Service Quality Measurement in Automobile Service Sector-A Review

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Abstract

Automotive sector plays a vital role in the growth of economy of any country. Service quality is a concept that has interest and debate in the research literature because of the difficulties in both defining it and measuring it. Measuring a service quality is always a issue of many researcher. There is no state forward methodology for measuring it. Service quality model, scale, data collection, Methods and analysis is the issue of many authors. In this contest this paper aims to review the service quality measurement methodology in automobile service sector.

Keywords: *Service Quality, SERVQUAL and FAHP*

1. Introduction

Research has shown that service quality affect significantly on profit of an organization. Service quality is about ensuring customers, both internal and external, get what they want. Customer satisfaction is the feeling or attitude of a customer towards a product or service after it has been used. Satisfaction and service quality are often treated together as functions of customer's perceptions and expectations. Customer satisfaction is determined by defining customer perceptions of quality, expectations, and preferences.

One question always exists: why should service quality be measured? Measurement allows for comparison before and after changes, for the location of quality related problems and for the establishment of clear standards for service delivery. In search of competitive advantage, both practitioners and academics are keen on accurately measuring service quality in order to better Understanding its essential antecedent and consequences, and ultimately establish methods for improving and measuring service quality.

In this paper we start with the concept of service quality, followed by reviewed of service quality models, scale used, data collection methods and analysis.. The purpose of this research is to find the most important service quality model and the method of analysis in automobile service sector.

2. Service Quality Concept

In service literature, service quality is usually defined based on consumers' assessment. Parasuraman et al. (1985) defined service quality as "a measure of how well the service level delivered matches customer expectations; delivering quality service means confirming to customer expectations on a consistent basis". Parasuraman et al. (1988) defined perceived service quality as "a global judgment, or attitude, relating to the superiority of the service". Zeithaml (1988) defined service quality as "the consumer's judgment about a product's overall excellence or superiority". It is clear that defining service quality is an essential step toward the development of a solid foundation for this

study. Kotler and Armstrong (1996) defined service quality as "the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs". Therefore, being in line with the service literature, this study looks into service quality as the standard of excellence toward fulfilling customers' requirements, which contributes toward achieving customers' ultimate satisfaction. This, in turn, entails organizations and firms to investigate, explore, and identify customers' requirements and to try to meet them in order to provide a high standard of service quality.

3. Service Quality Models

SERVQUAL model by PZB (1985), it has been used by many researchers for the measurement of service quality in different fields. Researchers have done studies regarding service quality measurement in a wide variety of industries such as banking, Information system, higher education, tourism, hotel, automobile, and Restaurant industry. The importance of service quality is seen in the effect that it has on the organization. It affects customer satisfaction, customer loyalty and customer – organization relationship, and Profitability & cost. Table I shows the different models used by authors in automobile service sector. It has been seen that majority of author uses SERVQUAL Model. Because of SERVQUAL limitation researchers used other models. Ravi S. Behra et al(2002) used neural network for measuring service quality.
Service quality in automobile sector is complex and varies within the industry. It involves multiple criteria and uncertainty in judgment. Manny approaches and model are used in the field of service quality. But difficulty arises in the assessment of the service because of lack of research work in this field. A strong method is required for handling this ambiguity. MCDM is one of the best methods which solve assessment problem of service quality.

Table1. Service Quality Model and Method of Data Collection

Sr.NO.	Author	Models	Data Collection
1	Bouman and Wiele (1992)	SERVQUAL	1)Quantitative research, 2) Random Sampling 3) Likert Scale 1-5 4) Sample size 400
2	Mersha and Adalakha (1992)	Delphi process	1)Quantitative research, 2)Convenience sampling 3)Sample size 316 4) Likert 5 point scale
3	Chen and Ting (2002)	Grey Sytem Theory	1)Quantitative research, 2) Random Sampling 3) Sample size 50
4	Ravi S. Behra et.al.(2002)	Neural Network	1)Quantitative research, 2) Random Sampling 3) Sample size160
5	Tian Shy Liou and Ching Wen Chen (2006)	Fuzzy Logic	Triangular fuzzy scale (Ratio Scale), sample size 110
6	Luiz Artur L. Brito (2007)	SERVPERF	1)Quantitative research, 2) Random Sampling 3) Sample size400 4)Scale 0-10
7	Adele Berndt (2009)	SERVQUAL	1)Quantitative research, 2)Convenience sampling 3)Self completion questionnaire, 4)Sample size 761
8	S. Keshavraz et. Al (2009)	SERVQUAL	1)Quantitative research, 2) Random Sampling 3) Likert Scale 1-5 4) Sample size 400
9	Rajnish Katarne &	SERVQUAL	1)Quantitative research, 2)Random

	S.Sharma (2010)		sampling 3)Sample size 100
10	Parameshwaran et al (2010)	FAHP, Fuzzy Logic, EBG,DEA, FFMEA and QFD	1) Quantitative and Qualitative research,2) Convenient sampling, 3) Sample size 215 4) 9 Point scale,
11	Wu Shuqin, Liu Gang (2012)	Structural Evaluation model	1)Quantitative research, 2) Random Sampling 3) Likert Scale 1-5 4) Sample size 327
12	Suhas S. Ambekar (2013)	SERVQUAL	1)Quantitative research, 2)Convenience sampling 3)Sample size 50 4) Likert 7 point scale
13	Satyendra Sharma , Dr Jayant Negi (2013)	Data Envelopment Analysis	1)Quantitative research, 2) Random Sampling 3) Likert Scale 1-5
14	Izogo and Ogba (2015)	SERVQUAL	1)Quantitative research, 2)Convenience sampling 3)Sample size 215 4) Likert 7 point scale

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Analytic hierarchy process is most powerful MCDM method for decision making. Saaty (1980) first developed the AHP; it is technique that facilitates structuring a complex multi attribute problem. It allows the user to structure complex problem in to hierarchy. In addition it can handle both quantitative and qualitative data effectively.

