

CHAPTER II

LITERATURE REVIEW

2.1 Inductive Study

Product is anything that can be offered to the market that might satisfy a need. In retailing product called as merchandise. In manufacturing, products are bought as raw material to be finished product. The lack of diversification products makes the customer hard to compare between the products. The service aspect is gaining more profitable then the product after sell. This shows the importance of quality of the service in neither retailing nor manufacturing. A company's offerings often include some services (Lovelock Christopher, 2004). The nature of most services is that the customer is present in the delivery process. This means that the perception of quality is influenced not only by the "service outcome" but also by the "service processes". Therefore, with the improvement of technology, the outcome is Internet of Things 4.0, this technology related to internet, it makes internet as powerful things. The electronic service quality come up with the e-commerce service quality to evaluate the quality of web site provider in e-commerce category.

Hamidi et al. (2014) studied the investigate on and analysis of concept of Electronic Service Quality (E-Servqual) in healthcare field especially in web site of healthcare field in Turkey. In present research criteria related to it were exploited. It included six main criteria i.e. tangibles, responsiveness, reliability, information quality, assurance and empathy each one having their own sub-criteria. In present research Multi-Criteria Decision Making (MCDM) methodology was used which was a combination of Analytic Network Process (ANP) for obtaining criteria weights and fuzzy topsis

methodology for ranking dimensions of electronic service quality for healthcare service. The result shows the rank between dimension to gain the alternative hospitals websites.

Wu et al. (2014) wrote a paper electronic service quality of Facebook social commerce and collaborative learning. This article aims to utilize the dimensions of e-SQ to measure the service quality of commercial activities on social media (e.g., Facebook/FB). It also applies an Analytic Hierarchy Process (AHP) questionnaire of 50 students who have experience of using FB ads linkage and then utilizes the Fuzzy Analytic Hierarchy Process (FAHP) to analyze the weighting of the e-SQ evaluation. The result shows the rank, according to rank the dimension it can be conclude that should be fix in that business on Facebook.

Amin & Ungku Ahmad (2012) examined a paper of level of electronic service quality (e-SQ) attributes among academic librarians in the Malaysian public universities which have an established automated library system and which have their libraries over than 10 years. Six attributes of the e-SQ were determined from the analysis of related e-SQ theories. The 162 academics librarians' respondents involved in this study were from nine public universities in West Malaysia. The method that are used by the researcher is Software Package of Social Sciences 18 (SPSS v18). The findings of the research indicate that all the attributes have high level of mean, of which the two highest attributes are Reliability and Security. Thus, the research shows that the academic librarians of the Malaysian public universities are aware of the importance of e-SQ in their job since the overall attributes at the high level.

Muhammad et al. (2016) studied that the advantage of the improvement technology that impact to the online shopping in Malaysia. The main objectives of this study are to examine the state of online shopping adoption, particularly in the groceries product category and assessing the electronic service quality (E-Servqual) provided by online grocers and situational factors influential to the online grocery shoppers. Data was collected using online questionnaire sent to potential respondents through personalized electronic mails and online private messages. The method that is used is SPSS from the online questionnaire that is spread out to the customer. The findings indicate that the online grocery shopping adoption is still not catching up where Malaysian shoppers still

do not have the affinity towards buying groceries online. It was also found that they have the core competencies in online business technology, but should outsource certain capabilities especially if to widen their service coverage, expanding into other markets beyond the major cities.

Lee et al. (2012) evaluated the electronic service quality on travel website provider. In order to overcome this difficulty, the purpose of this study is to propose a hierarchical MCDM evaluation model based on the Fuzzy Analytic Hierarchy Process (FAHP) and the fuzzy technique for order preference by similarity to ideal solution (FTOPSIS) methods. In this paper, the weights of criteria and ratings of alternatives are assessed by linguistic (natural language) variables expressed in triangular fuzzy numbers. Finally, four representative travel websites in Taiwan are provided to illustrate the practicability and usefulness of the proposed model. Moreover, the results of this study will help travel website managers understand their ranking positions relative to their competitors, thus can motivate travel website managers to provide appropriate levels of service quality in response to the e-customers' needs.

