Binus Business Review, 9(2), July 2018, 95-103
DOI: 10.21512/bbr.v9i2.4257
P-ISSN: 2087-1228
E-ISSN: 2476-9053

Product and Service Quality Analysis: An Empirical Study of Customer Satisfaction in a Bakery

Aina Nindiani[1]; Mohammad Hamsal[2]; Humiras Hardi Purba[3]

[1]Industrial Engineering Program, Faculty of Technology and Computer Science,
Buana Perjuangan University Karawang
Jln. H.S. Ronggowaluyo Telukjambe Timur, Karawang 41361, Indonesia
[2]Management Department, BINUS Business School Doctor of Research in Management,
Bina Nusantara University
Jln. Kebon Jeruk Raya No. 27 Jakarta Barat 11530, Indonesia
[3]Master of Industrial Engineering Program, Mercu Buana University
Jln. Menteng Raya No. 29, Jakarta Pusat 10340, Indonesia
[1]aina.nindiani@ubpkarawang.ac.id; [2]mhamsal@binus.edu; [3]hardipurba@yahoo.com

Received: 23rd December 2017/ **Revised:** 15th February 2018/ **Accepted:** 22nd February 2018

How to Cite: Nindiani, A., Hamsal, M., & Purba, H. H. (2018). Product and Service Quality Analysis: An Empirical Study of Customer Satisfaction in a Bakery. *Binus Business Review, 9*(2), 95-103. https://doi.org/10.21512/bbr.v9i2.4257

ABSTRACT

This research aimed to analyze the performance of a bakery located in Bekasi from the customer satisfaction on product and service quality. The method applied was Importance-Performance Analysis (IPA). IPA was conducted to determine the status of indicators related to product and service quality. It was to provide input to management in taking strategic actions. The sample size was 127 respondents. The used technique was non probability sampling. The results reveal that the priority of improvement is the taste indicator for product quality. On the other side, courtesy indicator is the priority for service quality that occupies position in Quadrant A. Hence, the bakery should emphasize those indicators as improvement priorities.

Keywords: Importance-Performance Analysis (IPA), product quality, service quality, customer satisfaction

INTRODUCTION

Customer satisfaction is an important aspect and becomes a key to run a successful business (Krivobokova, 2009). It also becomes the most important focus area for worldwide companies. If customers are satisfied with the product, they will repeat purchasing, showing loyalty, and telling good things to other people. Otherwise, they will move to another brand or may complain and express their dislikes to the company and others. It can have long-term impact on company's image (Nair, 2013).

Customers are valuable asset for the company, therefore, their opinion is crucial and should be explored persistently. The company should focus on voice of customer to retain the customers longer. To know the customers' desires, the company can build direct interaction with them. By conducting market research, company can investigate customer satisfaction level.

Customer satisfaction is important to improve customer-focused products and services. Voice of customers can be a valuable input for management in mapping which areas should be prioritized. There is a significant relationship between product quality and customer satisfaction (Cruz, 2015). Seyedi *et al*. (2012) also stated that the product and service quality were the important factors affecting customer satisfaction. Moreover, the level of satisfaction depended on the extent to which the needs were met.

According to Suchánek *et al*. (2014), quality is defined as perceived quality of the customer, so the main factor in measuring product quality is customer satisfaction itself. To achieve high customer satisfaction, it is important for the company to create products that meet the requirements of its customers.

Moreover, according to Alex and Thomas (2012), product quality is the degree to how well the product specifications meet customers' expectations. On the other hand, Munusamy *et al*. (2010) mentioned that service quality could be defined as the difference between the customer's expectations of the service with the perception of the service received.

In this research, the product quality refers to the food quality of bread. Bread is the bakery products made from four basic ingredients (flour, yeast, water, and salt). Bread is also enriched with other ingredients such as milk, eggs, fat, sugar, and others to create customer delight. Food quality is the most favored by customers or the customers like best. The degree of quality is described as the degree of expected attributes and the absence of unexpected characteristics that are primarily detected by customers' sensory system. A good method for deciding food quality is through sensory evaluation (Singh-Ackbarali & Maharaj, 2014).

