

Service Development Strategy Using QFD for Customer Satisfaction in a Bank

Chowdury M. Luthfur Rahman

Department of Industrial and Production Engineering
Shahjalal University of Science and Technology
Sylhet, Bangladesh
clr-ipe@sust.edu

Md. Sagar Islam Khan

Department of Industrial and Production Engineering
Shahjalal University of Science and Technology
Sylhet, Bangladesh
sagar56@student.sust.edu

Md. Jehad Islam

Department of Industrial and Production Engineering
Shahjalal University of Science and Technology
Sylhet, Bangladesh
zihad2050@gmail.com

Sheikh Nova

Department of Industrial and Production Engineering
Shahjalal University of Science and Technology
Sylhet, Bangladesh

Abstract

Quality Function Deployment (QFD) is a procedure that correctly defines the needs and requirements of the customers, ensures that the service provided is planned and designed to satisfy them and thus provides customer satisfaction. At the present time, as a result of rapid development in technology and increasing competitive circumstances, service businesses need to implement new approaches in order to be sustainable and successful. This paper focuses on the application of QFD through designing the house of quality matrix for service improvement in the banking sector. The application of QFD methodologies is emphasized, the methods of questionnaire and expert survey were used in the process of the study, the satisfaction of different customers' categories was assessed. Customer requirements are prioritized with the technical descriptors to satisfy the improvement of service quality that must be given to X bank customers. As customers drive service providers to add values, proper care has been given to grab their reactions and then the requirements have been put into the HOQ (House of Quality) that ultimately gives us the solution. The findings are very straightforward. The paper seeks the answer of how a service provider can ensure more customer satisfaction. The proposed approach effectively addresses a service development problem.

1. Introduction

Financial services are more complex than other services and deserve more attention [1]. Customers are increasingly involved in service development because they can choose to use or not to use services and thus have a direct impact on the success of the services [2]. Any strategy for service development is outdated and ineffective without considering potential customer patterns, needs, or backgrounds, as it fails to include critical factors that influence service success. A systematic approach is required for a financial service firm to analyze customer expectations and needs and to improve an existing financial service or to develop a new one [3] [4]. The success of financial

institutions can be guaranteed for the success of an economy. The most earnest financial institutions are in the banking sector. It suggests that the banking sector needs to be more customers oriented. This obtainment and possession of customers depend upon the customer's perceived value. Customers' perceived value is the perception of customers about quality, social psychology, benefit, and money related to the firm or services. So if the customer's perceived value is positive, then it will generate the customer's loyalty. In this competitive world, customer loyalty is becoming crucial and prime to gain competitive advantages for the banking sector. Moreover, due to the evolution of the servicing sector and changes in the nature of services, it's become challenging for the banking sector in Bangladesh to maintain customer loyalty through the factors that strongly related to it. Such factors are namely service quality, corporate image, and customer satisfaction level [5]. As the above mentioned, three factors are strongly examined in relation to the customer's perceived value and customer loyalty. Service quality can be considered as a major factor in keeping the banking sector competitive. In recent years, many practitioners and researchers are compelled to take the service quality into consideration due to its influence on customer's perceived value [6]. According to the customer's point of view, service quality should be convenient such as technological trends are greatly involved in the service sector for the last 15 years [7]. The need is to create a willingness in the customers to stay with the local service provider. It will be possible by adopting all technological and advanced means of providing high service quality to the customers [8].

Quality function deployment (QFD) is used as a cross-functional tool for customer satisfaction [9]. The QFD is a well-known technique as a structured framework to incorporate the "voice of the customer (VOC)" into compatible service [10].

Service sector is enjoying a rapid boom in Bangladesh due to privatization and liberalization; consequently, it is becoming crucial to gain and maintain their competitive advantages. On this basis, there is a need to expand the tools for assessing the quality of the bank's customer service. It is reasonable to check whether there is a possibility of applying other methods and tools of quality management in this field, whether this will lead to a positive effect and whether new conclusions will be made. The present study is used to explore those impact of service quality, corporate image, and customer satisfaction on customer perceived value in the banking sector of Bangladesh.

The key objectives of the study are:

- To identify the customer needs and requirements.
- To decide the service characteristics in accordance with the desire of the customer.
- To determine the level of importance of each service characteristics by applying Quality Function Deployment (QFD).
- To prioritize the service characteristics on the basis of importance level.

