

DOI: http://dx.doi.org/10.7324/IJASRE.2018.32579

Volume 4, Issue 1 January-2018

# Service Development Strategy with Quality Function Deployment (QFD) Approach: A Case Study in Banking Service in Indonesia

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# ABSTRACT

Increasing competition in the banking industry makes customers have many choices in determining what they want to get. If customers get services that are not in accordance with the desired then the customer will seek other banking institutions. To cultivate customer loyalty, the quality of service should be improved and provided as possible. Therefore, banking institutions need to make Minimum Service Standards in accordance with the wishes of customers. This study aims to determine the standard of service in accordance with the wishes of customers and prioritize the improvement of service quality that must be given to XYZ bank customers. To develop a customer service approach is to use the method of integration Analytic Hierarchy Process (AHP) is a method to solve an unstructured complex situation into several components in the hierarchical order, by giving subjective values about the importance of each variable relative, and establish which variable has the highest priority to influence the outcome of the situation. nine service attributes are sorted according to AHP priority ie Be Careful in Recording Documents and Information, Advanced in Electronic Banking, Level of Satisfaction Against "Customers Always Have Rights", Using Modern and New Equipment, Good Knowledge and Skill in Providing Services, Providing useful information during banking operations, Supporting Facilities and Environmentally Friendly, Number of branches of Nasasbah Service, Fast and Transparent Service in Customer Service. To know the consumer desire used method of Quality Function Deployment (QFD) that is method used to translate consumer desire into a product or service to ensure the achievement of customer satisfaction. From QFD processing result, the importance of service characteristic that needs to be improved is documentation and information problem with the highest importance weight that is 114,18.

Keywords: Banking Services, Customers Satisfaction, Quality Function Deployment, AHP.

# **1. INTRODUCTION**

Competition between companies in both manufacturing and service industries in the fight for customers is the biggest challenge for every company. This is also felt by the banking world. Every effort is made by every company starting from improving customer service, multiplying product / service features /design, improving product / service quality and other efforts aimed at winning the market by increasing customer satisfaction that leads to customer loyalty. One way to overcome the competition in the banking world is to provide customer satisfaction. At this time the role of the customer has changed from just consuming objects to colleagues, peers in creating value, and peer in competence development, which indicates the changing role of the customer. Achieving customer satisfaction is a powerful weapon for companies to enter the competitive arena, achieve competitive advantage, and increase market share. Customers will remain loyal to a product or service if the product or service is able to provide higher satisfaction to customers than competitors' products or services. In addition to retaining customers, the benefits that can be obtained if the company is able to provide satisfaction to customers is the customer will tell things that menyenagkan company and company products to others. To achieve this customer satisfaction, a company's management commitment and knowledge of customer wants and perceptions are required. Banking companies are required to provide maximum service in an effort to stay ahead in long-term competition by offering the best quality of service for their clients. In addition, the company must also commit to improve customer satisfaction and create customer loyalty so that companies can

survive and generate profits. To achieve this the company needs to make an assessment of the quality of service that has been given to customers.

Assessment of service quality of a banking institution is qualitative and very relative for each person so that necessary tools that can be used to interpret the qualitative desires. One of the tools that can be used to translate consumer desires is Quality Function Deployment (QFD), a method used to translate consumer desires into a product or service to ensure customer satisfaction [1]. Service is the provision of services to customers according to their needs. It is also said that services may be defined as activities or benefits which may be provided by one party to the other essentially intangible and not otherwise result in the possession of something and its production may or may not be attributed to a physical product Improving the quality of service should follow what the consumer needs. Basically the purpose of a business is to create satisfied customers[2]. Skill in fulfilment of customer's demands. Such skill required that the ability to produce or offering services arouse from market .Therefore outstanding operation, require systematic method to unite the commodity production decisions or offering services with customers demand QFD approach as a modern quality engineering ensure that the quality of product greatly increased at early designing stages by attention to the voice of the customers (Babayi, 2008). Actually QFD is on commodity /services designing that bring customers Satisfaction [3].