Septiani (2016) studied in her thesis about the Impact of Brand Image and e-Service Quality towards Customer Satisfaction in Bukalapak. The researchers observe the dimension of e-SQ online shop web which is Bukalapak. The collecting data is based on the questionnaire. Type of this research is quantitative. This research uses primary data which sampled by customer of Bukalapak. Data collected by accidental sampling with 100 respondents of customer Bukalapak. The method of this research uses Regression Analysis (RA). The result of this research showed that brand image influence significantly through customer satisfaction based on the electronic service quality dimension. The regression is to analysis the 2 or more variables in the case. Therefore, the result shows that there is correlation between the variable through its dimensions.

This research tries to continue the previous research conducted by Septiani (2016) in order to know what is the prioritized dimensions and attributes in customer satisfaction of electronic service quality framework. The difference of this research with previous are the method used and object of research. Previous research using the Regression Analysis to know the relation between variable and shows the impact of those variables, also to

understand the dimensions of e-service quality that necessary to be improve in order to increase the customer satisfaction that impact on brand image of the company. This research uses fuzzy mamdani to interpret the highest prioritized factors of e-service quality.

Furthermore, this research focuses on impact of electronic service quality framework to its dimensions and attributes to know the prioritized dimensions and attributes of electronic service quality framework to give the suggestion to the company in order improving the capability to compete with others e-commerce. Compared to previous research, this research uses fuzzy logic as the suitable tools to encourage the electronic service quality framework, collecting data of this research is from Tubagus (2018) that research on Tokopedia. The data that is collected is electronic service quality framework, fuzzy rule and mean score. The output of this research is concern on the highest score of dimensions that drives to its prioritized attributes, thus, the solution and suggestion will be given to the company to improve the electronic service quality framework.

From the inductive study that already done, the literature survey that would be used in this research, which is electronic service quality analysis to determine the prioritized dimensions and attributes of electronic service quality framework in order to improve the satisfaction of customer using Mamdani Fuzzy. The summary of related research is shown in Table 2.1.

Table 2.1 Literature Survey

| No | Author | Method | Manufacturing Application |
|----|----------------------|--|---|
| 1 | Hamidi et al. (2014) | Multi Criteria Decision Making (MCDM) & Analytic Network Process (ANP) | Healthcare field in Turkey |
| 2 | Wu et al. (2014) | Fuzzy Analytic Hierarchy Process (FAHP) | Facebook Social Commerce and Collaborative Learning |

| | | | |
|---|---------------------------|---|--|
| 3 | Amin & Ungku Ahmad (2012) | Software Package of Social Sciences 18 (SPSS v18) | Librarian Public universities Malaysia |
| 4 | Muhammad et al. (2016) | SPSS | Online Shopping in Malaysia |
| 5 | Lee et al. (2012) | Fuzzy Analytic Hierarchy Process (FAHP) & FTOPSIS | Travel Website Provider |
| 6 | Septiani (2016) | Regression Analysis (RA) | Bukalapak |
| 7 | Habibie Humas (2019) | Fuzzy Logic (Mamdani) | Tokopedia |

2.2 Background Theory

2.2.1 E-commerce

The use of Internet as a mean of shopping goods and services is growing over the past decade. E-commerce is the new commercial transactions conducted electronically on the internet that shows the power of internet in trading. Businesses in the e-commerce sector realize that the key factors for success are not limited to the existence of a website and low prices but must also include high standards of e-quality (Santouridis, 2009). The crowd of traffic shows the e-commerce make the transaction of either money nor data on website, thus, there is a huge server to have the transactional online on customer provided by the perpetrator of e-commerce. Ecommerce is often used to refer to the sale of physical products online, but it can also describe any kind of commercial transaction that is facilitated through the internet. Whereas e-business refers to all aspects of operating an online business, ecommerce refers specifically to the transaction of goods and services.

In these days, many of the firms adopt and support the three basic of e commerce, there are Business to Customer (B2C), Business to Business (B2B) and Customer to Customer (C2) (Humdiana & Indrayani, 2006).

