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Systems Engineering Procedia 4 (2012) 243 – 251

Procedia Systems Engineering

The 2nd International Conference on Complexity Science & Information Engineering

Decision Making Model Based on QFD Method for Power Utility Service Improvement

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Abstract

Aiming at improving power supply service quality to meet customer's satisfaction, this paper suggested an applicable model used to identifying service items, by employing QFD concept and recent research on power supply quality appraisal. Combining existing research result of perception theory with classification of power supply service, a house of quality (HOQ) was built to realize requirement transition from customers' demand to service requirements. Then, an empirical analysis was made, using investigated result of Evaluation of Power Supply Enterprises' Service of State Grid Corporation of China in 2007. In the end, results show that this method is useful for identification of service items which needed to be improved on the first priority, and is consequently helpful for management decision making.

Keywords: power supply enterprise; low-carbon; contribution effect; fuzzy comprehensive assessment

1. Introduction

With the development of market economy and reform of power industry, the role of power supply enterprises are transformed from the managers of electricity production and utilization into operators of electricity production and service providers of electricity customers. In this context, power enterprises must gear to the market, deepen the reform and strengthen services, then firmly establish the management philosophy of development as the main line and quality services for the purpose, setting up a new corporate image with a new look of service in order to gain the market and promote development. At present, how to provide the best services, and how to solve the short-board problem of current service, are the important issues placed in front of the superintendents of power enterprises.

The evaluation work is to find services concerned by users, and thus, to identify key areas to be improved. Actually, all aspects (or factors) associated with customer's satisfaction should be improved, especially those problems which got low scores (or poor performances) in evaluation. However, it is necessary for power enterprises to determine the importance of each service link (or factor) to make the best quality improvement decisions, from which can enterprises use resources effectively and achieve the effect of overall consideration, prioritization and multiplier.

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2211-3819 © 2011 Published by Elsevier Ltd. Selection and peer-review under responsibility of Desheng Dash Wu.
doi:10.1016/j.sepro.2011.11.072

The existing methods for analyzing service improvement mainly include AHP, SERVQUAL evaluation scale, the Boston matrix analysis method and other methods. In China, all industries have viewed service quality as key factors affecting development of enterprises, and made different explorations in theory and practice. Based on the analysis for managerial practices of power suppliers, an evaluation system for material suppliers of Electric Power Bureau was established by combining with BOCR ideas from four aspects, including benefit, opportunity, ability and risk, and an empirical research was also made by fuzzy AHP [1]. Literature [2] established an index system for service recovery quality of power enterprises, and further determined the index weight by using the modified fuzzy AHP. This system not only quantified the remedial quality of customer perception, but also took the uncertainty of thinking into account. Besides, according to the characteristics of power consumption, customers can be divided into industrial customers, residential customers and other customers for empirical analysis. Based on the results, power enterprises can divide the remedial objects into two categories, i.e. residents and non-residents, to implement service recovery [3]. Drawing lessons from existing SERVQUAL scale applied in general services, combined with administrative management theory and practical features of our government, a government service quality evaluation scale with high reliability and validity has been developed by using Factor Analysis and Principal Component Analysis method. This scale contains six dimensions of 29 question items. The research found that the government service quality can be assessed from six aspects, including the willingness, efficiency, indemnificatory, empathy, information and tangibility of the government services [4]. Liu yanhua(2008) defined customer's satisfaction as a starting point, combining with basic processes of quality improvement, he built continuous quality improvement model based on customer satisfaction by using system engineering and continuous improvement of thinking methods [5]. Besides, relevant improving directions and priority of service quality management were determined on the basis of the importance-service level strategy matrix method [6]. Managers got the best direction to arrange service improvement program by making a joint analysis based on several hypothetical service situations firstly, then using the fitting result to get a satisfaction Response Surface Model of service property function, thus to locate present service level in the steepest ascending path along the direction of response surface and maximize customer satisfaction [7].

Aiming at improving power supply service to meet customer's satisfaction, this paper suggests an applicable model used to modify power supply service quality based on QFD concept. The model suggested here will find the service items which should be improved preferentially through quantitative analysis, which will help relevant departments making better decision.

2. Relevant Theoretical Research of QFD

2.1. Development of QFD

QFD (quality function deployment, QFD) is a systematic, user-driven quality assurance and improvement method which focuses on meeting customers' demands in the process of product development. This concept was developed in the early 1970s in Japan by Dr. Shigeru Mizuno from the Tokyo Institute of Technology. Then, QFD developed into a set of scientific research methods which could design and produce systematically on a basis of customers' expectations, and provided in-depth product evaluation. Customers' expectations and requirements drove the whole process of product development, and reduced the risk of failure to develop new products. By 1980s, QFD was introduced to Euramerican developed country and been applied widely [8]. Up to now, QFD has been used not only in the initial production areas, but also in the non-production areas, such as services, software industry, medical & health care and etc [9-11].

2.2. The basic principles of QFD method