

Exploration of the Service Quality with the Applied Procedure via Quality Technique- A Case Study of Consumer Electronics Industry

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Abstract

With the development and evolution of consumer behavior, it possesses the magnitude of maintenance service market, especially in the after-sales service field for consuming electronic products. The trend of market transforms competition from the front-end to after-sales services. Therefore, this paper takes a case study of consumer electronics industry and mainly aims at the core to focus on the service quality to create customer satisfaction due to the shirking front-end sales. The enterprise can be able to maintain and enhance its brand imagine to increase customer loyalty by improving customer satisfaction through after-sales services of quality.

The service center primarily is the research subject respectively divided by consumers and maintenance issues via questionnaires. Furthermore, it would perform the correlation among service quality, customer satisfaction and customer loyalty to separate into internal and external analysis. The FMEA model is applied in the internal team discussion including service improvement and analysis. For the external analysis, reliability analysis, prescriptive statistical analysis, difference analysis, and regression analysis are performed the analysis result after the questionnaires were collected and conducted. However, the classified five aspects of service quality and the three aspects of customer satisfaction are suggested to strengthen the needs of major customers and improve customer royalty.

Keywords: Service Quality, Customer Satisfaction, Customer Loyalty, After-sales service, Failure Mode and Effect Analysis (FMEA).

1. Introduction

It's for a long time people have been accustomed to purchasing related equipment directly from local retail stores in the aspect of consumer behavior and the same is true for maintenance. However, the growth of e-commerce sales with the popularity of the internet has led to revolution of shopping habits, and multiple consumption channels are getting formed via different patterns and modes. Although the defective product can be repaired through the original purchased pipeline, it will take much time resulting in the repair information obtained indirectly from the repair service center opposite to the current consumption habits.

The case study is a company of printer industry sales with a chain channel of twelve directly-operated stores. It can strengthen professional maintenance and provide direct service and home repair to customers. Besides, even logistical pick-up, delivery and backup services can be made so that the products still can be available due to failure and repair problems. Eventually, the issues of service quality, customer loyalty and customer satisfaction are the primary prerequisites that cannot be ignored. From the previous separated model of sales and service, the company has created

a different one in the market. So it occurs companies established to operate the back-end services independently with fully following original factory's specifications. Similarly, other printer manufacturers have to adopt the direct maintenance authorization contracts with outsourcing companies in various regions. But it is unavoidable that the companies with authorized brand are often unable to be completely regulated by the original manufacturer that causes damage to consumers' rights. This paper mainly focuses on the independent subsidiary of the original brand that consumers can go directly to the service centers in various regions and possess the same maintenance service as the original factory providing consumers with convenient and effective service.

The business operation procedure is to pull the maintenance hidden in the back-end of sales to the front-end straightly facing the customer with reverse logistics way. It also can provide a service that can be directly sent to the front line by customers for repair as to raise service efficiency. The back-end maintenance of information products is a labor-intensive industry depending on human testing and judgment to ensure internal and external maintenance or quotation. Providing high quality and appropriate maintenance services is an important factor for the long-term operation even the key to the success as the main business project.

This research mainly aims at the core of the relationship among the quality of maintenance service, the impact on customer satisfaction and the customer loyalty. In addition to formulating standard service procedures, the market survey simultaneously is conducting for the customer satisfaction by the outsourcing method as a basis for checking the implementation of the service process and customer satisfaction. Furthermore, the purpose of this research is summarized as it follows:

1. The impact of the product quality on customer satisfaction.
2. The influence of printer service industry service quality on customer satisfaction.
3. The affects between customer satisfaction and customer loyalty

2. Literature reviews

2.1 Product Quality

Traditionally, there are many different definitions of quality, and quality is no longer just to meet the needs of consumers. Even so, the definition of quality is still expressed separately due to the background of the experts. Therefore, if only one level is used to discuss the definition of quality, the definition of quality is inappropriate. Ishikawa (1985) proposes the viewpoints as it follows:

1. Quality is customer-oriented and must be able to meet consumers' needs rather than national standards.
2. Quality includes work quality, service quality, information quality, and process quality.
3. Price must be considered with high product quality, but customers will not be satisfied with too high price.

Juran (1974) determines quality by applicability. Applicability means that the product or service can satisfy the user's process from these four quality perspectives as the followings:

1. Quality of design
2. Quality of conformance
3. Availability
4. Customer service.

Feigenbaum (1983) thinks quality is the sum of the cost paid to achieve and maintain a certain quality level even the

specific level. Total quality control is an effective system that integrates the quality development, quality maintenance, and quality improvement efforts of an organization. Production and service can satisfy customers at the most economical level. Shewhart (1980) regards the importance of "variation" in every process of the production, but it can be solved by using simple statistical tools such as sampling and probabilistic analysis. He proposed to use the design of control charts widely performed by Deming and others in the field of quality improvement.