2. Literature Review

Design methodology used in this research is a methodology that can integrate the "voice of the customer" into the process of designing is the methodology of Quality Function Deployment (QFD). QFD is a methodology used by the company to anticipate and prioritize the needs and desires of consumers, as well as incorporating the needs and wants of the consumers in the products and services provided to consumers. Application of the methodology QFD in the product design process begins with the formation of the matrix or often referred to as the House of Quality (HOQ). Basically, the HOQ is a matrix which is incorporated in the first phase (product planning) that contains information about the customer and the needs of its potential, the relative importance, as well as the perceptions and customer satisfaction with products/services that the company provides in comparison with other competitors. HOQ shows the structure to design and establish a cycle, and its shape resembles a house. The key to building a HOQ is focused on customer needs so that the design and development process more in line with what the customer wants and adapt to technology and innovation.

Fig.1 Demonstrates House of Quality (HOQ), the cornerstone of the QFD model. The customer requirements (CRs) or "WHAT's" are provided in the HOQ's left wing. Each of these criteria has a significant value created by consumers through surveys, interviews or focus groups [11]. The importance values are located in the third column of Fig.1. The central element of the HOQ in Fig.1 is the relationship matrix (SCs) or "HOW's" along the top of the relationship matrix horizontally. The relation matrix defines the strength of the relationship between each pair of CR and SC variables.

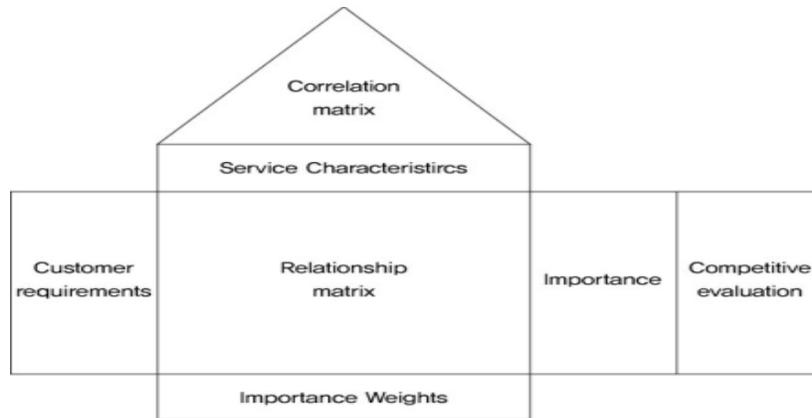


Figure 1. The house of quality

The “roof” represents the correlation between each pair of SCs, while the far right wing of the HOQ shows the competitive evaluation of competing alternatives. At the bottom of the HOQ are the importance weights of SCs.

3. Methodology

3.1 Data Collection

A structured questionnaire was prepared according to the specification of the study and collecting useful data suitable for quality function deployment analysis. For data collection purposes, we selected bank X and collect the primary data by interviews and discussions, which are located in Sylhet city. In this paper, a 5-point Likert scale was used for all survey statements for CRs satisfaction and importance level.

3.2 Data Processing and Analysis

In this flow chart, we represent how we process and analyze the data.

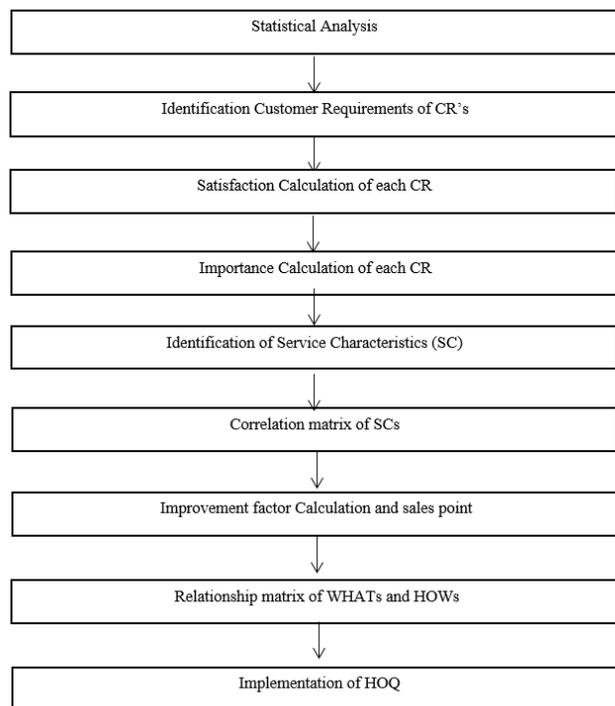


Figure 2. Data analysis Procedure

4. Results

4.1 Statistical analysis

The analysis of the data is initiated with the determination of satisfaction rating and importance rating's internal consistency. Cronbach's alpha coefficient has been calculated for satisfaction rating and the importance rating of each bank. Cronbach's alpha coefficient was calculated using Microsoft Excel. Cronbach's alpha coefficient has been found satisfactory.