Quality Function Deployment (QFD) is a method used to translate consumer desires into a product or service [4]. The conventional QFD that has been used has some drawbacks. The conventional QFD only considers the side of customer satisfaction. The application of QFD only focuses on the maximization of consumer needs by assuming that the funds / budgets provided by the company are not limited in terms of service improvements. Though service improvement is a techno-economic process, where there will always be a tradeoff between services that will be fixed with the company's budget limit [5]. According to Lin and Pekkarinen [6] there are three phases in QFD in the service industry process ie Service, Process and Activity. In their modular logistics service platform The main tool used for most of the QFD Phases is HOC which is a commonly used matrix Correlated two different attributes, because of this fact we can find in some references that they refer to HOC by QFD matrix. The QFD process in the service industry can be applied in accordance with the type of service industry.

## 2. LITERATURE REVIEW

To understand of the concept of quality is very important in the development activities of the company because the growth of a company is determined by the quality of the products or services it produces. Indifference to quality will lead to a loss of opportunity to sell products and market share, which in turn resulted in decreased activity and growth of the company. In an effort to understand the quality concept of a product then five definition of quality as follow:

- 1) Quality is the ability of a product or service to be able to meet the desires of consumers with easy to understand, the characteristics associated with achieving or not so as to cause the reaction of others.
- 2) Quality is a business strategy fundamentally seek to produce various goods (goods) and services (service) that satisfy the customers both internally and externally with complete and trying to meet their expectations both implisist or explicitly [1].
- 3) Quality is the ability of the product to perform its functions during the term certain predetermined usage [2].
- 4) Quality is the totality of characteristics of a product that supports the ability to satisfy which specified or defined [3].
- 5) Quality is the total characteristics of an entity in accordance with the needs and desires of [4]

## 2.1 Definition of Quality

Definition of quality services centered on addressing the needs and desires of customers and delivery accuracy to offset customer expectations. The level of service quality and excellence that is expected to control the level of excellence to meet the needs of customers. In other words, there are two main actors that affect the quality of services, the expected service and preceived service [5]. If the ervices received as expected, then the perceived better quality and satisfactory services. If the services eceived exceed customer expectations, the quality of service perceived as the ideal quality. onversely, if the services received is lower than expected, then the perceived poor quality of services. Thus, the quality of services depends on the ability of service providers to meet customer expectations consistently.( Application Quality Function Deployment to Improve the Quality of Services in Ngodoe Cafe, Aviasti Anwar, Dewi Shofi Mulyati, and Wenny Amelia, *International Journal of Innovation, Management and Technology, Vol. 4, No. 6, December 2013)*. Quality is a good level of badness, degree, and degree of something. The term is many used in business, engineering, and manufacturing in relation to techniques and concepts to improve the quality of products or services produced. Quality is one important indicator for the company to be able to exist in the midst of intense competition in the industry. Quality is defined as the totality of the characteristics of a product that supports the ability to satisfy a specified or determined need. Various studies show, product quality is a key factor affecting customer satisfaction [7]. [8] Haghighi express the quality of the product is the most important factor affecting satisfaction. The results of Ryu and Han (2010) affirms the importance of quality as a factor key affects consumer satisfaction.

#### **2.2 Characteristics of Services**

The most prominent difference between the services with the manufacturing industry is the degree of tangibility of the product and the degree of contact with the customer. The bigger two attributes in a company, it can be said that the company is engaged in the service sector. Both of the above attributes are the core services of the services sector, and a lot of implications that should be taken into account in operational management.

#### 2.3 Definition of Quality of Service

Definition of quality services centered on addressing the needs and desires of customers and delivery accuracy to offset customer expectations. The level of service quality and excellence that is expected to control the level of excellence to meet the needs of customers. In other words, there are two main factors that affect the quality of services, the expected service and preceived service. If the services received as expected, then the perceived better quality and satisfactory services. If the services received is lower than expected, then the perceived poor quality of services. Thus, the quality of services depends on the ability of service providers to meet customer expectations consistently.