Importance-Performance Analysis (IPA) is a useful tool to map the status of indicators to guide management in taking strategic actions. Wu *et al*. (2010) stated that IPA could be applied to identify strengths and weaknesses of quality attributes from the customer's point of view. It evaluated the importance and performance simultaneously. In the early development of IPA by Martilla and James (1977), the indicators investigated were related to service quality. They analyzed automobile dealer as a research object to develop marketing strategies. Since it is first introduced, IPA has attracted many researchers and is widely adopted in various fields such as tourism (Hamsal, 2016), education (Suroto *et al*., 2017), food and beverage (Adinegara & Turker, 2016), transportation (Putra *et al*., 2014), accounting management (Charaf & Rahmouni, 2014), hospital (Chen & Lin, 2013) and others.

In service quality, some researchers have applied IPA using SERVQUAL framework of Parasuraman *et al*. (1988) such as Tzeng and Chang (2011) and Adinegara and Turker (2016). Tzeng and Chang (2011) analyzed restaurant service quality in Taiwan. The result showed that five indicators were prioritized to improve based on IPA. Similarly, Adinegara and Turker (2016) investigated service quality in coffee outlets in Bali. There were two indicators in the first quadrant or prioritized factor.

In another study, IPA is not only used to investigate indicators related to service quality but is also applied to investigate indicators related to product quality such as Zhu *et al*. (2010) with digital camera, Tontini and Picolo (2013) with mobile phone, and Tontini and Silveira (2007) with pizzeria. Those research combined IPA with Kano method to classify product features. However, it is not the focus of this research. This research focuses on developing framework of product and service quality in a bakery and determine the status of indicators. It is graphically-displayed on two-dimensional grid based on Martilla and James (1977).

Moreover, the dimension of product quality is the basic theory of Garvin (1984). Eight dimensions are mentioned in product quality. Those are performance, feature, reliability, conformance, durability, relationship, aesthetics, and perceived quality. Those dimensions can be categorized into three different approaches (product-based approach, user-based approach, and manufacturing-based approach). However, Zeithaml (1988) argued that quality could be categorized into objective quality and perceived quality. Objective quality was a different concept to describe technical and superiority of a product. Product-based quality and manufacturing-based quality of Garvin (1984) were similar to objective quality. On the other side, perceived quality was similar to user-based approach of Garvin (1984). It was based on perception of superiority or product excellence.

Based on Zeithaml (1988), the objective quality measurement in the bakery sector can be conducted by food technologist or engineer. However, as this research is designed from the customers' point of view, it focuses on perceived quality dimension (user-based approach). It is a subjective quality measurement to evaluate the quality from the customers' perspective.

The dimension of service quality refers to the basic theory of Parasuraman *et al*. (1988). It has five dimensions. There are tangibles, assurance, reliability, empathy, and responsiveness. Both product and service quality are analyzed with IPA to know the priorities for improvement that the company should pay attention.

For food company, satisfaction is often measured by a basic of Likert scale (from very satisfied to very dissatisfied) or responding to various attributes of the food quality. Customers tick a number on the scale indicating how satisfied or dissatisfied they are with the respective attributes. However, this approach ignores the fact that some of these attributes are less or more important to the customers than others. Therefore, the uniqueness of this research is conducting product quality along with service quality analysis as a whole view of company in evaluating its external customer satisfaction. Besides that, the evaluation of customer satisfaction using product quality (bread features) and service quality in a bakery are still rarely discussed in scientific journals. Thus, this research develops the framework of product and service quality in the bakery.

The objective of this research is to analyze the indicators of product and service quality. It is related to customer satisfaction in a medium scale Indonesian bakery in Bekasi. This bakery started to produce bread in 2010 with the open kitchen concept and had been providing fresh products. It is located on the roadside and has easy access to the crowd. It has experienced fluctuation of sales and dealt with fierce competition. Although most of the customers tend to perform frequent purchase, some of them show unhappiness and give input in several areas related to product or service quality.

METHODS

This research combines qualitative and quantitative approach. The researchers use qualitative approach because this research explores the product and service quality indicators to articulate customer's perception. Meanwhile, in processing the data, quantitative approach is used. It is because the result of the questionnaire is transformed to number.