Table 1. Cronbach's Alpha coefficient value

Bank	Cronbach's alpha coefficient for Level of importance of CR'S (%)	Cronbach's alpha coefficient for Level of customer satisfaction (%)
X	87.29%	93.55%

4.2 Identification of customer requirements (WHAT's)

The CRs were adopted and modified to construct part of the HOQ in the banking industry based on a literature survey. [12] The CRs for the HOQ. Table-2 shows the details. The survey for this study had two sections: 'the level of importance for each CR' and 'the level of satisfaction for each CR.

Table 2. Customer requirements

Code	Title
CR 1	Jobs are accurately done.
CR 2	Customers' questions and requests are sincerely resolved.
CR 3	Services are provided by the time promised.
CR 4	Prompt services are provided.
CR 5	Employees are always ready to respond to customers' requests.
CR 6	The branch staffs behave.
CR 7	Sufficient staff of the branch.
CR 8	Waiting times are short.
CR 9	Individual attention is provided to customers.
CR 10	Employees kindly respond to customers.
CR 11	Employees understand customers' specific needs.
CR 12	Employees are properly dressed.
CR 13	Facilities are clean and easy to use.
CR 14	The customer lounge is clean and comfortable.
CR 15	Reading materials for service are easy to read (booklets, brochures, etc.)
CR 16	Branches are easily accessible (short distance, many branches, etc.)
CR 17	Employees are knowledgeable about their jobs.
CR 18	Security systems are constructed very well.
CR 19	It is convenient to use the internet and phone banking.
CR 20	Satisfaction with the number of services offered on our online banking platforms
CR 21	Are the calls answered promptly by the call center agent?
CR 22	Are the call center staff knowledgeable and have a friendly and professional attitude?
CR 23	The agent is genuinely interested in assisting the customer and resolving the customer's complaint.

4.2 Service characteristics (HOWs)

Technical descriptors or Service characteristics (HOWs): The ceiling or second floor of the house contains the technical descriptors describing how the service may achieve its required performance in general terms, which are not solution specific that represents the Voice of the Designer. For this research, 17 service characteristics (SC) are identified by literature survey. Table-3, shown below, contains 17 service characteristics (SC) with title code [12].

Table 3. Service characteristics-SC

Code	Title
SC 1	Computer systems
SC 2	SMS notification service
SC 3	Internet banking/phone banking
SC 4	Customer call center
SC 5	Employee training
SC 6	Knowledge sharing among employees
SC 7	The number of employees
SC 8	Internal regulations
SC 9	Written procurement policy
SC 10	The financial status of the bank
SC 11	Automatic teller machines
SC 12	The number of branches
SC 13	Parking facilities
SC 14	Up to date facilities
SC 15	Branch interior
SC 16	Branch layout
SC 17	A variety of financial products

4.3 Importance level, satisfaction level, Improvement factor and sales point of CRs for Bank X

Table-4 represents, to the Improvement factor, sales point, mean satisfaction and importance of each CR's for bank X. The improvement factor, meaning the degree of improvement is needed to create the planning matrix. Improvement factor is calculated by the formulae below-

$$\text{Improvement factor} = ((\text{importance level} - \text{satisfaction level}) / \text{scale of performance and importance measurement}) + 1 \dots\dots\dots [13]$$

Sales-point column contains information characterizing the ability to sell the service. The values assigned for sales point are 1.0 for "no sales point," 1.1 for "weaker sales point", 1.2 for "weak sales point", 1.3 for "medium sales point", 1.4 for strong sales point," and 1.5 for "stronger sales point"[14]. This scale was provided to a representative from top management of each bank to rate the improvement factor.

The geometric mean is used to determine the mean satisfaction and importance level of each CR [15].

