ASSESSING SERVICE QUALITY GAP AND CUSTOMER SATISFACTION FOR PREDICTING SUCCESS OF CUSTOMER REFERENCE

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Abstract: This paper aims to examine the perceptual gap of service quality dimension among tyre manufacturing company and its retail clients. The tyre manufacturing organization craved to examine the quality of its services highlighting three threshold of service quality dimensions such as: delivery standards, sales person’s competency and brand image for predicting the customer satisfaction. Further the service quality dimension and customer satisfaction are tested for predicting success of referral marketing. The result indicates that the competency of sales person is the key dimension for both the customer satisfaction and customer referral. To make referral marketing successful it is important to make customer satisfied with good service quality.

Key words: Delivery Standards, Sales person competency, brand image, service quality dimension, customer satisfaction, customer referral, principal component analysis, multivariate regression and logistic regression.

1. Introduction

To quote Peter Drucker “the aim of marketing is to know and understand the customer so well the product or service fits him and sells itself”. So services is assumed as key to business sustainability, as most of the customer’s expectation is aligned with their service experience (Ivon, 1997: p.4). The service sector requires competent human capitals to enhance intangible aura for the organisation. According to Kotler and Armstrong (1996) services are intangible activities that does not result in the ownership of any product, object or phenomena. Most organization willing to becoming a leader as established organization are well aware, that their sustainability in competitive market depends on services quality to customers and satisfaction they derive in exchange to the value they have paid (Lovelock and Patterson, 1998: p.4). Zeithaml (1988), indicate customer’s satisfaction as perception on what they should receive and what they have actually received or their experience with the competitor’s product or service. There are other researchers, who have tried to distinguished satisfaction (experience after the consumption) from quality (product’s characteristics) and from value (price as per
quality. Thus customer satisfaction varies in degree depending on service quality provided by the organization and the expectation or perception of the customer about particular service. Here service quality means a measured dimension in comparison to a standard or degree of excellence. Customer derives satisfaction from a service, when the price paid is fairly reflecting the value offer through some intangible activity. Thus, the concept service quality relatively depends widely on the customer perception and their actual experience, which holds lots of debate and extensive research because of it’s difficult to measure. Customer’s perception and expectation are treated as base of service quality, as customers are assumed to be satisfied when the actual service matches the expectation or perception of customer, otherwise it leads to customer dissatisfaction. Many researchers agree that service quality can be divided into two major factors; one is quality for process and functional and second is outcome of quality (Grönroos, 1983; Lehtinen and Lehtinen, 1982; Grönroos 1984 and Parasuraman, et al. 1985). Often the terms “process quality” and “outcome quality” are ambiguously used. To avoid this confusion, it is important to assume service as combination of both input and output. Dimensions to measure service quality in tyre industry is almost same as service quality dimensions in manufacturing industries. Dimensions here mean those measurable factors on which standards are developed to provide best service to customers for enhancing their satisfaction level and change their perception towards brand image with intention of generating word of mouth or referral network.

Customer referral is the process of networking for acquiring new customers by organisation and incentivize the existing customer (Kumar et al., 2010). Customer’s positive behaviour frequently rely on the word of mouth or reference by other customers, who had already experience the service. This kind of behaviour is known as customer referral (active) and observational learning (passive) while making a purchase decision (Dichter 1966). In some case, the existing customer referral has positive impact on customer purchasing decision and this is often referred as referral marketing (Kumar et al., 2010). The importance of service quality and customer satisfaction is directly proportionate in building customer network through referral programme. Sometimes negative impact of above mentioned dimensions might lead to customer dissatisfaction or brand shift, which might be due to service quality gap in perception between service provider and customer.