There are not many researches of customer satisfaction in bakery especially product quality. Therefore, this research explores the references in food industry and improves the indicators by applying triangulation with bakery expert, practitioner, and academician to reinforce the questionnaire design. The questionnaire has 27 indicators. It consists of 11 indicators of product quality and 16 indicators of service quality. The product quality indicators are defined as indicators that are attached to the final product. Thus,the other indicators are included in service quality. Figure 1 explains the conceptual research framework.

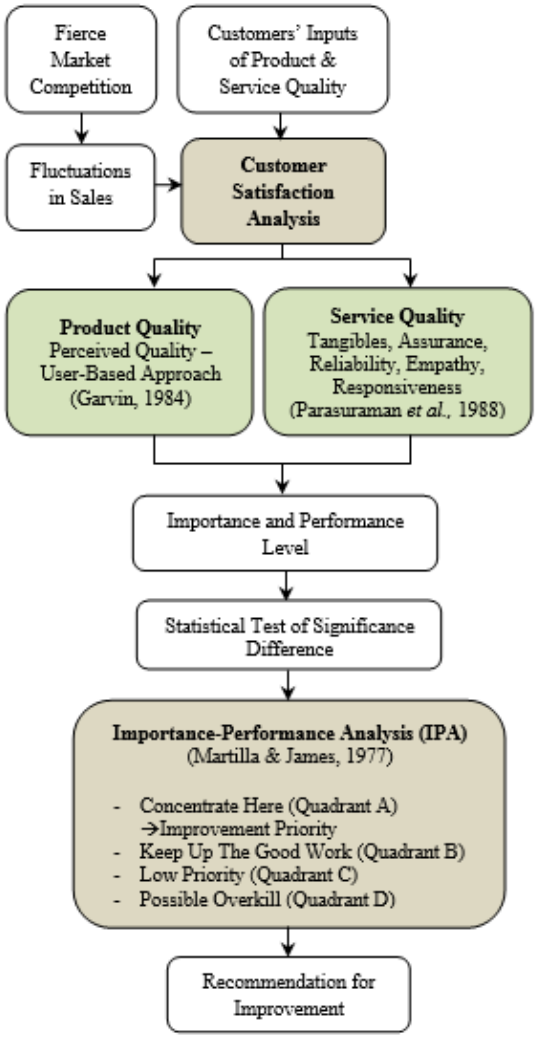

Figure 1 Conceptual Model of Research

Questionnaires are distributed to the customers by using non-probability sampling technique. This sampling technique is applied due to the exact population data that cannot be obtained from the bakery accurately. As a medium scale bakery, it only focuses reporting the number and type of products. It ignores the customer data. Therefore, non-probability sampling technique is chosen. Then, the samples are taken with convenience and purposive sampling method as sampling selection criteria. Dörnyei in Etikan *et al*. (2016) stated that convenience sampling (also known as haphazard sampling or accidental sampling) was a non-probability sampling or non-random sampling that the members of the target population met certain practical criteria. The criteria could be accessibility, geographic proximity, availability at the appointed time, or willingness to participate for research purposes.

As this bakery only serves to take home service and not every customer is willing to participate in this research, convenience sampling method is applied. The samples are taken accidentally especially at the peak hours on both weekdays and weekends. It enables the researchers to get the portrait of heterogenous customers. Moreover, to avoid bias sampling such taking wrong sample (like new customer), purposive sampling is applied. The unit analysis or sample used in this research are the customers who have purchased at least three times in the bakery to give better evaluation of product and service quality for improvement purposes. About 127 complete questionnaires are used as samples from total 132 questionnaires. Five questionnaires are incomplete and deleted. According to Singh-Ackbarali and Maharaj (2014), 75-150 untrained panelists are required for acceptance or liking test. Therefore, the samples used in this research are enough.

Five points of Likert scale are applied in IPA questionnaire. It ranges from strongly unimportant (1) to strongly important (5) for importance level. Moreover, it is strongly dissatisfied (1) to strongly satisfied (5) for performance level. Then, data analysis technique is performed using software of IBM SPSS statistics 23.