Deming (1982) takes the roots of the system problems into account. It should be uprooted by team's efforts to achieve the goal. Through cross-departmental functions to solve existing system problems is led to the team-oriented approach. The fourteen points he proposes are straightforward and attend to be the direction of thinking.

2.2 Failure Mode and Effect Analysis (FMEA)

The failure mode has been widely used since early 1950s. This is originally used as an evaluation method during design and development, systematically predicting possible failures and malfunctions in the system. The next steps are to analyze the main reasons for the possible impact of these situations, evaluate the impact and select the orders of key priorities. In the final step, the discussion and actions are provided under the control the implementation of follow-up corrective measurement so as to reduce risks for the predicted failures. The series procedures are present with logical and systematic concepts. The purpose of the implementation of FMEA is to evaluate the potential failure modes in a system or process, and it is achieved to reduce or improve the affected parts towards the target under the corrective cycle. Ono (1998) thinks some purposes as the followings:

- (1) When entering the development and design of new products, the issues that affect quality control, reliability, maintainability, safety, and the environment or publicity must be provided.
- (2) It is expected to shorten time and reduce costs, and problems can be pointed out in advance and corrective actions can be reviewed.
- (3) The primary factors affecting product life should be present and reviewed in the process of design.
- (4) Point out the operational problems from the users' perspectives.
- (5) The new products possess the stable manufacturing as soon as possible after mass production.
- (6) Shorten the assembly time or evaluate the improvement effect of the assembly process.
- (7) Improve the reliability and maintainability of manufacturing equipment.
- (8) Point out the negligence of personnel during operation and prevent it.

2.3 Customer Satisfaction

The definition of customer satisfaction depends on the product performance expected by the customer after purchasing. Generally speaking, satisfaction is feeling of pleasure and disappointment from product performance unexpected. Anderson and Sullivan (1993) defines customer satisfaction as "customer satisfaction can be regarded as the result of consumers evaluating the quality of products after purchase according to their expectations of products before purchasing". Howard and Sheth (1969) regards that the so-called customer satisfaction refers to consumers' perception of whether they have the sacrifice of money and time for purchasing a certain product and whether the compensation is appropriate. Churchill and Surprenant (1982) define customer satisfaction as a response to the difference between the actual performance of the product before and after purchasing and using and purchasing the product later. The

claim that customer satisfaction is the result of purchasing and using as the perception and experience of the purchaser by comparing with the expected reward and input cost. Engel, Blackwell and Miniard (1995) define customer satisfaction that they will evaluate the consistency between the product performance and the letter before purchase when customers use a product and be satisfied with the high consistency. Peter and Olson (1987) regard that customer satisfaction is the process by fulfilled or advanced expectations. Kotler (1996) stands the viewpoints that customer satisfaction is the product performance (functional characteristics) combined with customers perceive and personal perceptual expectations.

2.3 Customer Loyalty

Customer loyalty is a voluntary decision made by customers to continue patronizing a specific company for a long time. Oliver (1999) defines customer loyalty as "the influence of external environmental factors and sales conversion has a deep impact on repeated purchasing or patronage of a preferred brand." Sirdeshmukh, Singh and Sabol (2002) think that customer loyalty means "customers may want to maintain a relationship with an existing company, and therefore may intend to take a variety of the same actions including increasing the use of a service provider’s products and praising the company. With higher the customer loyalty, the more stable the company’s market sharing is. The lower the sensitivity of customers to other products or services occurs, it can’t affect the behavior of existing customers who want to transfer products or services. Oliver (1999) deeply researches on the field of customer loyalty and clarifies his viewpoints on customer loyalty in detail. Customer loyalty is “consumers have a high level of commitment to repurchase the goods or services they like in repetitive brand purchases not been affected by the conversion of any circumstance.” In the definition, Oliver (1999) once emphasizes that customer loyalty should include two dimensions as consumer heart factors and behavior.

3. Illustration of a case study

Based on the customer's viewpoint, this research mainly discusses the relationship between the service quality, customer satisfaction, and customer loyalty. The research structure has been established, and the framework diagram of this research structure is proposed in Figure 1. Parasuraman, et al. (1991) suggest that the quality of service will affect consumers’ intension to consume again, and further discuss the relationship between service quality, customer satisfaction and customer loyalty using empirical data. The items are shown is Table 1.



Figure 1. The Structure of Research

Table 1. The Dimensions in Each Item

Research Dimension	Parts of the questionnaires
Basic Information	Customer, Gender, Age, Marriage, Occupation, Education Level, Average Monthly Income.
Service Quality	Tangibility, Reliability, Reactivity, Authenticity, Care.
Customer Satisfaction	Environment, Price, Profession.
Customer Royalty	Recommendation, Repurchase Intention.