A. Business to Customer (B2C)

Firms have to develop the electronic market which has the interest to the customer who wants to buy the product nor the service. B2C also called as type of market transaction.

Application of E-commerce that focus on customer has the important similar purpose which is: interest the customer, have the transaction of product and service, also create the loyalty of the customer through good service for every individual.

B. Business to Business (B2B)

The transaction of B2B called as the transaction between the firms. Transaction in B2B applied the EDI and e-mail as the buying method. E-commerce B2b also the transactional of grociers online as the place for the firms, buyer, seller or the trading between the other firms.

C. Customer to Customer (C2C)

The place for the customer (also firms) could have the authority to buying or selling for another in website process, it makes the C2C as the important e-commerce strategy that happen in this modern era.

2.2.2 E-Service Quality

Quality is a multi-dimensional phenomenon. Thus, reaching the service quality without distinguishing the important aspects of quality is impossible. In his discussion of service quality, Gronroos (2000) refers to three dimensions of output technical quality, service performance quality, and organization's mental picture. Also, Lehtinen and Lehtinen (cited in Harrison, 2000) have referred to dimensions of physical quality, interactive quality, and organizational quality as three dimensions of service quality. Although these attempts have had a major role in division of service quality into process quality and output quality, but they lack enough details. On this basis, Zeithaml et.al., (1996) have referred to ten dimensions of service quality in their primary researches. But, in their further researches, they found a strong correlation among those dimensions. Thus, they combined these dimensions and applied the fivefold dimension of Reliability, Responsiveness, Assurance, Empathy and Tangibles as a basis for making a tool for testing the service quality, known as SERVQUAL. In their researches, they emphasize that SERVQUAL is a lasting and reliable scale of service quality (Parasuraman et.al., 1994). They also said that this tool is applicable in an extensive spectrum of service

domains such as financial institutions, libraries, hotels, medical centers, although some of its components should be rephrased, or more components should be added to it.

Service quality takes a prominent position in the marketing management literature. Service quality is usually defined as the customer's impression of the relative inferiority/superiority of a service provider and its services, and is often considered similar to the customer's overall attitude towards the company. Researchers have tried to conceptualize and measure service quality and explain its relation to the overall performance of companies and organizations (Siddiqui & Sharma, 2010). A common denominator of research on service quality is the conclusion that, because services are intangible, heterogeneous, and their 'production' and 'consumption' are usually inseparable, the process used by customers to evaluate service quality is exceptionally composite and cannot be easily identified. The idea that services are evaluated both by the outcome and by the production and delivery process is commonly accepted.

Today's knowledge intensive services businesses require reliable methods of measurement, assessment, and improvement (Spohrer & Maglio, 2008). Service quality is determined by calculating the difference between two scores where better service quality results in a smaller gap (Landrum, et.al., 2008). Johnston, et.al., (1997) did comprehensive empirical experiments on service quality dimensions offered by Parasuraman, et.al., (1988) in ten service organizations in England.

As the development of technology in internet aspect, the service quality become the traditional method, it is called as electronic service quality which focus on the transactional online of service quality. Colby and Parasuraman (2003) defined e-services as "all services delivered via an electronic medium (usually the internet) and comprising transactions initiated and largely controlled by the customer". E-services differ from traditional services, in a sense that customers interact with the organization usually through a web site, relying on sight and sound, in comparison to traditional services, where they use all their senses (Rowley, 2006). The way that people apprehend service quality in internet based settings differs from service quality in traditional settings, because they tend to have different beliefs about technology, a fact that makes them accept and use technologies in a different manner (Parasuraman et al., 2005). In recent

years, the well acknowledged relationship between service quality and business performance has also increased interest in e-service quality (Rowley, 2006). E-service quality has been defined by Zeithaml (2002) as “the extent to which a Web site facilitates the efficient and effective shopping, purchasing and delivery”. Therefore, the e-service quality has developed to create the better quality of the service that provided by the firms in order to have the satisfaction of the customer.