The word perception is derived from Latin word perception meaning "taking in", however for service industry it means “awareness”. Perception drives customer attitude towards a service being offered to him. Service quality gap is defined as the difference between customer actually experienced and perceptions about that particular service. If expectations are greater than performance, then perceived quality is less than satisfactory and customer dissatisfaction occurs (Parasuraman et al., 1985; Lewis and Mitchell, 1990). The service quality gap model, developed by Parasuraman, et al. (1980, 1985) and Zeithaml et al. (1988, 1991), indicate gaps in dimensions due to management’s perception not aligned with customer expectation; or other way round customer expectation do not meet appropriate service performance standard or mishandling of the customers by the sales person. The service organization mission is to bridge these gaps.
between customer expectations (customers’ expected service quality) and perceptions (customers’ perceived service quality) (Zeithaml & Bitner, 2003). Customer perceptions on service develops after customer experience them and forms a belief which serve as a standard or benchmark against which service performances are judged. Customers trends to evaluate their perception on performance which they receive from other competitive service providers. Customers also trend to measure degree of service quality, by comparing their expectation and how satisfied they are with their overall experiences in terms of value they have spent. In return if the customer is satisfied, they may refer the same service to other customers.

2. Conceptualization of Research

A tyre manufacturing company aimed to map the perceptual gap in service quality dimensions between manufacturer and retail clients. The object of the live project is to test the service quality on the light of three threshold of service standards mostly preferred by the tyre industry. The dimensions are delivery standards, competency of sales persons and perception on the brand image. The three gaps assumed on the basis of service quality dimensions are indicated in the Figure I below:

Gap 1: Perceptual gap in standard of delivering service
Gap 2: Perceptual gap in performance of sales person
Gap 3: Perceptual gap about brand image

**Figure I: Service Quality Gap Model for a Tyre Firm**
Better the service quality, more the customer satisfaction can be expected. Customer satisfaction according to Gupta and Zeithaml (2007) can be best measured by the customer’s perception on service expected and achieved. Thus the customer satisfaction can be best comprehend through Kano Model, developed in the 1980s by Professor Noriaki Kano. The model addresses the three important attributes (as indicated in Figure II below):

- Satisfying basic needs or dissatisfaction: allows a company to enter a market.
- Satisfying performance needs or satisfier: allows a company to persist sustain in market.
- Satisfying excitement needs or delighter: allows a company to excel in industry globally.

**Figure II: KANO Model for customer satisfaction**

![KANO Model](image)

The importance of the customer satisfaction is accepted as major factor for organizational success and business sustainability; or else an organization will be considered unsuccessful without achieving required level of customer satisfaction, Ogunlana (2009). To keep the existence in today’s competitive environment it is essential to identify customer’s need (Cheng et al. 2006). It is also required to identify factors contributing towards customer dissatisfaction due to poor experiences in quality standards, long service time, unnecessary delay, and incompetency of service providers. (National Audit Office 2000; Health and Safety Executive 2002; “Holyrood” 2004).

The customer when satisfied with any service or product, trend to talk positive about the brand and the new customers mostly relies on word of mouth and referrals from these existing customers while making purchase decision (Dichter 1966). The referral is mostly due to customer loyalty towards particular service; product or brand and they are more likely to refer others to use the same (Reichheld and Earl Sasser, 1990; Zeithaml, 2000). Customers refers and spread word of mouth in different situations which includes
information about new product or diffusion of different products (Mahajan, Muller, and Bass 1995) or before buying a new product (Feick and Price 1987). Most of the companies use customer feedback systems to assess the customer loyalty and their chance of referring others. This is measured by customer surveys which measures satisfaction, intention to repurchase and intentions of word of mouth (Morgan and Rego, 2006).

3. Research Approach

3.1 Statement of Purpose
Does standard of service quality help to achieve customer satisfaction, finally leading to success of customer referral program?

3.2 Objectives
a) To explore the service quality dimensions, to map the perceptual gap between management and retail clients. 
b) To test service quality dimensions as predictors of customer satisfaction 
c) To understand the probability of success in customer referral program

3.3 Hypothesis

The proposed model has following null hypothesis to be tested to generalise the model on population of tyre manufacturer and their retail clients. All the null hypothesis is assumed as $H_0 = 0$ and alternative hypothesis are assumed as $H_a \neq 0$.