It is mainly employed whether consumers are satisfied with the "product quality" and measure "customer satisfaction" to explore whether it will affect the "customer loyalty" and "repurchase intention". Literature discussion and research framework to influence variables on the relationship among service quality, customer satisfaction, and customer loyalty, are present and provide the following hypotheses:

H1: Service quality has a significant impact on customer satisfaction

H2: Customer satisfaction has a significant impact on customer loyalty

H3: Service quality has a significant impact on customer loyalty

4. The implementation of the research procedure

The maintenance quality and customer satisfaction perform a positive and significant impact on customer loyalty after being verified by empirical experiments. When the company presents the better service quality, the customer satisfaction is better. The research found that consumers' perception of service quality also positively affects customer satisfaction. When the service quality and customer satisfaction are better simultaneously, the more customers can visit again, and the loyalty of customers will increase. The analysis results are shown in Table 2.

Table 2. Hypothesis Verification and Analysis Results

	Hypothesis	Results
H1	Service quality has a significant impact on customer satisfaction	Valid
H2	Customer satisfaction has a significant impact on customer loyalty	Valid
H3	Service quality has a significant impact on customer loyalty	Valid

4.1 The impact of service quality on customer satisfaction

service quality that affects customer satisfaction has a positive and significant impact especially after the satisfaction survey. It is found that the quality of service is considered extremely important by the customer. When the maintenance quality of the printer is improved, the relative recognition of the customer satisfaction will increase.

4.2 The impact of customer satisfaction on customer loyalty

When customer satisfaction has a positive and significant impact on customer loyalty, it means that when customer satisfaction improves, customer loyalty will also increase relatively. The service station takes prompt and correct responses to customer complaints and the appropriate solution is adopted. Customers are highly willing to return to consume by increasing customer loyalty.

4.3 The impact of service quality on customer loyalty

Service quality has a positive and significant impact on customer loyalty, and it can be shown that when the service quality of printer maintenance improves, customer loyalty will increase relatively. When the service station can realize the needs of customers and maintain interaction, customers will increase their recognition and continue to return to the service station for consumption, and recommend to others.

4.4 Impact of FMEA on maintenance quality service

Based on the data obtained from the phone survey of customer service satisfaction, an improvement team was established employing FMEA. The actual improvement methods proposed for the maintenance quality and the service process improvement. After implementation, it is expected that the company will continue to improve the internal mechanism, and continue to improve the process based on the answers obtained in the phone survey in order to achieve the service required by the customers.

5. Discussion and conclusion

According to the results of research, a preliminary framework has been established for the correlation and influence of service quality, customer satisfaction, and customer loyalty in this case. In addition to the analysis results and discussion, it is also recommended to analyze the reasons from the failure mode and the satisfaction survey via phone. The above kinds of analysis can be used effectively as to enhance service quality for practical management and suggestions in the future research. FMEA is applied to classify customers' expectations, and then achieves the goal that can strengthen the needs of the main customers and increase customer loyalty. Therefore, five dimensions of service quality and the three dimensions of customer satisfaction are present and provided as the following suggestions

1. Tangibility

The quality of the service station itself will depend on the brand itself as well as the importance to solve any urgent event. The impression from the customer entering the service station is like the environment and the waiting area with the related facilities arranged neatly and the surrounding items been clean. The clothing, appearance and cordial attitude of the staff can make the customers feel good even exceed expectations.

2. Reliability

Customers expect the printer can be repaired on time. The service station also is constantly making effort toward this direction, but it cannot meet the target thoroughly. Repair service is a professional technology and is also an important indicator of service quality. The professional skills of maintenance service technicians must be upgraded. In addition to achieving the professional level even exceed customers' expectations.

3. Reactivity

Due to policy changes, labor holidays has increased and many customers only send machines for repairs on holidays. the personnel at the maintenance station cannot serve customers on holidays, and the immediate response to the customer's service is getting worse. In this case, the logistics service provided by the service station should be more convenient for delivery exceeding customers' expectations during holidays.

4. Authenticity

Service stations hope the volume of products sent by customers for repair will increase, but they often ignore the problem of sufficient materials. In addition to strengthening the professional skills of maintenance, service stations must pay attention to the delivery on time due to lack of materials during the maintenance process. It happens such as this situation that caused the customer to wait for no products to use. The service station should let the customer can borrow one without interruption, and achieve the guarantee to the customer.

5. Care

The users of printers are distributed with different education levels and occupations. As long as the service is slightly bad, it will be widely spread. It is recommended that the service station should stand in the position of the customers based on the interests of customers.

6. Environment

In addition to the original service station that makes customers feel at home, many other self-operated stations are just small shops and pay little attention to the appearance and the environment. It is recommended that the service stations continue to be maintained to make customers feel comfortable.

7. Price

When service stations exist in great numbers and are available everywhere, price varies greatly. As the time and personal concepts change, low-price strategies are not necessarily for a customer-oriented choice. Instead, they should bring service and quality to consumers.

8. Profession

The maintenance service station instructs the maintenance personnel on how to repair, which leads to wrong judgments of the problem. It is recommended that the maintenance service station should continue to conduct professional education and training and certification, so that consumers can understand that professional judgment is more important than some unprofessional online information.

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