# International Research Conference on Business and Economics 2013

## Semarang - Indonesia, 28 - 30 June 2013

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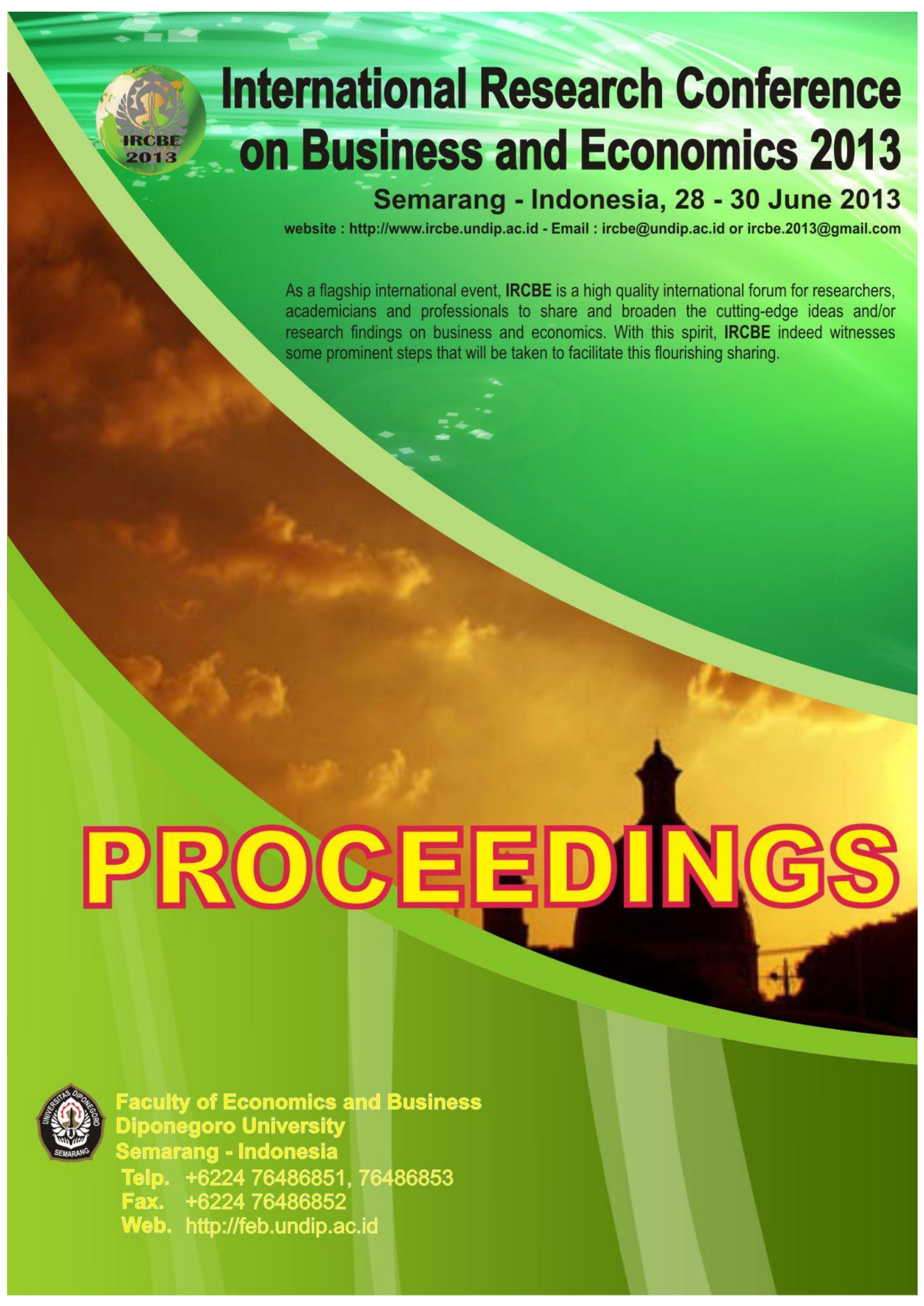