- $H_1$ = there is no perceptual gap between manufacturer and retail client for delivery standard.
- $H_2$ = there is no perceptual gap between manufacturer and retail client for service promised by the organization and its sales person.
- $H_3$ = there is no perceptual gap between manufacturer and retail client for perception on brand image.
- $H_4$ = Service quality dimensions are the predictors of customer satisfaction.
- $H_5$ = Satisfied customers have probability in participating customer referral program.
- $H_6$ = Service quality dimensions are predictors of customer referral program.

3.4 Field of study and Sampling

In order to test the above hypotheses, an exploratory study was carried on randomly selected respondents represented by the managers of manufacturer and their retail clients. Total 101 responses are collected, out of which 14 are representatives of the manufacturer and rest 87 are retail client respondents. The data collection area is confined within Delhi and National capital region (NCR) of India.

3.5 Research Method
Initially during the conceptualization of the service quality construct 4 focus groups with 5 members each are formed to discussion on different variables to be considered as the parameters for measuring service quality and customer satisfaction. All the comments by the focus group team members are converted into 26 statements to form a close-ended questionnaire. The variables are scaled with point 5 bipolar Likert scale (maximum 5 = strongly agree and minimum 1 = strongly disagree) to understand the variation caused by the impendent variables to dependent variables. Qualitative method is being applied to eliminate all irrelevant statements with the help of 2 subject domain experts. Finally 17 statements are refined to collect primary data from the respondent out of which 16 are scaled variables and 17th question is dichotomous non-parametric variable measured by Guttman scale (1 = Yes; No = No) to understand intention for referral program. Back ground information are collected with the help of 4 questions. Online questionnaire is designed through google docs and administrated to 150 respondents through different electronic mode, such as mail, Facebook, LinkedIn etc. Feedback and reply back are received from 108 respondents. After data cleaning and deletion of incomplete responses 101 response set are considered as the final data set for analysis with the help of Minitab. Thus the final sample size represents the yield of 67.33% response rate. The questionnaire had four distinctive section of cover letter, background information, parametric measure of variables and a non-parametric referral question.

4. Result and findings:
The initial scale was standardizing through variable reduction technique of principal component analysis (PCA) with Varimax. The research construct of service quality is not explored on the basis of any pre-conceived theories or research literature. The Kaiser - Meyer - Olkin Measure of Sampling Adequacy measured index of 0.884 indicating that units of respondents selected as samples are highly adequate to consider the data as normally distributed to represent the population. The Bartlett’s Test of Sphericity tests the item-to-item correlation matrix indicating the validity and suitability of the responses with Chi-Square index as 774.259, which is significant at 5% level of significance indicating the data set suitable for factor analysis. The components which are cross-loading over .30 and low item-to-total correlation below 0.50 are deleted as indicated in the Table I.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Factors</th>
<th>Initial Items</th>
<th>Reliability of accepted items</th>
<th>Items Extracted</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Delivery</td>
<td>4,7,10,13</td>
<td>0.708</td>
<td>24.57 %</td>
<td>Q4 0.679</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Q7 0.787</td>
<td>Q10 0.6719</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Q13 0.736</td>
<td>Q13 0.736</td>
</tr>
<tr>
<td>2.</td>
<td>Competency</td>
<td>5,8,11,14</td>
<td>0.738</td>
<td>53.29 %</td>
<td>Q8 0.800</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Q11 0.820</td>
<td>Q14 0.817</td>
</tr>
<tr>
<td>3.</td>
<td>Brand Image</td>
<td>6,9,12,15,16</td>
<td>0.773</td>
<td>40.55 %</td>
<td>Q6 0.804</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Q9 0.670</td>
<td></td>
</tr>
</tbody>
</table>
The Table I indicates that out of 17 statements, 16 statements are retained after PCA. Question 5, representing competency is deleted due to low factor loading below 0.40. The retained statements with eigenvalues more than 1 are labelled under different factors as delivery (4 statements); competency of sales person (3 statements, one statements deleted), brand image (5 statements); customer satisfaction (3 statements) and one non-parametric statements for dependent variable customer referral (CR) (1 items). The reliability coefficients (Cronbach’s alpha) for all four dimensions are ranged from 0.691 to 0.763 indicating good internal consistency among items of the scale. In exploratory factor analysis Cronbach’s Alpha of 0.6 is the criterion used to establish an acceptable level of reliability (Nunnally, 1978: Robinson et al., 1991). The combined reliability for the 16-items is pretty high (0.917). The four factors are accounted for 65.007 percent of variance in tested phenomena. Hence the validity of research model is established to a certain extent, however it is subjected to confirmatory factor analysis and path analysis.