Then, validity and reliability tests are conducted as statistical procedure. It is to make sure that the research instrument is valid and reliable. In addition, nonparametric statistical test is applied to know the significance difference between importance and performance. The indicators of customer satisfaction analysis applied in the research are represented in Table 1 and Table 2.

IPA shows the relationship between the importance of an indicator and the satisfaction or perceived performance. The first step in IPA analysis is to calculate the average of importance and satisfaction level for each item of the indicator. It uses the equation as follows.

$$\overline{X_i} = \frac{\sum_{i=1}^{k} X_i}{n} \quad (1)$$

$$\overline{Y_i} = \frac{\sum_{i=1}^{k} Y_i}{n} \quad (2)$$

It consists of three items. First, it is the average weight of the i-item satisfaction level (X_i). Second, there is the average weight of the i-item importance level (Y_i). Last, it is the number of respondents (n).

The second step is to determine the axis (crossing lines) on Cartesian diagram. This research uses median value as crossing lines. Martilla and James (1977) used the median value as axis in the IPA diagram. The use of median values in axis can distinguish attributes of high importance with attributes at low levels of performance. Compared to the mean, median values can be used to avoid strong bias response during investigation (Lirn *et al*., 2012).

The third step is to create a Cartesian diagram consisting of four quadrants. It can be seen in Figure 2. Quadrant A is "concentrate here". In this quadrant, customers assess the very important service attribute. However. It indicates low satisfaction, so the bakery should concentrate in this quadrant to improve performance to get maximum result. Quadrant B is "keep up the good work or keep the achievement". In this quadrant, the customers assess the important service attributes and are satisfied with the performance given. Quadrant C is "low priority". In this quadrant, customers feel less satisfied with the performance and assess the unimportant service attributes. Quadrant D is "possible overkill". In this quadrant, the customers are satisfied with the performance, but they assess the less important service attribute.

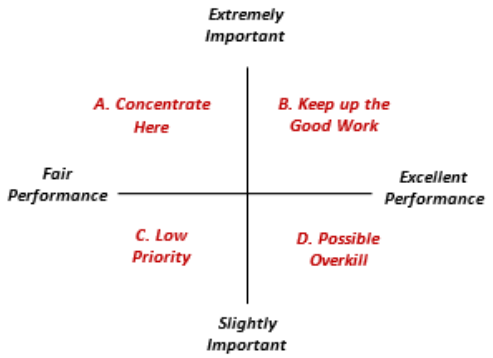

Figure 2 IPA Matrix

(Source: Martilla & James, 1977)

Tabel 1 Product Quality Indicators

No	Indicators	Indicators' Information	References
1	**Taste**	Delicious taste	Nair (2013), Al-Tit (2015),Marić *et al.* (2009)
2	**Texture**	Fine texture	Nair (2013), Marić *et al.* (2009)
3	**Aroma**	Nice aroma	Al-Tit (2015), Marić *et al.* (2009)
4	**Product Appearance**	Good appearance	Marić *et al.* (2009), Donkoh *et al.* (2012)
5	**Portion**	Good portion	Sahari *et al.*(2012)
6	**Variety**	Large variety of products	Nair (2013), Al-Tit (2015), Marić and Arsovski (2010)
7	**Freshness**	Good freshness	Nair (2013), Al-Tit (2015), Tzeng and Chang (2011), (Donkoh *et al.* (2012)
8	**Health**	Healthy nutritious products	Al-Tit (2015), Tzeng and Chang (2011), Donkoh *et al.* (2012)
9	**Packaging**	Nice packaging	Nair (2013), Marić *et al.* (2009), Marić and Arsovski (2010), Al-Tit (2015)
10	**Price Fairness**	Compatible price	Nair (2013), Hanaysha (2016), Jakpar *et al.* (2012), Marić *et al.* (2009)
11	**Discount**	Interesting discount	Jakpar *et al.* (2012)