One of the company's service goals is providing services of higher quality than competitors consistently. The key is meet or exceed service quality expectations target consumers. Consumer expectations are formed by his past experience, the talk of the mouth to mouth, and promotions made by service Company. Consumers choose service providers based on this and after receiving the service, they compare the services experienced with services expected, consumers are not interested again on the provider, if the services experienced meet or exceed their expectations. A company that understands the concept quality correctly, must also be aware the importance of continuous effort in the direction improvement of service quality generated. This continuous improvement important in maintaining competitiveness product company, given that needs consumers are dynamic and fluid according to the development of time. In the initial ACSI model developed in 1994, customer satisfaction has three antecedents, that is, perception of quality (perceived quality), perceived value, and expectation customer expectations (Johnson et al., 2001). In the year of 1996, the ACSI model is extended to describe two common forms from the perception of quality, ie the perception of quality to the product physical (physical good / product quality) and perception of service quality (service quality). This change needs to be done to accommodate manufacturing durables, which encompass both the product and components great service [9].

Likert type scale was adopted, and the initial psychometric properties are evaluated. The findings of this study can be used to develop a psychometrically sound, theoretically based, andmultidimensional instrument that will improve clinical knowledge, guide the selection of interventions, and gain insight into the study of fear of death as a transdiagnostic construct. Such knowledge will be beneficial in thefields of hospice and palliative medicine, clinical psychology, and thanatology. This study is the first to replicate the Likert-type TDAS on Chinese cancer patients, thereby expanding the scale's applicability in medical/psychological practice and applied research. Ease of use scale Likert causes this scale more used by researchers. [10] uses Likert scale to measure behavior Individual cooperation is by measuring ideological variables, perspectives, training personal, and training of others. In agriculture, likert scale too often used to measure preferences individuals like on preferences consumers towards product acceptance food that has been modified [11] and preferences farmers on the characteristics of plants wheat to be cultivated [12].

#### 2.4 Quality Function Development (QFD)

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. QFD was introduced by Yoji Akao, Professor of Management Engineering of Tamagawa University, developed from practice and experience industries in Japan. Was first developed in 1972 by the company Mitsubishi Kobe Shipyard, and was adopted by Toyota in 1978, and following years were developed by other companies. QFD is a methodology for translating customer needs and desires into a product design that has the technical requirements and characteristics of a certain quality [13].( A. Yoji, Quality function deployment: Integrating customer requirements into product design, Cambridge, Mass: Productivity Press, 1990.) 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 in building a HOO is focused on customer needs, so that the design and development process more in line with what the customer wants and adapted to technology and innovation. It is intended to obtain the necessary information from the customer. Fig. 1 shows the components of a quality table or diagram HOQ.



Figure. 1. House of quality.

Part A (Needs and desires of customers): Contains data information obtained from the results of market research on the needs and desires of consumers. Part B (Planning Matrix): Loading the planning matrix, and referred to as a product targeting, based on the team's interpretation of market research data. Part C (Technical Response): Contains the technical requirements for products or services that will be developed by the company. This data is derived based on the information obtained about the needs and desires of consumers (matrix A). There is some information obtained on technical requirements, the most common alternative is a need for your products or services and the ability and function of products or services. Part D (Relationship): Contains the management assessment of the strength of the relationship between the elements contained in the technical requirements (Matrix C) to the needs of consumers (Matrix A) it affects. Strength of the relationship is shown by the use of certain symbols. Part E (Correlation Matrix): Indicates that the correlation between the requirements engineering with other engineering requirements contained in the matrix C. Part F (Matrix Requirement): Contains three types of data, namely are order of importance (rank) of technical requirements, information requirements of the performance comparison results, and target performance technical requirements of new products being developed.[14]