2.2.3 Fuzzy Logic

A. Definition of Fuzzy

Fuzzy logic is a mathematical expression that is used to represent uncertainty, inaccuracy, lack of information, and ambiguity between true or false at the same time but some great truth and error of a value depends on the weight of its membership. Fuzzy logic is used for state a group or set entities that can be distinguished with other groups based on the degree of crisp membership. The crisp set is a way to dichotomize the individuals in some given universe or discourse into two groups; members and nonmembers (Klir et.al., 1995). Fuzzy logic is used to convert heuristic control rules stated by human operator into an automatic control strategy (Mamdani and Assilian, 1975). Fuzzy logic has a three core concepts namely, fuzzy sets, linguistic variables, and possibility distribution (Wu et.al., 2011).

B. Fuzzy Sets

Fuzzy set is an extension of classic theory, it is arranged from a set which determined by the membership functions, with the main function of membership function itself give the value of the value elements inside fuzzy set with the range of value which commonly used is the interval [0,1] Klir et al., (1995). A value in the interval [0,] has a degree of membership ($=\mu x$) from one member of the fuzzy set (x) is said that fuzzy sets are mapped to values in the interval [0,1] by the functions μ . There are only two grades of membership function in a classic set.

That is $\mu_A(x) = 1$ which means that x be a member of A , and $\mu_A(x) = 0$ for x is not as a member of A , this classic fuzzy set is different with fuzzy logic that using interval

0 and 1. A value in the interval are called membership value is denoted by $\mu_A(x)$, the degree of membership is a value that indicates how much the level of membership of element (x) in a set (A).

C. Membership Functions

Membership function is a curve showing mapping of data input points into the membership value having intervals between 0 and 1. Linear functions of triangular number and trapezoid are popular membership function. The representation of triangular curve number is basically a combination of two linear representation (linear rises curve and linear down curve). Example of membership function equation is shown by Equation 2.1.

Where:

$$\mu(x; a, b, c) = \begin{cases} \frac{x-a}{b-a}, & a \leq x \leq b \\ \frac{c-x}{c-b}, & b < x \leq c \\ 0, & \text{otherwise} \end{cases} \quad (2.1)$$

A fuzzy set over the universe of discourse X, $A, \subseteq X [0,1]$, is described by the degree of membership $\mu_A(x) \in [0,1]$ for each $x \in X$. With a graphic of membership functions as follows in Figure 2.1.

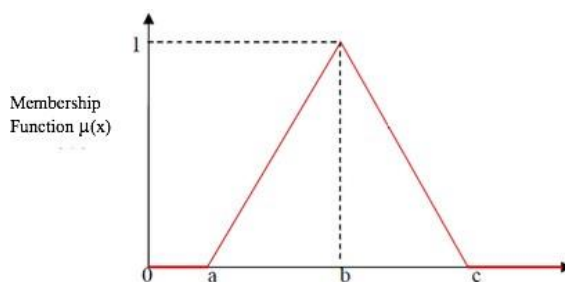


Figure 2.1 Graphic of Membership Function

The representation of triangular curve number is basically a combination of two linear representation (linear rises curve and linear down curve).

D. Operations in Fuzzy Set

Like the set of crisp sets, there are several operations are used to define specifically to combine and modify fuzzy sets. The membership value as a result of a two-set operation are known as fire strength or α -cut. There are three basic operators created by Zadeh, as follows: AND, OR, and NOT.

1. AND Operator

AND operation is related to intersection of the sets number. Intersection of 2 sets is the minimum of each pair of elements on both sets. Example of the equation is shown by Equation 2.2.

$$\mu_{A \cap B} = \text{MIN} (\mu_A (x), \mu_B (y)) \quad (2.2)$$

2. OR Operator

OR (union) operation is associated with the combined operation of the set. The union of 2 sets is the maximum of each pair of elements on both sets. Example of the equation is shown by Equation 2.3.

$$\mu_{A \cup B} = \text{MAX} (\mu_A (x), \mu_B (y)) \quad (2.3)$$

3. NOT Operator

NOT operation is related to the compliment operation on the set. NOT operation is obtained by subtracting the membership value elements with the value of 1. Example of the equation is shown by Equation 2.4.