The service quality factors derived from the PCA are delivery, competency and brand image to measure impact on customer satisfaction. The services provided during delivering of a products or intangible activity (Mont, 2002) to assist end customer (customers, manufacturers, and government), helps to improving products’ life cycle and service quality. For making delivery system successful and simultaneously making customer satisfied with their experience (Morelli, 2006), it is advisable to generate certain delivery protocol and standards, that one need to follow to form coherent partnerships between manufacturers and clients (Palmatier, et al., 2007). Providing error free service or meeting expectation of customers is a major managerial and operational challenges for manufacturers (Pawar et al. 2009, Legnani and Cavalieri 2010). There is a general consensus that, to manage these kind of challenges, it requires readiness and competency on the part of organization and flexible perception of potential clients (Rosas and Camarinha-Matos 2008, 2009, Romero et al., 2009).

Competency as defined by Parry (1998) is cluster of knowledge, attitudes, and skills correlated to performance, which can be measured and improved via training and development. Lambert et al. (2009), in his research explains sales competency of practitioner can be clustered as knowledge, skills, and abilities. For defining competency, knowledge, skills, abilities and attitude are the common components found cited in the work of Schippmann et al. (2000). Competent people of organization not only helps to enhance customer satisfaction and brand image, but tries to generate referral marketing network through reference of service by old customers to new customers.

The customer’s over all evaluation as positive influence of any product or service of the date is the customer satisfaction, which might lead to customer retention or loyalty
Customer satisfaction is either relationship between customer and product or customer and service provider (Cengiz, 2010). Customer satisfaction is also considered as an important dimension so as to increase customer retention, secure future revenues and reduce future cost of transaction for customer relation management (Eugene et al., 2004).

Hsieh et al. (2004: p.252.), studied successful brand image as a factor, which enables customers to identify their needs with brand, to differentiate the brand from its competitors, and consequently increases the loyalty for brand, which eventually leads to satisfaction and that customer might refer the brand to others. A organization, whose product/services holds constantly a favorable image by the public, would definitely gain a better position in the market and sustainability as competitive advantage, and increase market share or performance (Park et al., 1986) leading number of customer referral networking.

Research indicates that customer looks for referral either during product confusion (Mahajan et al., 1995) or product purchase decision (Feick and Price, 1987). Referral behavior plays a key role for decision making and purchase behavior (Kumar et al., 2010). The challenges lie in converting customer loyalty to referral network and revenue generation. The referral programme means existing customer giving reference of another new customer.