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. 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 [15]. The initially increased effort with which the method needs to be introduced to the company can be considered disadvantageous [16].With QFD, it is possible to achieve a high level of customer satisfaction since customer demands are included in the development process from the beginning.Innovative solutions are, however, not increased by the use of this method but only in this way it is possible to develop a competitive advantage and thus to secure high market shares.Quality Function Deployment (QFD) is a quality tool that helps to translate the Voice of the Customer (VOC) into new products that truly satisfy their needs. This paper will review QFD to understand how it works and to discuss its practical applications. The first part of the paper will present an overview of QFD and explain the methodology. QFD will be defined and explained by means of an example and a number of benefits and implementation problems will be revealed [17]. Thus, an opportunity was created for QFD to come to fruition as a method to check the design itself for adequacy in meeting customer requirements and to translate those requirements into production [18].

#### 2.5 Analytic Hierarchy Process (AHP)

AHP is a method in which a complex, disintegration to smaller sections then put in a hierarchy structure. Saati in1994 express that AHP help to disintegrate the unstructured program to hierarchy logical decision. Lee et al identify the requirement of management for designing services system by using Kamo's model and AHP [19]. Momeni in a research for describe bank services in Iran combine the method s of clustering. AHP and Kano and the result of this research show that combinations of these 3 methods create empowerment technical statues, by which an organization can obtain competitive advantages through market segmentation identifying valuable customers and satisfied them (Momeni, 2006). In a comprehensive research in 2008 by Ozgen and his team, they obtain the most important needs of library users through integration of AHP and QFD matrix. Result of this research unfold the marketing strategies for a library in a state university that is a nonprofit organization and help the library to find its competitive location [20] One of the techniques for solving MCDM problems is analytic hierarchy process (AHP). AHP is

a subjective tool with which to analyze, based on a crisp 9-point scale, the qualitative criteria needed to generate alternative priorities and preferences. AHP enables decision makers to construct complex problems in a simple hierarchical form, and to evaluate a large number of quantitative and qualitative factors in a systematic manner despite the presence of multiple conflicting criteria [21].

# **3. METHODOLOGY**

Target of this research is applied and according to nature and method is descriptive survey. In this section we express total frame work, sample and measurement of research variable.



**Figure 2: Research Framework** 

This research was conducted in one of the banks in DKI Jakarta. This research is conducted in the form of descriptive research, which is a type of research that aims to describe the systematic, factual and accurate about the facts and the properties of a particular object or population. This research is also a survey research that is part of descriptive research that is research done to obtain facts from the existing symptoms and seek information factually to get the truth. The data collected were taken from the population by using questionnaires as a means of data collection. The measured variables are derived from the minimum standards of food services as set forth in Law Number 10 of 1998 concerning the National Banking Standards: standard of content (rules), process standards, warranty standards, facilities and infrastructure standards, and financing standards. After distributed questionnaires and calculated using Likert scale, then weighted each indicator and sub indicator by using AHP. after the weight is obtained then it can be done House of Quality calculation as recommendation of quality improvement at Bank XYZ.

## 4. RESULT AND DISCUSSION

From the recapitulation of open questionnaires obtained attributes that become consumer desires. we have 12 customer desires from four Indicator, namely: Uncomplicated requirements, Accuracy, alertness and speed of service, Availability of convenient Banking Hall, Competitive Interest, Underwriting (LPS), Available Customer Parking, Easy Rule, Ease of administration, Not regard social status, Reward and Attention from Banks.

Get the priority assessment then the twelve sub indicators of the assessment are weighted using AHP as Figure 3.



Figure 3: AHP Result QFD in Bank XYZ

After the customer needs through AHP, then we can start to make QFD, with the following stages :

1. Weighting of Customer Need is used for conducting customer need priority to the product (motorcycle helmet), to know the level of customer interest to the product



#### Figure 4: Weighting of Customer Needs (Voice Of Customer)

By using scale 1-5, and based on brainstorming results in Product Development that customer needs are most important with scale 5 : Terms are not complicated Accuracy, alertness and speed of service, The availability of a comfortable Banking hall, Competitive Interest, Rules are easy to understand, Ease of administration, Loans with light interest, Does not look at social status, Giving rewards, Attention from the bank

Step 1 : Competitive Benchmark is used for conducting benchmarks with competitors' products (Bank BJB, Bank Mandiri, etc) based on survey results and brainstorming product development team to see the position of the product to competitors.