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**Faculty of Economics and Business**
**Diponegoro University**
**Semarang - Indonesia**
**Telp.** +6224 76486851, 76486853
**Fax.** +6224 76486852
**Web.** http://feb.undip.ac.id

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**International Research Conference on Business and Economics,**
**28 – 30 June 2013**
**Venue: Santika Premiere, Semarang, Indonesia**

| **28 June 2013** | |
|---|---|
| 08.00 - 08.30 | Registration |
| 08.30 - 10.00 | Openings |
| 10.00 - 10.15 | Tea Break |
| 10.15 - 11.30 | Key note speech |
| 11.30 - 13.30 | Lunch |
| 13.30 - 15.00 | Parallel Sessions 1 |
| 15.00 - 15.15 | Tea Break |
| 15.15 - 16.30 | Parallel Sessions 2 |
| 19.00 - 21.00 | Gala Dinner and Best paper Announcement |
| **29 June 2013** | |
| 08.00 - 08.30 | Registration |
| 08.30 - 10.00 | Parallel Session 3 |
| 10.00 - 10.15 | Tea Break |
| 10.15 - 12.00 | Parallel Sessions 4 |
| 12.00 - 13.30 | Lunch |
| 13.30 - 15.00 | Parallel Sessions 5 |
| 15.00 - 15.15 | Tea Break |
| 15.15 - 16.30 | Parallel Sessions 6 |
| **30 June 2013** | |
| 08.00 - Finish | Post conference Tour |

## Parallel Session 2

| Date | 28 June 2013 | Session No. | P2A |
|---|---|---|---|
| Chairperson | Dr. Manoj Sharma (Chandigarh University) | Time | 15.15 – 17.00 |
| Area | Management | Room | 1 |
| Code | | | |
| M052 (p.44) | SHARMISTHA BANERJEE (UNIVERSITY OF CALCULTTA, INDIA) AND IPSITA C. PATRANABIS (GLOBSYN BUSINESS SCHOOL, KOLKATA, INDIA) | DOES EMOTIONAL INTELLIGENCE SCORE DRIVE SUCCESSFUL LIFE INSURANCE MARKETING? | |
| M069 (p.27) | MANAWIN SONGKROH (MAEJO UNIVERSITY, THAILAND) | TOURISTS' PERCEPTION TOWARD HANDICRAFT PRODUCT IN CHIANG MAI SUNDAY WALKING | |
| M075 (p.28) | YENNI CAROLINA (PADJAJARAN UNIVERSITY, INDONESIA) | A DESIGN OF IMPROVED SERVICE QUALITY WITH SIX SIGMA BASED-SERVQUAL (CASE STUDY ON INTERNET SERVICE PROVIDER COMPANY) | |
| M109 (p.29) | ASIF ALI (FEDERAL URDU UNIVERSITY OF ARTS SCIENCE AND TECHNOLOGY, PAKISTAN) | THE RELATIONSHIP BETWEEN PERCEIVED TRAINING OPPORTUNITIES, WORK MOTIVATION AND EMPLOYEE OUTCOMES. EVIDENCE FROM PAKISTAN | |

International Research Conference on Business and Economics, 2013

# A DESIGN OF IMPROVED SERVICE QUALITY WITH SIX SIGMA BASED-SERVQUAL

# (CASE STUDY ON INTERNET SERVICE PROVIDER COMPANY)

by

Yenni Carolina

Doctoral Student of Accounting at Padjadjaran University

Email :yenzcarolina@gmail.com

**Abstract**

The purpose of this research was to obtain a design of service quality improvement with Six Sigma based-Servqual. This research was motivated by the increase of internet user in Indonesia which reached 40-45 percent, and even Indonesia become the fourth-rank country in Asia for the internet users. Business competition would inevitable and encourage companies to think in more creative and competitive ways in order to survive and take profits to the company. One of the strategic efforts that can be taken was to reach customers loyalty as well as to capture new customers. Many studies confirmed service quality contributing to establishment of customer loyalty therefore business entity must consider service qualityto capture loyalty from its customers.