Table II: t-test for hypothesis testing between manufacture and retail clients

<table>
<thead>
<tr>
<th>Factors</th>
<th>F</th>
<th>Sig</th>
<th>t</th>
<th>df</th>
<th>Sign. (2-tailed)</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery (D)</td>
<td>0.057</td>
<td>812 (NS)</td>
<td>-1.832</td>
<td>99</td>
<td>0.070</td>
<td>-1.04186</td>
<td>0.56860</td>
</tr>
<tr>
<td>Competency (C)</td>
<td>0.666</td>
<td>0.416</td>
<td>-2.297</td>
<td>99</td>
<td>0.024</td>
<td>-1.68062</td>
<td>0.73158</td>
</tr>
<tr>
<td>Brand image (BI)</td>
<td>3.046</td>
<td>0.84</td>
<td>-2.337</td>
<td>99</td>
<td>0.021</td>
<td>-1.10853</td>
<td>0.47438</td>
</tr>
<tr>
<td>Customer Satisfaction (CSAT)</td>
<td>0.534</td>
<td>0.467</td>
<td>-1.728</td>
<td>99</td>
<td>0.087</td>
<td>-0.94574</td>
<td>0.54722</td>
</tr>
</tbody>
</table>

NB: **Significant at 95 percent confidence and NS = non-significant at 0.05 level

The Table II is the index of gap analysis for different service quality dimensions with the help of independent-samples t-test, which compares the means between two unrelated groups on the same variables. The p-value for all the variables are greater than 0.05 indicating no mean difference between the groups, thus statistically there perceptual gap between manufacturer and retail clients are not significantly at the 5% level of significance. The null hypothesis assumes both manufacturer and retail clients have same perception on service quality dimensions, i.e., Ho=0 (2-tail). The study indicate no mean
difference resulting into null hypothesis (H₁, H₂, and H₃) not rejected and plausible to conclude. In this study all t values are negative as the mean of the first group is greater than the mean of the second group, which does not affects the results.

4.1 Regression: Stepwise Selection of Terms

α to enter = 0.15, α to remove = 0.15

Table III: Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Adj SS</th>
<th>Adj MS</th>
<th>F-Value</th>
<th>P-Value</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3</td>
<td>277.94</td>
<td>92.64</td>
<td>80.16</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Delivery</td>
<td>1</td>
<td>9.94</td>
<td>9.94</td>
<td>8.60</td>
<td>0.004</td>
<td>2.60</td>
</tr>
<tr>
<td>Competency</td>
<td>1</td>
<td>15.57</td>
<td>15.57</td>
<td>13.47</td>
<td>0.000</td>
<td>3.88</td>
</tr>
<tr>
<td>Brand Image</td>
<td>1</td>
<td>16.62</td>
<td>16.62</td>
<td>14.38</td>
<td>0.000</td>
<td>2.06</td>
</tr>
<tr>
<td>Error</td>
<td>97</td>
<td>112.11</td>
<td>1.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack-of-Fit</td>
<td>67</td>
<td>95.91</td>
<td>1.43</td>
<td>2.65</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Pure Error</td>
<td>30</td>
<td>16.20</td>
<td>0.54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>390.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table III of regression ANOVA indicates all the three service quality dimensions are significantly causing variation in customer satisfaction, as the p value are less than 0.05, which is significant at 95% level of confidence. The VIF column indicates the index of the measurement that how much the variance of an estimated regression coefficient is increased because of collinearity. There is no specific paper or standard indicating upper magnitude of VIF. In this study we have assumed 5 as the upper limit of multicollinearity and since all the variable’s VIF are below 5 indicating non-existence of multicollinearity between predictors and the predicted variable. The square root of the VIF indicates that the standard error of the coefficient of a service quality dimensions is as large as it would be if that same service quality dimension is uncorrelated with other two service quality dimensions.

Table IV: Model summary of regression

<table>
<thead>
<tr>
<th>S</th>
<th>R-sq</th>
<th>R-sq(adj)</th>
<th>R-sq(pred)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.075</td>
<td>71.26%</td>
<td>70.37%</td>
<td>68.51%</td>
</tr>
</tbody>
</table>

Customer satisfaction = -1.636 + 0.2474 Delivery + 0.2910 Competency + 0.3373 Brand Image

The table IV of regression summary indicates prediction of 71.26% of variance in customer satisfaction is caused by the predictor delivery, competency and brand image. The best fitting regression line intercept the y axis below zero thus the β₀ is indicative in negative which has no further influence on prediction process. On every 0.2474 β₁
variation of delivery will cause variation in customer satisfaction. In the same way $\beta_2 \ 0.2910$ of sales person competent and $\beta_3 \ 0.3373$ of brand image will cause further variation in customer satisfaction. Thus the null hypothesis (H₄) is not rejected and plausible to conclude.