Customers Needs

Terms are not complicated	4
Accuracy, alertness and speed of service	5
The availability of a comfortable Banking hall	5
Competitive Interest	4
Rules are easy to understand	5
Ease of administration	4
Loans with light interest	4
Does not look at social status	4
Giving rewards	4
Attention from the bank	5

Interlationship

Planning Matrix

3	4	2	1.2	1.1	5.28	80.1%
4	5	4	1.2	1.5	9	83.9%
4	5	3	1.2	1.3	7.8	82.7%
2	3	3	1.4	1.3	7.28	82.1%
3	4	2	1.4	1.3	9.1	84.0%
2	3	2	1.4	1.1	6.16	81.0%
3	3	4	1.2	1	4.8	79.7%
2	3	3	1.4	1.4	7.84	82.7%
3	4	2	1.2	1.5	7.2	82.1%
2	3	3	1.6	1.3	10.4	85.3%

#### **Figure 5: Competitive Benchmark**

By using scale 1-5, and based on brainstorming results in Product Development, that the top three percentages total benchmarking are: Attention from the bank (85.3%), Accuracy, alertness and speed of service (83.9%), The availability of a comfortable Banking hall (82.7%). This shows that from the competitor side these three factors are very dominant in making the product design plan.

Example for calculation (Attention from the bank)

Improvement Factor	: ((Our Planned CS Rating - CS Rating our textbooks) *0.2)+1					
	: ((4-3)*0.2) + 1 = 1.2					
With using same case						
Overall Weighting	: Weigh Customer Voice * Improvement Factor * Sales Point					
	: (4*1.2*1.1) = 5.28					
% of total weight	: (Overall Weighting Customer needs / Total Overal Weighting Total)*100					
	: (5.28) / (5.28+9+7.8+7.28+9.1+6.16+4.8+7.84+7.2+10.4) *100 = 80.1					

CS Rating our textbooks, CS rating competitor BMC, CS rating competitor INK, Our Planned CS Rating, and Sales Point there is input related with product development brainstorming and data collection.

Step 2 : Technical Requirements (HOWs), to determine from technical aspect for product development plans to meet customer needs

Customers Needs (What's)		Supporting and Environmentally Friendly Facilities	Be Careful in Recording Documents and Information	Advanced in electronic banking	Fast and Transparent Service in Customer Service	Good Knowledge and Skill in Providin Services	Using Modern and New Equipment	Number of branches of Nasasbah Service	Provides useful information during banking operations	Level of Satisfaction To "Customers Always Have Rights"			F	Plannin	g Mat	rix		
Terms are not complicated	4											3	4	2	1.2	1.1	5.28	80.1%
Accuracy, alertness and speed of service	5										[	4	5	4	1.2	1.5	9	83.9%
The availability of a comfortable Banking hall	5											4	5	3	1.2	1.3	7.8	82.7%
Competitive Interest	4										[	2	3	3	1.4	1.3	7.28	82.1%
Rules are easy to understand	5											3	4	2	1.4	1.3	9.1	84.0%
Ease of administration	4											2	3	2	1.4	1.1	6.16	81.0%
Loans with light interest	4											3	3	4	1.2	1	4.8	79.7%
Does not look at social status	4											2	3	3	1.4	1.4	7.84	82.7%
Giving rewards	4											3	4	2	1.2	1.5	7.2	82.1%
Attention from the bank	5											2	3	3	1.6	1.3	10.4	85.3%
				I	nterl	atior	iship	1				Rating Our Product	Rating Competitor A	Rating Competitor B	nprovement Factor	Sales Point	Verall Weighting	6 of Total Weight