This research applied Six Sigma as a design for service quality improvement to achieve a zero-defect rate. Sigma level was measured through a preliminary survey to summarize critical characteristics which customer wereexpected in internet service providers company by usingZeithaml, et.al. SERVQUAL dimensions. The results of a preliminary survey were then processed into the final survey which aimed to measure the Sigma level of the company's service. Final survey applied dual stimulus definition in presenting the survey questions and the critical characteristic which successfully summarized from the initial survey. The result showed seven critical characteristics were in the internet service provider company, namely, reliability, responsiveness, assurance, empathy, tangibles, connection quality, and after-sales service.

**Keywords** : Six Sigma, Servqual, Service Quality, Customer Loyalty

## INTRODUCTION

The need of information for various parties is inevitable. One of the media to seek information is internet, by which people very easily access information at anytime and anywhere. On this basis, the growth of Internet users has increased significantly each year. In 2011 the average penetration of Internet usage in urban Indonesian cities reached 40-45 percent, and even Indonesia become the fourth-rank country in Asia for the internet users. (www.antaranews.com). In response to these phenomena, internet service providers certainly take a part in it and its implications would inevitably be business competition forcing companies to think in more creative and competitive ways in order to survive and take profits to the company. Competitive market requires a company to demonstrate its superiority to survive in the business world. In addition to capturing new customers, the company can survive by establishing customer loyalty. Loyal customers will buy again and again and even influence others to purchase products or services offered. In other words, a loyal customer will positively contribute to the company's profit. Therefore, customer loyalty is an invaluable asset for the company, and the company will certainly make any efforts to reach customer loyalty. Many factors contribute to customer loyalty, among other, quality. Many previous studies provided results that quality played an important role for establishment of customer loyalty.

One tools to enhance quality is Six Sigma. Six Sigma Method clearly describes a number of steps the company should take to achieve its goal. Purpose of the Six Sigma is to reduce the level of variation and to reduce defects leading to a decline in company's product or service quality so as to produce better product or service quality to support customer loyalty. Six Sigma method has five steps called DMAIC (define, measure, analyze, improve, control). While Six Sigma was not new in the management world, it was applied in this research in measuring quality along with SERVQUAL dimensions.

## SIX SIGMA

> Sigma is the Greek letter statisticians use to represent the ”standard deviation of a population”. The sigma or standard deviation tells you how much variability there is within a group of items (the population)”Pande, et.al (2002:15)

In statistics, it is known a normal distribution curve broken into standard deviation areas measured from average. Almost all (approximately 99.9998%) of the area under the normal curve are contained in the six standard deviations ($\mu + 6\sigma$).

The ultimate goal of Six Sigma is to make all the products and services an entity produced to be in the six standard deviation areas or, in other words, none of the products or services miss the target. Therefore, it could be said that the Six Sigma is oriented towards capability improvement process to zero defect).

Many models are applicable to guide Six Sigma improvement efforts, such as widely-used DMAIC. DMAIC is an acronym of:

> Define the problem and what the customer require, Measure the defects and process operation, Analyze the data and discover causes of the problem, Improve the process to remove causes of defects, and control the process to make sure defects don’t occur (Pande, et.al., 2002:14).

**SERVICE QUALITY**

Service quality is more difficult to assess than the finished-goods quality due its intangible nature. However, many approaches are applicable to define the service quality. DarilWykoff in Ramadyhani (1999:69) suggested the notion of quality services as follows:

> Service quality is the degree of excellence intended, and control of variability in achieving that excellence in meeting customer's requirement.

Brady and Cronin inZeithalm proposed:

> Service quality is a focused evaluation that reflects the customer's perception of elements of service such as interaction quality, physical environment quality, and outcome quality

From above definition we can see a common thread indicating that service quality is expressed by its customer needs. This implies that qualfied service is a service fulfilling customer expectations. So the service quality is more subjective because the parameters of service quality are derived from user expectation.