Tabel 2 Service Quality Indicators

No	Indicators	Indicators' Information	References
1	**Outlet**	Clean, neat, and comfortable outlet	Adinegara and Turker (2016), Al-Tit (2015), Tzeng and Chang (2011)
2	**Food Storage**	Good food storage	Marić *et al.* (2009)
3	**Staffs' Appearance**	Clean, neat, and charming appearance of the staffs	Adinegara and Turker (2016), Al-Tit (2015)
4	**Product Information (cues)**	Sufficient product information	Nair (2013)
5	**Competence**	Bakery staffs comprehend to answer questions	Al-Tit (2015), Tzeng and Chang (2011), Rahman *et al.* (2012)
6	**Courtesy**	Bakery staffs serve customers politely and friendly	Adinegara and Turker (2016), Al-Tit (2015), Tzeng and Chang (2011)
7	**Process**	Production process assurance (hygiene process)	Marić *et al.* (2009)

Tabel 2 Service Quality Indicators
(continued)

No	Indicators	Indicators' Information	References
8	**Accurate Charge**	Accurate transaction of payment	Al-Tit (2015), Adinegara and Turker (2016)
9	**Committed Service**	Commitment to the services as promised	Al-Tit (2015), Rahman *et al.* (2012)
10	**Product Supply**	Products are available in sufficient amount	Marić *et al*. (2009), Marić and Arsovski (2010), Donkoh *et al.* (2012)
11	**Operating Hours**	Comfortable operating hours	Al-Tit (2015), Donkoh *et al.* (2012)
12	**Personal Attention**	Bakery staffs give personal attention to the customer	Adinegara and Turker (2016), Tzeng and Chang (2011), Donkoh *et al.* (2012)
13	**Keeping Manner**	Bakery staffs keep and pack the products in a good manner	Al-Tit (2015)
14	**Response**	Bakery staffs are responsive to the customers' need	Adinegara and Turker (2016), Tzeng and Chang (2011), Donkoh *et al.*(2012)
15	**Promptness**	Bakery staffs provide prompt services	Adinegara and Turker (2016), Al-Tit (2015), Tzeng and Chang (2011)
16	**Complaint Handling**	Complaints or questions are responded quickly	Adinegara and Turker (2016)

RESULTS AND DISCUSSIONS

Validity and reliability test are conducted by the questionnaire. Table 3 and Table 4 show the validity test results for product and service quality.

Table 3 Validity Test of Product Quality

Item	Coefficient	r-Table	Remark
p1	0,786	0,362	Valid
p2	0,842	0,362	Valid
p3	0,856	0,362	Valid
p4	0,885	0,362	Valid
p5	0,864	0,362	Valid
p6	0,817	0,362	Valid
p7	0,817	0,362	Valid
p8	0,855	0,362	Valid
p9	0,816	0,362	Valid
p10	0,875	0,362	Valid
p11	0,704	0,362	Valid

(Source: Data processed, 2017)

Based on Table 3, no item has a validity coefficient value below 0,362 (r-Table). It can be concluded that 11 items of product quality in the questionnaire are valid. Meanwhile, the alpha value of reliability coefficient is 0,952. It means the research instrument is reliable.

Similarly based on Table 4, no item has a validity coefficient value below 0,362 (r-Table). It can be concluded that 16 items of service quality in the questionnaire are valid. The alpha value of reliability coefficient is 0,977. It means the research instrument is reliable.

Table 4 Validity Test of Service Quality

Item	Coefficient	r-Table	Remark
p1	0,862	0,362	Valid
p2	0,794	0,362	Valid
p3	0,824	0,362	Valid
p4	0,846	0,362	Valid
p5	0,836	0,362	Valid
p6	0,850	0,362	Valid
p7	0,872	0,362	Valid
p8	0,882	0,362	Valid
p9	0,844	0,362	Valid
p10	0,880	0,362	Valid
p11	0,858	0,362	Valid
p12	0,876	0,362	Valid
p13	0,866	0,362	Valid
p14	0,888	0,362	Valid
p15	0,832	0,362	Valid
p16	0,892	0,362	Valid

(Source: Data processed, 2017)

Majority respondents who fill the questionnaire are women (77 %). They are 26-45 years old (55%). They have senior high school education (42%). Some of them work private employees (28%). They spend <Rp50.000,00 in every transaction (68%), and visit the bakery 2-3 times/week (47%).

The descriptive statistics of customers' perceptions show that there is significant difference between importance and performance of product and service quality at the α level 0,05. The phenomena show that customers require the company to give better product and service quality compared to what is currently performed.

