs of services did not take a significant part in factors’ formulation. This phenomenon may reveal the crucial importance of humane relationship in providing services, which could be of high prominence in customer satisfaction.

The results of the factor analysis produced a clean factor structure with relatively higher loadings on the appropriate factors. Most variables loaded heavily on one factor and this reflected that there was minimal overlap among factors and that all factors were independently structured. The higher loadings signaled the correlations of the variables with the factors on which they were loaded. Reliability analysis (Cronbach's alpha) was conducted to determine whether the specified indicators were sufficient in their representation of the constructs. The results showed that the alpha coefficients of the three factors ranged from 0.944 - 0.859, well above the minimum value of reliability accepted sign that is considered acceptable as an indication of reliability for basic research (Nunally, 1967). The $\chi^2$ statistic
Table 3. Construct correlation.

<table>
<thead>
<tr>
<th></th>
<th>Performance</th>
<th>Relation</th>
<th>Announcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>0.592</td>
<td>0.325</td>
<td>0.325</td>
</tr>
<tr>
<td>Relation</td>
<td>-0.688</td>
<td>0.711</td>
<td>0.128</td>
</tr>
<tr>
<td>Announcing</td>
<td>-0.388</td>
<td>-0.273</td>
<td>-0.114</td>
</tr>
</tbody>
</table>

Figure 3. Structural model with estimates.

suggested the good fit of the model ($\chi^2 = 455.485$, $df= 296$; $p<0.001$) (Table 3).

Path analysis

For purposes of CFA in this study, a covariance matrix was employed. LISREL program (version 8.5) was chosen to estimate the measurement model and the construct covariances, which traces structural relations in a data set. LISREL uses correlations and the covariances of error terms as two independent sources of information, hence gives a more accurate picture of data variation. Consequently, the validity of the proposed research model was assessed using a two-step approach, initially by testing the measurement model and secondly by testing the structural equation model. The measurement model specified how the latent or theoretical constructs are measured in terms of the observed variables and describes the measurement properties such as validities and reliabilities of the observed variables. On the other hand, the structural equation model clarified the causal relationships among the latent variables and described the causal effects and the amount of unexplained variance (Figure 3).

Since the results indicated valid and reliable measures of the latent constructs, analysis proceeded to testing the proposed research model for an adequate model fit. The chi-square statistic ($\chi^2 = 455.485$, $df= 296$; $p<0.001$), goodness-of-fit index (GFI= 0.91), adjusted goodness-of-fit index (AGFI= 0.94), standardized root mean square residual (RMSR= 0.71), comparative fit index (CFI= 0.96), normed fit index (NFI=0.93), non-normed fit index (NNFI=0.91) showed that the model was acceptable to represent the constructs. Moreover, the root mean square error of approximation (RMSEA= 0.067) was less than 0.08 that indicated fitness of the model to the data (Hair et al., 2006).

The model proposed that announcing influenced perceived value directly ($H_1: \beta = 0.392$, $p < 0.01$). The path estimates performance had direct effect on perceived value (but relation’s direct impact on perceived value was not significant ($H_2: \beta = 0.018$, $p < 0.01$). The influence of perceived value on customer satisfaction was significant ($H_3: \beta = 0.407$, $p < 0.05$). Thus the data supported, and, but did not support the influence of relation on perceived value ($H_4$). However, in competed path, direct effect of relation on customer satisfaction was observed that we did not hypothesize in conceptual model. This shows that relationship between customers and company is of high significance in satisfaction. Thus, company not only should address announcing but also should enforce relationship with customers.

Conclusions

The current research proposed and tested a theoretical framework for gaining insight into the customer satisfaction in the industries with face-to-face communication rarely occurs, and most of customers may not have any direct contact with the service providers during enjoying the service, such as the services of electricity distribution companies.

The proposed model has investigated the relation between service quality in electricity distribution and customer satisfaction through perceived value. The perceived value was influenced by three factors derived from service quality of company. This service quality attributes was screened by managers and literature of company and other researches about quality. From the evidence of study, the analysis indicated that service quality attributes of electricity distribution company can be divided into three main factors: relation, performance and announcing. The performance factor suggests technical and cost oriented attributes of company. Announcing shows company’s one-way relation with customers. This factor is different from relation for the lack of feedback. The factor of relation is mutual communication between company and customer and includes feedback. In other words, it is face to face or verbal communication. The results of standard error of the mean (SEM) addressed the effects of both performance and announcing on customer satisfaction through perceived value. Whereas
the effect of relation on perceived value was rejected, its direct effect on satisfaction appeared to be significant.

Therefore, it may be concluded that in the industries which face-to-face and mutual relation between service providers and customers rarely occurs, such as electricity distribution industries, creation of mutual relation could be of high prominence. Although factors like performance and announcing may affect customer satisfaction via value perception, making reciprocal relation could influence customer satisfaction directly and remarkably. As a result, companies should make attempt to communicate with customers and try to develop systems for calling on them or establishing mutual verbal communication, even if the nature of services hinders them to do so. Consequently, it seems reasonable to claim that the findings of the present study are in line with Oliver's theory that satisfaction is nothing but feelings.

**FUTURE RESEARCH**

Further research is required to investigate various types of relation in different industries, as well as, the difference among the feelings resulted from disparate types of relation and the impact of each one on customer satisfaction. Moreover, the study of every single demographic characteristic' effect on customers' satisfaction could indicate the impact of each factor on customer satisfaction in terms of culture, language, nationality, etc.

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