**Graph I: Residual plots for customer satisfaction**

The graph I indicates the residual plots are not scattered, thus the residual follows normal distribution with mean=0 and constant variance. This is again conformed by the residual plot ($p=0.005 <0.05$) indicating the independent variable do influence dependent variable to certain extend and significant at $\alpha \ 0.05$.

### 4.2 Logistic regression

This study has a dichotomous dependent variable as customer willing to participating in the referral programme. The logit model will test the linear probabilities bounded between ‘yes’ (1) or ‘no’ (2). In this case odds ratios between the groups will be interpreted directly to understand the variance caused by the one unit of change.

**Binary Logistic Regression: CR versus D, C, BI**

Link Function: Logit
Table V: Response Information

<table>
<thead>
<tr>
<th>Variable</th>
<th>Count</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Referral (Event)</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>89</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>101</td>
<td></td>
</tr>
</tbody>
</table>

The Table V describe the number of retail clients respond positively for participation in customer referral programme, which is estimated as 89% of the sample distribution.

Table VI: Logistic Regression Table

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>ADJ Mean</th>
<th>ADJ Dev</th>
<th>Chi-Square</th>
<th>p-value</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2</td>
<td>49.361</td>
<td>24.6807</td>
<td>49.36</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Competency</td>
<td>1</td>
<td>8.997</td>
<td>8.9971</td>
<td>9.00</td>
<td>0.003</td>
<td>1.01</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>1</td>
<td>5.778</td>
<td>5.7779</td>
<td>5.78</td>
<td>0.016</td>
<td>1.01</td>
</tr>
<tr>
<td><strong>Error</strong></td>
<td>98</td>
<td>24.278</td>
<td>0.2477</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>73.639</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model Summary

$R^2=67.03\%; \ R^2(\text{adj})=64.32\%; \ AIC=30.28$

Customer referral (Y1)= 32.1-1.268( Competency)- 1.170 (Customer Satisfaction)

Table VII: Odds Ratio for Customer Referral

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Coef</th>
<th>SE Coef</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>95% CI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>32.1</td>
<td>10.9</td>
<td></td>
</tr>
<tr>
<td>Competency (C)</td>
<td>-1.268</td>
<td>0.530</td>
<td>0.2814</td>
</tr>
<tr>
<td>0.0996, 0.7948</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Satisfaction (BI)</td>
<td>-1.170</td>
<td>0.550</td>
<td>0.3104</td>
</tr>
<tr>
<td>0.1057, 0.9118</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Log-Likelihood = -11.127
Test that all slopes are zero: G = 51.385, DF = 4, P-Value = 0.000

The Table IV indicates the estimated coefficients, standard error of the coefficients, odds and a 95% confidence interval for the odds ratio. The log odds of different independent variables predicts the probability for the reference group willing to participate in the customer referral programme. They tell us how the log-odds of a ‘success’ change with a
one unit change in the response variable. The increase in the log-odds of a success means increasing the probability of the retail clients in participating in customer referral programme and vice-versa decreasing the log-odds of a success means deceasing the probability of clients’ participation. Thus in the Table VI and VII that log-odds ratio indices of competency and customer satisfaction are 0.28; and 0.31 respectively indicating the positive relation and likelihood of a success that how they are insignificant for this study in predicating the chance of retail clients to participate in customer referral programme as the p-values for both the variable are > 0.05 at 95 percent of confidence level. So increase in every unit in the competency level of sales person and degree of customer satisfaction there is likelihood of success of retail clients participating in the referral programme.