Then, IPA is conducted. IPA is a low-cost, easy-to-understand technique, and important insight for company. It should be concerned. Moreover, it identifies the areas that use too many resources (Martilla & James, 1977). In this research, IPA analysis is performed to describe the status of the indicators from the customers' point of view. Table 5 shows mean importance and performance of product quality indicators. It results from questionnaire data processing.

Moreover, Figure 3 is Cartesian diagram of product quality. The diagram shows that taste indicator occupied position in Quadrant A (concentrate here). Product appearance, freshness, health, and price fairness are in Quadrant B (keep up the good work). Portion, packaging, and discount are in Quadrant C (low priority). The texture is in Quadrant D (possible overkill). Then, aroma and variety are located exactly on the crossing lines.

Table 5 Mean Importance and Performance of Product Quality Indicators

IPA Code	Product Indicators	Importance	Performance
1	Taste	4,46	4,27
2	Texture	4,39	4,29
3	Aroma	4,31	4,28
4	Product appearance	4,44	4,31
5	Portion	4,34	4,28
6	Variety	4,43	4,29
7	Freshness	4,50	4,37
8	Health	4,51	4,36
9	Packaging	4,41	4,32
10	Price fairness	4,48	4,38
11	Discount	4,38	4,34

(Source: Data processed, 2017)

Improvement priority based on the diagram is the taste indicator. The managerial implication based on the result diagram of product quality is that the bakery should pay more attention to this indicator to increase the satisfaction. Improving recipe by using better quality ingredients is suggested to produce preferred taste. The indicators in Quadrant B (product appearance, freshness, health, and price fairness) are the bakery's strength and should be maintained. The production chief must control the ingredient quality and production process to produce good quality products in every production schedule. Stable production outcome should be targetted to maintain satisfaction. In addition, the price is always compatible with the ingredients' quality. Even though indicators in Quadrant C (portion, packaging, and discount) are considered low priority, its presence cannot be dismissed. The bakery should maintain those indicators. Meanwhile, the bakery should not spend many expenses for indicators in Quadrant D (texture). It is better to allocate the resources to the Quadrant A that becomes the priority for product quality improvement. The bakery should maintain the aroma indicator on the crossing lines because it is considered as low importance. However, its presence can evoke pleasure. Besides that, the variety indicator on the crossing lines should be maintained or improved for better satisfaction. Table 6 shows the mean importance and performance of service quality indicators.

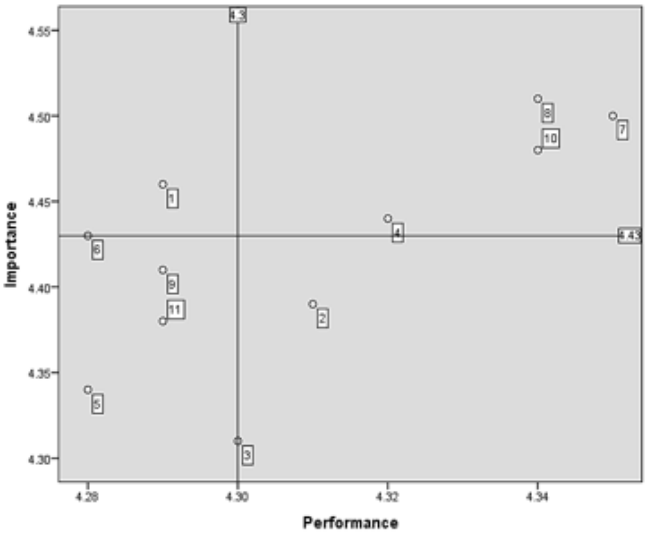

Figure 3 Cartesian Diagram of Product Quality
(Source: Data processed, 2017)

Cartesian diagram of service quality in Figure 4 shows that courtesy indicator is in Quadrant A (concentrate here). The process, accurate charge, keeping manner, and promptness are in Quadrant B (keep up the good work). Moreover, outlet, product information, competence, committed services, product supply, and personal attention are in Quadrant C (low priority). Operating hours and complaint handling are in Quadrant D (possible overkill). Food storage, staffs' appearance, and response are exactly on the crossing lines.