Zeithaml and colleagues suggested that quality can be defined to the extent of superiority or perfection, and furthermore, perceived quality can be defined as consumer ratings on perfection or superiority of product on the whole. Perceived quality is (1) different from objective quality or actual quality; (2) a higher abstraction than specific attributes of a product; (3) global assessment - in some cases - arranging an approach; and (4) judgment generally made in the consumer mind (Lien and Yu, 1985). Furthermore, Zeithaml et al structured perceived service quality in the following explanation.

**Service Quality Dimensions**

The service quality itself has several dimensions. Zeithaml, Berry and Parasuraman suggested a model of service quality termed SERVQUAL (service quality). Servqual proposed 10 criteria the consumers used in evaluating the service quality. The criteria included:

> *(a)* Credibility Trustworthiness, believability, honesty of the service provider (b). Security Freedom from danger, risk or doubt (c). Access Approachability and ease of contact (d). Communication Listening to customer's and keeping them informed in language they can understand (e). Understanding the customer - Making the effort to know customers and their needs f. Tangibles Appearance of physical facilities, equipment, personnel, and communication materials (g). Reliability - Ability to perform the promised service dependably and accurately (h). Responsiveness -willingness to help customers and provide prompt service (i). Competence- Possession of the skills and knowledge required to perform the service (j). Courtesy Politeness, respect, consideration, and friendliness of contact personnel. Lovelock (2001:365)

In a subsequent research, Zeithamlet. al. (2003:364) found that there was a high correlation among some variables and he incorporated them in 5 broad dimensions, namely:

(a). Tangibles (appearance of physical elements) (b). Reliability (dependable, accurate performance) (c). Responsiveness (promptness and helpfulness) (d). Assurance (competence, courtesy, credibility and security) (e). Empathy (easy access, good communication, and customer understanding)

SERVQUAL usage aimed to collect data for multipurpose usage, such as:

a. To determine the average gap score (between customers' perceptions and expectations) for each service attribute b. To assess a company's service quality along each of the five SERVQUAL dimensions c.To track customers' expectations and perceptions (on individual service attributes and/ or on the SERVQUAL dimensions) over time. d. To compare a SERVQUAL score against those of competitors. e. To identify and examine customer segments that differ significantly in their assessments of company's service performance f. To assess internal service quality (that is, the quality of service rendered by one department or division of a company to others within the same company)

## CUSTOMER LOYALTY

Customer loyalty is a deeply held commitment to rebuy or repatronize a preferred product or service consistently in the future, despite situational influences and marketing efforts having the potential to cause switching behavior. Oliver (1997:132)

Customer loyalty gradually grows. Oliver argued that customer loyalty consisted of the following stages: (1). Cognitive Loyalty (2). Affective loyalty (3).Conative Loyalty (4). Action Loyalty

According to Reichheld and Sasser (1995:59), the longer customers stayed with the company, the more profitable the company was in the service. In fact, the stage of profit followed these steps:

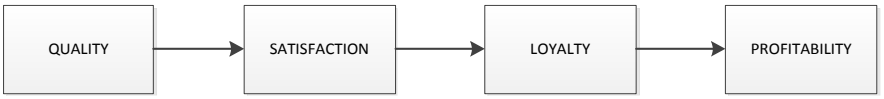


FIGURE 1.

Correlation between quality and profitability

### Effect of Service Quality on Customer Loyalty

Research by Berry and Parasuraman (1997) showed a strong correlation among service performance, customer loyalty, and propensity for migration. Research suggested that customers receiving services under the tolerance zone became less loyal and had propensity for migrating to competitor, compared with customers receiving service beyond the tolerance zone. In addition to a positive effect on customer loyalty, the research also found that customer showed willingness to pay more for better service and even the willingness of externally complaining reduced.

## RESEARCH METHOD

The object of this research was an internet service provider company in Bandung City. The company provided Wireless Local Area Network (WLAN)-based or, so-called, Wireless Fidelity (Wi-Fi)-based internet connection services. Data collection applied interviews, questionnaires and observational surveys.

