Integrated Quality Function Deployment as a Tool for Quality Achievement in Healthcare

Chintala Venkateswarlu, College of Engineering Roorkee (COER), Roorkee, Uttarakhand, India

A. K. Birru, Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, India

ABSTRACT

Quality function deployment (QFD) is a methodology that extracts client demands (CDs) and inducting them in the final service/product. Once CDs are extracted from client the traditional QFD approach uses absolute importance to identify the degree of importance for each CD. Direct evaluation of CDs based on absolute weighting without tradeoffs is easy to perform, but may lead to serious deviations from reality. An alternative to avoid this problem is to adopt the analytic hierarchy process (AHP) approach. In this paper, an integrated model combining AHP and QFD has been delineated as a quality achievement tool in healthcare. A case study is performed on the healthcare services provided by government general hospital, Indore District, Madhya Pradesh, India and data has been analyzed to benchmark the proposed framework by computing the degree of relative importance for CDs through AHP and incorporating them in subsequent deployment matrices.

Keywords: Analytic Hierarchy Process (AHP), Client Demands (CDs), Design Attributes (DAs), Functional Attributes (FAs), Quality Function Deployment (QFD), Task Attributes (TAs)

1. INTRODUCTION

Health service quality is an abstract concept because of its intangibility. According to Donabedian (1980), quality for health systems was defined as the ability to achieve desirable objectives using legitimate means. To assess the service quality, Chen and Yoon (1994) proposed a medical performance measurement system for Advanced Cardiac Life Support (ACLS) protocol operations based on linguistic variables and membership functions. To define outcomes of health care, Patrick (1986) improved “Five Ds” criterions (death, disease, discomfort, disability and dissatisfaction) to a more comprehensive six factors which are death, disease, physical well-being, psychological well-being, social well-being, and quality of life. Parasuraman, Zeithaml, and Berry (1985) identified 10 dimensions of service quality: access, communication, competence, courtesy, security, tangibles, reliability, responsiveness, credibility, and understanding or caring. Headley and Miller (1993) identified 6 dimensions in a...

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Service quality is a measure of how well the total service package meets clients’ expectations. The abilities to identify and prioritize clients’ expectations and to perform existing process assessment are important elements of a successful quality improvement strategy. The inherent characteristics of services complicate the efforts for quality improvement. Quality function deployment (QFD) is a systematic technique for designing services or products that are based on clients’ expectations. However, there are several difficulties in its application, among them: interpreting the customer voice, defining the correlations between the quality demanded and quality characteristics (Chan & Wu, 2005), defining the projected quality due to the ambiguity in the quality demanded and quality characteristics (Ramasamy & Selladurai, 2004). In order to overcome these problems QFD may be integrated with other methodologies, for instance, AHP, Fuzzy logic, FMEA, TRIZ. Zakarian and Kusiak (1999) evaluated and selected the multi-functional teams using the combined AHP–QFD approach. Chuang (2001) applied the combined AHP–QFD approach to deal with the facility location problem. Partovi and Corredoira (2002) used the combined AHP–QFD approach to prioritize and design rule changes for the game of soccer. Myint (2003) proposed the combined AHP–QFD approach to aid the product design. Bhattacharya et al. (2005) applied the combined AHP–QFD approach to aid the robot selection. Partovi (2006) used the combined AHP–QFD approach to evaluate and select facility location for a company producing digital mass measurement weighted products for industrial use. Hanumaiah et al. (2006) presented the combined AHP–QFD approach to deal with the rapid tooling process selection. Hou et al. (2007) developed a customer-manufacturer-competitor (CMC) model, which helps manufacturers to analyze customer’s, competitor’s and manufacturer’s orientation and related issues within the Product Life Cycle (PLC) based on QFD, AHP/ANP and TRIZ. Bayraktaroglu and Ozgen (2008) applied integrated AHP-QFD model to central library services of Dokuz Eylul University (DEU) in Izmir, Turkey. Huang et al. (2008) used QFD integrated with AHP and Artificial Neural Network framework to determine the key technology of new product plan and design. Das et al. (2008) demonstrated AHP-QFD framework for designing a tourism product, which takes care of the touristic needs of tourists. Ho et al. (2009) developed an integrated AHP-QFD approach for selecting 3PLs (Third-party logistics service providers) strategically in contemporary supply chain management.

Though integrated AHP-QFD approach has been proved to be a successful quality achievement tool, the application of this approach in health care service sector was rarely found in the literature. Hence an attempt has been made to apply AHP-QFD integrated framework as a tool for quality achievement in a government general hospital at Indore (District), Madhya Pradesh, India. The organization of the paper is as follows. The next section highlights the AHP method that has been used in the study, and then the traditional QFD procedure is discussed briefly. The subsequent sections include the proposed integrated AHP-QFD framework and a case study. The last section concludes the methodology with some implications for quality achievement.

2. ANALYTICAL HIERARCHY PROCESS (AHP)

AHP is a decision-support procedure developed by Saaty (1988) for dealing with complex, unstructured and multiple-criteria decisions.
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Beauty of the Environment, Knowledge, and Systems
(2013). Technology and Energy Sources Monitoring: Control, Efficiency, and Optimization (pp. 127-146).
www.igi-global.com/chapter/beauty-environment-knowledge-systems/72816?camid=4v1a