#### Technical Requirment (HOW's)

Interlationship

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#### Figure 6: Technical Requirement (HOWs) Applied to the HOQC

Step 3: Interrelationship WHATs and HOWs, to determining the level of relationship (relation) between customer needs and needs in terms of technical aspects

Technical Requirment (HOW's)



#### Figure 7: Interrelationship between WHATs and HOWs

By using score : 1 (week), 3 (Medium), and 9 (high), based on brainstorming results in sectionsProduct Development obtained a high correlation is in several things, there are helmet is not easy to break vs.material (point 9), foam easily and humid vs adjustable, inside foam (point 9),glass easily scratched and broken vs visibility, rider (point 9), less ergonomic vs adjustable inside foam, and size and shape (point 9), the paint is not visible at night vs material (point 9), hot and airless vs temperature control (point 9), styrofoam density vs adjustable inside foam, and size and shape (point 9), and less aerodynamic vs size and shape (point 9). Based on the above factors, the relationship between the customer need and the technical requirement is more focused on the safety of the rider (points 1, 3, 5, 8) and convenience (points 2, 4, 6, 7) see figure 6. Step 7: Design Target and House of Quality, calculation, and weighting of design targets to determine priorities in conducting product development related to customer need (WHATs), technical requirement (HOWs) and benchmarking result to competitors so that the products produced in accordance with customer needs and able to compete with competitor products.



Figure 8: QFD in Bank XYZ

From Figure 8 can be seen the value of importance and degree of difficulty for each variable. The degree of importance is ranked based on the percentage figures to make it easier to know which variable is the priority of improvement. Preparation Level of importance based on its rank can be seen in Table 1

Characteristics of Service	Level of Importance	Cumulative	Rangking
Be Careful in Recording Documents and Information	114.18	114.18	1
Advanced in electronic banking	96.82	211	2
Level of Satisfaction To "Customers Always Have Rights"	66.6	277.6	3
Using Modern and New Equipment	54.3	331.9	4
Good Knowledge and Skill in Providing Services	28.2	360.1	5
Provides useful information during banking operations	27.3	387.4	6
Supporting and Environmentally Friendly Facilities	23.4	410.8	7
Number of branches of Nasasbah Service	18.48	429.28	8
Fast and Transparent Service in Customer Service	6.16	435.44	9

Table 1:	Degrees	of	Interest	for	each	variable
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From Table 1 above can also be seen calculation of degree of importance. The cumulative cumulative rating of rank 1 to rank 3 contributes up to half (50%) of the cumulative total of Interest degree. According to Lou Cohen (2010) in the book Quality Function Deployment, the variables that ranks 1 to 3 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 priorities is (1) Be Careful in Recording Documents and Information (2) Advanced in electronic banking (3) Level of Satisfaction To "Customers Always Have Rights".

## 5. CONCLUSION

The main target of this research is to identify bank customer's requirement through integration using combination model .AHP and QFD matrix to realization of this target, we study agriculture bank services in Bank XYZ by using the models mentioned before. At first we identify and recognize the competitive priorities and customer's requirements and classify this requirement through Kano's model, then prioritize them by using analytical hierarchy and finally identify technical requirement through QFD and design quality home. The result of this research show modulation of these 2 method create a empowerment modulation .through which an organization can facilitate its competitive differentiation. According to the result of this research basic requirement has more priority. Based on the results of model development and analysis conducted in this study obtained 9 service attributes sorted by priority AHP Be Careful in Recording Documents and Information, Advanced in electronic banking, Level of Satisfaction To "Customers Always Have Rights", Using Modern and New Equipment, Good Knowledge and Skill in Providing Services, Provides useful information during banking operations, Supporting and Environmentally Friendly Facilities, Number of branches of Nasasbah Service, Fast and Transparent Service in Customer Service. From the results of QFD processing, the priority level importance of service characteristics that need improvement is the documentation and information problem because it has the greatest importance weight 114.18.

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