One measurement to use is SERVQUAL. SERVQUAL consists of 21 service attributes grouped into five dimensions of service quality.

SERVQUAL dimensions consist of Reliability, Responsiveness, Assurance, Empathy and Tangibles. The attributes of each dimension are:

1) Reliability (i). When X Company promises to do something by certain time, it does so. (ii). When you have a problem, X Company shows a sincere interest in solving it. (iii). X Company provides its service at the time it promises to do so. (iv). X Company insists on error-free records

2) Responsiveness (i). X Company keeps customers informed about when services will be performed. (ii). Employees in X Company give you prompt service. (iii). Employees in X Company are always willing to help you (iv). Employees in X Company are never too busy to respond your request.

3) Assurance (i). The Behavior of employees in X Company instills confidence in you.(ii). You feel safe in your transaction with X Company. (iii). Employees in X Company are consistently courteous with you. (iv). Employees in X Company have the knowledge to answer your questions.

4) Empathy (i). X Company gives you individual attention (ii). X Company has employees who give you personal attention (iii). X Company has your best interests at heart. (iv). Employees of X Company understand your specific needs. (v). X Company has operating hours that are convenient to all is customers.

5) Tangibles (i). X Company has modern looking equipment. (ii). X Company's physical facilities are visually appealing. (iii). X Company's employees appear neat (iv). Materials associated with the service (such as pamphlets or statements) are visually appealing at X Company

Dual Stimulus Definitions of quality measurement has disadvantage of lack benchmarks. Oliver argued that quality could be materialized in the presence of benchmark. This assumption requirred benchmark as ideal quality standard to measure the quality dimension.

## RESULT

### Preliminary Survey

Preliminary survey was conducted to summarize the customers' expectation of a wireless internet service. The expectations were critical characteristics in wireless Internet services. The results of this preliminary survey became a reference for the preparation of the final survey. A total of 30 questions were made in a dichotomous scale. These questions applied SERVQUAL dimensions and were analyzed in depth to determine the validity of SERVQUAL characteristic or characteristics analyzed in assessing the quality of a wireless internet service. A rest question was with category options. The preliminary survey resulted in seven key dimensions as critical charasteristic of the Wi-fi service provision. The seven dimensions are: a. Reliability b. Responsiveness c. Assurance d. Empathy e. Tangibles f. Connection quality g. After-Sale Service

**Final Survey**

The final survey aimed to assess the performance of PT. X in providing wi-fi according to consumer opinion. The results of the final survey will be processed and utilized as a base line to draft Six Sigma of the Company service. Furthermore, the final survey contained 28 covered or structured questions. This question applied double stimuli definitions, providing imaginary comparisons for respondents to assess wi-fi service. The questions broke into seven major groups of quality dimension obtained from a preliminary survey.

**Enhanced Six Sigma Model**

**1. Define**

Define is the first step of the Six Sigma quality improvement projects. A few things need to define at this stage, including: 1. Six Sigma project selection criteria - At this stage, an analysis carried out on several matters, such as, whether the application of Six Sigma will deliver business benefits, whether the project is feasible, whether the project offers a positive impact for the company; 2. Roles and responsibilities of those involved in Six Sigma projects; 3. Key processes in the Six Sigma project - the key process is derived from "defining" SIPOC (Suppliers, Inputs, Process, Outputs, and Customer) of the company. 4. Defining the customer and their specific needs - Customers of this company consisted of direct and indirect customers.Based on data summarized by the preliminary survey, the specific needs of customers can be divided into 7 main requirements which consists of reliability, responsiveness, assurance, empathy, tangibles, connection quality and after-sales service.5. Statement of the Six Sigma project goals - Statement of the Six Sigma project goals must meet the criteria of SMART (Specific, Measurable, Achievable, Result-oriented, and Time-bound). Six Sigma project goals for the company is "Improving the quality of service provision wi-fi internet to increase the level of 6-Sigma Sigma heading to be achieved within a period of 4 years."