Table 4. Importance level, satisfaction level, Improvement factor and sales point of crs for Bank X

Customer requirements		Impor- tance	Satiufac- tion	Improvement factor	Sales point
Code	Title				
CR 1	Jobs are accurately done.	4.89	4.22	1.13	1.3
CR 2	Customers' questions and requests are sincerely resolved.	4.90	4.83	1.01	1.4
CR 3	Services are provided by the time promised.	4.51	3.94	1.11	1.5
CR 4	Prompt services are provided.	4.87	4.83	1.01	1.5

CR 5	Employees are always ready to respond to customers' requests.	4.69	4.51	1.03	1.3
CR 6	The branch staffs behave.	4.61	4.51	1.02	1.4
CR 7	Sufficient staff of the branch.	3.78	3.50	1.06	1.2
CR 8	Waiting times are short.	3.87	2.87	1.20	1.3
CR 9	Individual attention is provided to customers.	4.88	4.83	1.01	1.0
CR 10	Employees kindly respond to customers.	4.38	4.20	1.04	1.3
CR 11	Employees understand customers' specific needs.	4.55	3.50	1.21	1.4
CR 12	Employees are properly dressed.	4.64	4.51	1.03	1.1
CR 13	Facilities are clean and easy to use.	4.48	4.36	1.02	1.2
CR 14	The customer lounge is clean and comfortable.	4.42	4.22	1.04	1.3
CR 15	Reading materials for service are easy to read (booklets, brochures, etc.)	4.79	4.67	1.02	1.4
CR 16	Branches are easily accessible (short distance, many branches, etc.)	4.07	3.07	1.20	1.3
CR 17	Employees are knowledgeable about their jobs.	4.50	4.20	1.06	1.4
CR 18	Security systems are constructed very well.	4.38	4.08	1.06	1.5
CR 19	It is convenient to use internet and phone banking.	4.78	3.94	1.17	1.4
CR 20	Satisfaction with the number of services offered on our online banking platforms	4.66	3.62	1.21	1.4
CR 21	Are the calls answered promptly by the call center agent?	4.79	4.49	1.06	1.3
CR 22	Are the call center staff knowledgeable and have a friendly and professional attitude?	4.76	4.49	1.05	1.3
CR 23	The agent is genuinely interested in assisting employees and resolving the customer's complaint.	4.90	4.83	1.01	1.1

4.4 Implementation of 1st HOQ for Bank X

A careful study of the HOQ matrix, as depicted in Figure-3, gives us the prioritized customer requirements and technical descriptors in response to those customer requirements.

Technical priorities or the level of importance of each service characteristic (SC) is calculated by the following formulae,

Technical priorities or the level of importance = $\sum_1^n (R*W)$. Where n= the number of CRs, R= Scale of relationship with CRs, W= Overall weight of CR [16].

Table 5. Degrees of interest for each variable of 1st HOQ of Bank X

Ranking	Level of importance	Characteristics of services	Primary rank of SC
1	580	Employee training	SC 5
2	446	Customer call center	SC 4
3	394	The number of employees	SC 7
4	383	Internet banking/phone banking	SC 3
5	368	Knowledge sharing among employees	SC 6
6	360	Computer systems	SC 1
7	346	Up to date facilities	SC 14
8	345	The number of branches	SC 12
9	322	Internal regulations	SC 8
10	278	SMS notification service	SC 2
11	268	Automatic teller machines	SC 11
12	238	Branch layout	SC 16
13	166	Branch interior	SC 15
14	108	Parking facilities	SC 13
15	78	Written procurement policy	SC 9
16	49	The financial status of the bank	SC 10
17	14	A variety of financial products	SC 17

The level of importance of rank 1 to rank 5 contributes about half (45.6%) of the cumulative total of Interest degree. The variables that rank 1 to 5 become the top priority of improvement by the management of the bank because if fulfilled, it means the management has fulfilled half of service improvement efforts. The order of the top 5 priorities of 1st HOQ is (1) Employee training, (2) Customer call center, (3) The number of employees, (4) Internet banking/phone banking, (5) Knowledge sharing among employees. The final list can be used as a managerial guideline when managers make their strategic decisions in the process of service development because the results from a pair of houses of quality provide bigger support for their decisions than depending solely on the results of a single HOQ. This is an effort to boost customer satisfaction and enhance competitive strength by improving service quality under limited resources.