But on the other hand AHP method is not handling the ambiguity situation of decision maker's subjective judgment. This problem can be solving more preciously by Fuzzy AHP methodology. Parameshwaran et al (2009) used integrated fuzzy approaches for performance evaluation of organization

4. Sampling Technique

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. It is design before data is collected. Sample designs basically of two types' non probability and probability sampling. In Non probability sampling there is always the danger of bias entering that's why researcher doesn't prefer this technique. Whereas probability sampling also know as random sampling ensures the law of statistical regularity which states that if on an average the sample chosen is a random one, the sample will have the same composition and characteristics as the universe. In automobile field researcher preferred Random sampling technique.

5. Measurement And Scaling Technique

Measurement is a relatively complex and demanding task, especially so when it concerns qualitative, measurement is a process of mapping aspects of a domain on to other aspects of a range according to some rule of correspondence. In this sector researcher uses different scale according to their suitability. Izogo and Ogba (2015) and Suhas S. Ambekar (2013) used 7 point likert scale and majority of researcher used 5 point likert scale. Parameshwaran et al. (2010) and Tian Shy Liou and Ching Wen Chen (2006) used triangular fuzz scale which is developed by Saaty.

6. Methods of Data Collection

Data collection begins after a research problem has been defined and research plan was ready. It me be primary data or secondary data. Primary data were collected from experiments or through surveys. Data collection through survey is generally obtained from structured questionnaire. Parsuramman et al (2002) used 22 items questionnaire for measuring a service quality. As there is no such method described for data processing and it has same limitation.

On the other hand, the AHP method is mainly used in nearly crisp (non-fuzzy) decision applications and creates and deals with a very unbalanced scale of judgment. Therefore, the AHP method does not take into account the uncertainty associated with the mapping Cheng, et al,(1999). The AHP's subjective judgment, selection and preference of decision-makers have great influence on the success of the method. The conventional AHP still cannot reflect the human thinking style. Avoiding these risks on performance, the fuzzy AHP, a fuzzy extension of AHP, was developed to solve the hierarchical fuzzy problems.

Parameshwaran et al (2009) used qualitative as well as quantitative research from customers and workshops. He measured the performance of garage along with service quality through fuzzy triangular comparative scale developed by Saaty. Other researcher uses quantitative research through structure questionnaire with the help of likert scale.

7. Sample Size.

Sample size should be optimum it should not be to small nor excessively large. Optimum sample fulfills the requirements of efficiency, representativeness, reliability and flexibility. Sample size is varying from 50 to 761. As per the convenience of researcher sample size was determined by them. There is lot of factor for determining the sample size. Hair et al (2010) said that sample size should be 100 or larger. As a general rule minimum sample size should be five times the number of observation or variables and maximum as ten times variables.

8. Processing and Analysis of Data.

After data collection it has to be processed and analyzed in accordance with the research plan. Processing implies editing, coding, classification and tabulation of collected data so that they are amenable to analysis. Analysis of survey involves estimating the values of unknown parameters of the population and testing of hypothesis. In most of the studies inferential analysis is used. Bouman and Wiele (1992), Luiz Artur L. Brito (2007), Adele Berndt (2009), Wu Shuqin, Liu Gang (2012) Izogo and Ogba (2015) used factor analysis for finding the common factors. Mersha and Adalakha (1992) used total weighted score, kendalls coefficient of concordance, correlation analysis for finding the results. Chen and Ting (2002) used normalized process for results. Ravi S. Behra et.al.(2002) had done analysis with root mean square error(RMSE). By using the triangular fuzzy number Tian Shy Liou and Ching Wen Chen (2006) finds relative importance weight of factors. Root Cause Analysis was done by Rajnish Katarne & S.Sharma (2010) for problem solving. With the help of comparison matrix Eigen vector and consistency ratio Parameshwaran et al (2010) finds ranking of workshop. Suhas S. Ambekar (2013) calculate Mean of Perception and Expectation also test the results by paired t-test. Satyendra Sharma, Dr Jayant Negi (2013) finds the results with relative importance weight. Izogo and Ogba (2015), Wu Shuqin, Liu Gang (2012) and Bouman and Wiele (1992) used cronbatch alpha for testing reliability of scale. Luiz Artur L. Brito (2007) had done regression analysis for finding the relation between variable.

9. Conclusion.

From this research it is concluded that SERVQUAL methodology is most widely used by various authors because of its simplicity and measurement. Even though there was much criticism on it. There were no such guidelines given for measuring it. On the other hand fuzzy and vague data is also considered in calculation of fuzzy AHP methodology, it gives truthful result. Based on decision maker's judgments, fuzziness and vagueness existing in many decision-making problems may contribute to the imprecise judgments of decision makers.

In complex systems, the experiences and judgments of humans are represented by linguistic and vague patterns. Therefore, a much better representation of this linguistics can be developed as quantitative data; this type of data set is then refined by the evaluation methods of fuzzy set theory.

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