**2. Measure**

Measure is the second stage of the Six Sigma quality improvement projects. This stage plays a very important role in the overall sequence of quality improvement process, because this stage reveals the company performance at measurement as performance baseline of the company at the beginning of the Six Sigma project. The performance baseline will, then, be utilized as a benchmark in the Six Sigma project. This stage measures key quality characteristics from previous customer requirements. Key quality characteristics of the first Six Sigma project are summarized in the tree of key quality characteristics, sometimes termed as the Critical-to-Quality (CTQ).

**Measuring Performance Baseline**

The first step of measuring the performance baseline is a calculation of total satisfaction score. The results of the calculated total score is derived from following: Collecting value assigned by respondent for company performance, and summing up values assigned by respondents for each question in order to obtain a total score. As a result, the highest consumer satisfaction of the seven dimensions is derived from dimensions of Assurance (87.39%), followed by Responsiveness (82.83%), and reliability (81.22%). Then customer satisfaction difference between expected and actual product or service perceived by the customer is processed. As a result, the average percentage of difference in customer satisfaction was still above 50%. Defect, Defect occurred when respondents gave value under 5. If a respondent gave a less than 5, it could be concluded that customer's expectation was higher than the company's performance. This condition termed as "defect". From the calculation, it could be seen that the dimension (d) had the highest total defect among other attributes. However, the highest average defect was dimension (f) of the quality characteristics of the connection. Thus, it is concluded that the low quality service of the company is mainly caused by the low quality of the connection, after-sales service (dimension g), empathy (dimension d), tangibility (Dimension e), reliability (dimension a),

and responsiveness (dimension b) followed by assurance, respectively. Sigma Value Sigma value is determined on the assumption of such that each service dimension has independent questions from one another. Considering the purpose of the Six Sigma is to pursue zero defect level, the value included in the Six Sigma calculation is lower than 5, and Sigma value should be based on a conversion table contained in the book of The Six Sigma Way by Pande, et.al. Sigma value was determined by the closest DPMO value. As a result, a sigma value of the company in offering Wi-fi service was only 1.375 and a lowest sigma value was 0.375. This means that the company should work hard with extraordinary commitment to achieve sigma value of 6. DPMO value of the calculation was 706521.74 inversely proportional to the value Sigma. It was very reasonable because the higher the sigma value of a product or service is, the better the quality is.

**3. Analyze**

Identifying source of problem with 7M principle - Manpower, Machinery and equipment, Methods, Materials (raw and auxiliary), Media (place and time of work), Motivation, and Money. The research results were throttled and slow Wi-Fi connection. The user's device incompatible with the minimum requirement to access Wi-Fi service was one possible cause. The company did not regularly check and the customers felt the company's facilities looked less attractive. The company employees did not understand the specific needs of customers. Materials regarding corporate services (such as Pamphlets, Posters, Flier, Company Identity, and Website Homepage) was not visually attractive.

**4. Improve**

Tools 5W-2H (stands for What, Why, Where, When, Who, How, and How) applied to arrange the plan,. Stage of improve basically discussed what kind of solution can be taken and applied to solve problems in stage of analyze.

**5. Control**

The last step aimed to monitor whether improvements run as expected and to determine result of the improvement. Then the improved items should be maintained and upgraded to reach sigma level 6. Several auxiliary tools were used to control, such as the Process Documentation, Process Dashboard and Balanced Scorecard. This process could be described only if the Six Sigma quality improvement projects would have been undertaken.

## CONCLUSION

Sigma value of the internet service provider company was 1 of 6 expected sigma. Hence, the company should work hard to improve the service quality. This research found 7 chritical characteristics the customers expect from the internet service provider company, those were reliability, responsiveness, assurance, empathy, tangibles, connection quality, and after-sales service. Paying attention to these characteristics, customer satisfaction would surely be achieved and the achievement of customer satisfaction implied customer loyalty easier to achieve. All the seven critical characteristics were customers' expectations for the Internet service provider company. If competitors paid attention to these factors, the customers would grant them their loyalty.

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