5. Conclusion

Quality Function Deployment is based on the philosophy that the 'voice of the customer' drives all company operations. The QFD is typically also used to define customer needs and translate them into specific plans for products or services. However, it is often a challenge to capture, understand, and organize customer needs. In this study, 23 Customer Requirements (CR), and 17 Service Characteristics (SC) had been identified. Furthermore, we collected primary data by using a structured questionnaire from bank X. All the questions were built based on the Likert Scale. On the basis of the response of both customer and employee, the house of quality is constructed, which shown the overall situation of quality management of those banks. According to the 1st HOQ for the Bank X, critical factors for bank services are (1) Employee training, (2) Customer call center, (3) The number of employees, (4) Internet banking/phone banking, (5) Knowledge sharing among employees. These 5 SC contributes about half (45.6%) of the cumulative total of Interest degree which service characteristics should give more emphasize by the management. Thus, the theoretical and practical analysis of the customer service of banks conducted in this thesis has confirmed that the use of quality function deployment contributes to the improvement of services and hence increase customers' satisfaction and competitiveness of the bank. As a result of the application of QFD, the conclusions were made concerning the appropriateness of the use of other methodologies at different stages of service process management.

6. References

- [1] Yik-Chee, L., Meredith, G. G., & Marchant, T. Singapore stock broking service quality: fifteen percent gap. *Journal of Services Marketing*, 2010.
- [2] Tsai, W. H., Hsu, W., & Lin, T. W. New financial service development for banks in Taiwan based on customer needs and expectations. *The Service Industries Journal*, 31(2), 215-236, 2011.
- [3] Gustafsson, A., Ekdahl, F., & Edvardsson, B. Customer focused service development in practice—a case study at Scandinavian Airlines System (SAS). *International Journal of service Industry management*, 1999
- [4] Yu, E. J., & Kwak, C. Service Development using Fuzzy QFD in the banking industry. *Journal of the Korean Society for Quality Management*, 43(1), 103-123, 2015.
- [5] Rehman, A., Zia ur Rehman, D., & Akhtar, W. Factors affecting Brand Loyalty: a perspective of fast food restaurants. *Actual Problems of Economics*, 130, 13-20, 2012.
- [6] Malik, M. E., Naeem, B., & Arif, Z. Impact of perceived service quality on banking customers' loyalty. *Interdisciplinary journal of contemporary research business*, 3(8), 637-645, 2011.
- [7] Joseph, M., McClure, C., & Joseph, B. Service quality in the banking sector: the impact of technology on service delivery. *International journal of bank marketing*, 1999.
- [8] Zafar, M., Zaheer, A., & ur Rehman, K. Impact of online service quality on customer satisfaction in banking sector of Pakistan. *African Journal of business management*, 5(30), 11786, 2011.
- [9] Erginel, N. Construction of a fuzzy QFD failure matrix using a fuzzy multiple-objective decision model. *Journal of Engineering Design*, 21(6), 677-692, 2010.
- [10] Akao, Y. *An introduction to quality function deployment*. Quality function deployment (QFD): Integrating customer requirements into product design, 1-24, 1990.
- [11] Sireli, Y., Kauffmann, P., & Ozan, E. Integration of Kano's model into QFD for multiple product design. *IEEE Transactions on Engineering Management*, 54(2), 380-390, 2007.
- [12] Eun Jin Yu, Choonjong Kwak. *Service Development using Fuzzy QFD in the banking industry*. Vol. 43, No. 1:103-124, March 2015.
- [13] Humiras Hardi Purba¹, Miftah Parid², Rahmat Dodi Prasetyo³ and Riyadil Jinan⁴. *Service Development Strategy with Quality Function Deployment (QFD) Approach: A Case Study in Banking Service in Indonesia*. Volume 4, Issue 1 January-2018.
- [14] Aysun Kapucugil Ikiz*, Ali Masoudi. A QFD and SERVQUAL Approach to Hotel Service Design. *İşletme Fakültesi Dergisi*, Cilt 9, Sayı 1, 2008, 17-31.
- [15] Pride, W. M. & Ferrell, O.C. *Marketing*, 15th Edition. Canada: South Western International Edition, 2010.
- [16] Tabachnick, B. G., and Fidell, L. S. *Using multivariate statistics* (3rd ed.), St. Louis, MO: HarperCollins, 1966.