$$\mu_{\bar{A}} = 1 - (\mu_A (x)) \quad (2.4)$$

2.2.4 Customer Perception

Customer Perception is a marketing concept that tells us what customers think about a brand or a company or its offerings. It can be positive or negative feelings, perceptions, inhibitions, predispositions, expectations or experiences that a customer has. It is believed that consumer perception influence customer level of satisfaction and so their buying and

usage decisions. As the increase of internet consuming in Indonesia, the perception about any events as the behavior of people in using internet is the important value that should be consider by any provider. Perception is basically an organism which describes an individual's perceived image which he expected from any product or service (Kazmi, 2012). Observation can be changed or influenced by numerous factors.

Differences among real and perceived quality, product quality has two forms, accurate quality and expected quality. The actual quality contains the actual benefits achieved from the purchase of product. On the other hand, perceived quality contains consumer expectations from product. Customer is end-user of product who consideration about the expectation and the reality of the product quality or service quality in balance. The perceived of product of private brands, Initially, the perception qualities of product of privately-owned brands were taken as consumer's perception on the quality of product provided by vendors or company. Scholars have noted that country-of-origin perceptions and expectations lead to cognitions. It also puts significance on particular products and marketing attributes. These were considered as the factors that could bring affect to the people in the country of where the product or services were market (Gary, 1999).

2.2.5 Service Quality Framework

Parasuraman et al. Proposed 10 quality dimensions which included reliability, responsiveness, competence, access, courtesy, communication, creditability, understanding/knowing the customer, and tangibles. They simplified the ten dimensions of service quality into five dimensions as tangible, reliability, responsiveness, assurance, and empathy. The five generic dimensions are as follows:

- 1) Tangibility: concerns the physical facilities, equipment, personnel and materials that can be perceived by the five human senses;
- 2) Reliability: translated into the ability of the supplier to execute the service in a safe and efficient manner. It depicts the consistent performance, free of non-compliance, in which the user can trust. The supplier must comply with what was promised, without the need for rework.
- 3) Responsiveness: refers to the availability of the provider to attend voluntarily to users, providing a service in an attentive manner, with

precision and speed of response. It concerns the availability of employees of the institution to assist users and provide the service promptly;

- 4) Assurance: it is identified as the courtesy, knowledge of employees and their ability to convey trust;
- 5) Empathy: related to whether the organization cares for the user and assists him in an individualized manner, referring to the ability to demonstrate interest and personal attention. Empathy includes accessibility, sensitivity and effort in understanding the needs of users.

Zeithaml et al (2009) stated that distinguish the 5 dimensions to 8 dimensions from Parasuraman et al (1996). The researcher choose the framework because it is suit to dimension that need in Tokopedia, therefore the researcher take the dimension based on Zeithaml et al that already been modified and applied to Tokopedia in previous research. The purpose is to make it more suitable on the core of electronic service quality to have the perception based on the electronic. Based on a literature review Zeithaml et al (2009) proposed a relatively comprehensive framework and modified by the researcher to including 6 dimensions for service industries. The table of quality dimension is shown in table 2.1.

Table 2.1 Quality Dimensions in Two Levels

| First Level | Second Level |
|------------------------------|---|
| Web Design | (1) Navigation Structure (2) Interface/ Appearance (3) Fast presentation (4) Updated information |
| Responsiveness | (1) Willingness to help customer (2) Readiness (3) Promptness (Timeliness and speed) |
| Security and confidentiality | (1) Physical security (2) Financial security |
| Access and approachability | (1) Ease of contact (2) Timely access |
| Efficiency | (1) Convenience (2) Promptness |
| System availability | (1) Accurate order (2) Error |
| Fulfillment | (1) Trustworthiness (2) Reputation of service |
| Merchandising | (1) Number of offering (2) Variety of offering |

According to the table above, there is 7 first level of dimension and each of

dimensions has sub-dimensions as the second level that shows the specification of dimension. In order to achieve the customer satisfaction through E-SRVQL, the researcher uses these frameworks as the input parameter of satisfaction.