Next, the log-likelihood from the maximum likelihood iterations is displayed along with the statistic G. This statistic tests the null hypothesis that all the coefficients associated with predictors equal zero versus these coefficients not all being equal to zero. In this study G = 51.385, with a p-value of 0.000, indicating that there is sufficient evidence that at least one of the coefficient (customer satisfaction or competency) is different from zero, given that our accepted α-level is greater than 0.000. The Table VI also indicate that competency and customer satisfaction are the two predictors causing 67% of variance in making customer referral programme successful.

<table>
<thead>
<tr>
<th>Method</th>
<th>Chi-Square</th>
<th>DF</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson</td>
<td>24.28</td>
<td>98</td>
<td>1.000</td>
</tr>
<tr>
<td>Deviance</td>
<td>32.94</td>
<td>98</td>
<td>1.000</td>
</tr>
<tr>
<td>Hosmer-Lemeshow</td>
<td>2.21</td>
<td>8</td>
<td>0.974</td>
</tr>
</tbody>
</table>

**Table IX: Measures of Association: Between the Response Variable and Predicted Probabilities**

<table>
<thead>
<tr>
<th>Pairs</th>
<th>Number</th>
<th>Percent</th>
<th>Summary Measures</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concordant</td>
<td>1040</td>
<td>97.4</td>
<td>Somers' D</td>
<td>0.95</td>
</tr>
<tr>
<td>Discordant</td>
<td>26</td>
<td>2.4</td>
<td>Goodman-Kruskal</td>
<td>0.95</td>
</tr>
<tr>
<td>Ties</td>
<td>2</td>
<td>0.2</td>
<td>Kendall's Tau-a</td>
<td>0.20</td>
</tr>
<tr>
<td>Total</td>
<td>1068</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4.2.1 Goodness-of-Fit Tests**

The Table VIII indicate Pearson, deviance, and Hosmer-Lemeshow goodness-of-fit tests. The goodness-of-fit tests, with p-values ranging from 0.974 to 1.00, indicate that there is
insufficient evidence to claim that the model does not fit the data adequately. If the p-value is less than our accepted $\alpha$-level, the test would reject the null hypothesis ($H_0$) of an adequate fit.

4.2.2 Measurement of Association

The Table IX indicate the concordant, discordant, and tied pairs is calculated by pairing the observations with different response values. Here, we have 12 response dataset with low pulse and 89 with a high pulse, resulting into $12 \times 89 = 1068$ pairs with different response values. Based on the model, a pair is concordant if the response with low pulse rate has a higher probability of having a low pulse, discordant if the opposite is true, and tied if the probabilities are equal. In this study, 97.4% of pairs are concordant and 2.4% are discordant. These values can be used for comparative measure of prediction, for example in comparing fits with different sets of predictors or with different link functions. The Somers' D, Goodman-Kruskal Gamma, and Kendall's Tau-a are summaries of the table of concordant and discordant pairs. These measures most likely lie between 0 and 1 where larger values indicate that the model has a better predictive ability. In this study, the measure range from 0.20 to 0.95 which implies that the model has desirable predictive ability.

4.2.3 Probability Plots

Two diagnostic plots-delta Pearson $\chi^2$ versus the estimated event probability and delta Pearson $\chi^2$ versus the leverage haven plotted below in Graph II and III to explain association between the dimensions competency and customer satisfaction versus customer referral. These two graphs indicate that two observations are not well fit by the model (low delta $\chi^2$). A low delta $\chi^2$ is indicator of low leverage and low Pearson residual. In this study a low Pearson residual caused the low delta $\chi^2$ indices, because the leverages are less than 0.1.

5. Discussion and Conclusion:

In this paper, a tyre manufacturing company has tried to develop a new service quality model to predict customer satisfaction and success of referral marketing, which is more
comprehensive for different service quality applications in particular to tyre industry. The Figure II below indicates the accepted research model.

**Figure II: Service Quality Gap Model for a Tyre Firm**

According to Figure II, the research construct indicate no perceptual gap between manufacturer and retails clients for all the three dimensions of service quality, thus the null hypothesis $H_1$, $H_2$ and $H_3$ are not rejected and plausible. All the three dimensions are accepted as the predictors of customer causing variation in level or degrees of satisfaction. Thus the null hypothesis $H_4$ is not rejected and plausible. The three service quality dimensions and customer satisfaction is further tested to understand their contribution in making customer referral programme successful. The result of logit model indicate customer satisfaction and competency of sales person are the key dimensions to make the referral marketing successful. So the $H_5$ is not rejected and plausible as customer satisfaction is acting as predictor of customer referral. However $H_6$ is rejected on the ground that delivery standards and brand image are not the predictors, however competency of the sales person is a predictor of referral marketing success.

Thus the research model indicate that the sales person competency is the key driver in achieving customer satisfaction and customer referral as well. To improve service quality it is important to identify incompetent sales person immediately and sent them for training either through job rotation or class room lecture; to enhance their soft skills in
handle service protocols carefully. The service quality dimensions have impacted the manufacturer strategy formation and implementation, leading to changes important for the top management and staff planners. This help us to conclude that retail clients will refer the brand or service if they are satisfied on the ground of sales person representation convincing them for product performance or have direct delightful experience or services offered exceeding the their expectation.

The research is conducted in short span of 14 weeks therefore exploratory findings are subjected to further analysis and validity, which will give better understanding of the service quality dimension and customer satisfaction. An action plan has been designed for the organization to bridge the competency gap of organization sales representative, however all the three service quality dimensions are performing consistently.

6. Implication of the study
Customer of today’s world give more emphasis on the service quality value in return to their money. Many tyre manufacturing organization have developed model on service quality dimensions to understand customer actually experience. Otherwise there is a threat of shifting brand (means changing brand) among dissatisfied customers. Here the service quality model is based on variables like delivery standards, competency of sales person and brand image extracted keeping in view the tyre products as focus. Researcher can also use existing service quality standardized instrument such as SERVQUAL of Parasuraman et al. (1985), which measure service quality on the scalar of expectation and perception of customer on variables like tangibles, reliability, responsiveness, assurance, and empathy. The relevance of service quality analysis is understand the perception of both the service provider and customers are aligned or not, to enhancing customer satisfaction. It is also expected that if the customer is happy, then one can expect the customer to be the part of customer referral programme. Additionally, competitive advantages can be achieved by exceeding customer expectations through the excellent performance of the sales representation of the organization. The research model developed will help to determine whether organization exceed or fall below customer expectations. The study will be useful for most of tyre manufacturing organization to evaluate their service quality between the retail clients and the original manufacturer. Any company dealing with tyre product, which required sales service and after sales service can use this model to evaluate their service quality. This model can be also applied to electronic and fast moving consumer goods (FMCG) industry as well. The model developed has more applicability, when digital marketing has gain competitive advantage for vendors to sell their products through e-commerce website, where delivery standards or commitment is important for customers. The behavior of the person delivering the product also influence customer’s experience and perception, which leads to building the brand image of the particular product delivered.

7. Limitation
Even with all possible efforts made towards making a comprehensive and scientific analysis, this study is bounded by certain limitations. The paper is based on inferential analysis and empirical work to generalized research model on tyre industry. The name of
the company and the data collected during this research study cannot be shared publically due to confidentiality (as per company norms). The field of data collection is restricted within Delhi and NCR only. So the result extracted may not be applicable in other scenarios or geographical condition. For collecting data customers are not replying on time and even after regular perusal there are customers who never revert back for the survey. The exploration of all the dimensions done by principle component matrix needs to go further analysis of validity and reliability, to apply the end result to a wider and diverse scenario of tyre manufacturing business. On the other hand, this study is an attempt to examine and account the opinions of tyre retail clients and manufacturer in an honest endeavor.

Reference