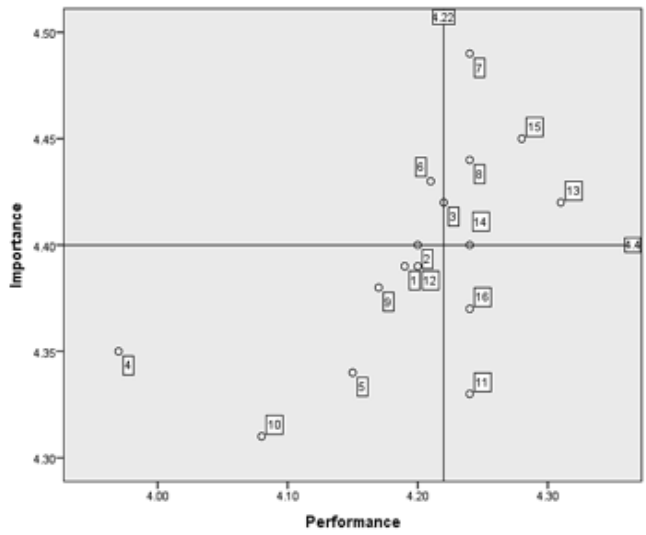

Figure 4 Cartesian Diagram of Service Quality
(Source: Data processed, 2017)

Tabel 6 Mean Importance and Performance of Service Quality Indicators

IPA Code	Service Quality Indicator	Importance	Performance
1	Outlet	4,39	4,18
2	Food storage	4,40	4,20
3	Staff's appearance	4,42	4,23
4	Product information/ cues	4,35	3,98
5	Competence	4,33	4,16
6	Courtesy	4,43	4,24
7	Process	4,49	4,27
8	Accurate charge	4,43	4,27
9	Committed services	4,38	4,21
10	Product supply	4,32	4,13
11	Operating hours	4,33	4,29
12	Personal attention	4,40	4,27
13	Keeping manner	4,42	4,38
14	Response	4,39	4,33
15	Promptness	4,45	4,36
16	Complaint handling	4,37	4,33

There is the managerial implication based on the diagram result of service quality. This company should prioritize the improvement of the courtesy indicator in Quadrant A. The recommendation suggested for courtesy indicator is by conducting customer service training for staffs to empower them with knowledge and skill to serve customers better. Then, the indicators in Quadrant B (process, accurate charge, keeping manner, and promptness) should be maintained as they are the strength of company service. Otherwise, they will be at risk to fall into Quadrant A.

Meanwhile, the indicators in Quadrant C (outlet, product information, competence, committed services, product supply, and personal attention) that are considered low priority should also be maintained. It is because their presence is still required and cannot be removed. The resource used in Quadrant D (operating hours and complaint handling) can be allocated to the Quadrant A. It can become the priority for service quality improvement. Staffs' appearance indicator on the crossing lines must be maintained unless it may fall into Quadrant A. It is better to improve it to achieve higher satisfaction. Meanwhile, the other indicators on the crossing lines (food storage and response) should also be maintained.

Compared to the previous research of Zhu *et al*. (2010), Tontini and Picolo (2013), and Tontini and Silveira (2007), this research confirms that IPA can be explored for product quality indicators. The research outcome gives deeper insight into management for product improvement purpose. Although there is a unique characteristic in food product that some product features may be interrelated, the information obtained can be used in selecting which feature should be prioritized in product improvement to achieve better customer satisfaction. For example, when a product development specialists will improve a product, they should give more attention to the recipe. It will give result in taste improvement more than the other features. Meanwhile, the service quality analysis in this research confirms the research of Tzeng and Chang (2011) and Adinegara and Turker (2016). It suggests that IPA can analyze service quality and provide information for management in taking strategic actions.

The results obtained in this research are different from previous research because of the different research objects with different features. As mentioned earlier that customer satisfaction analysis for bread product and bakery service are still rarely discussed. Thus, this research gives contribution in building a customer satisfaction framework in a bakery using product and service quality features. It gives a whole insight for management to analyze its external customers. The results achieved in this research only valid for this case study and can not be generalized. However, the framework can be applied to other bakeries which have similar condition.

CONCLUSIONS

The conclusion that can be drawn from the research case in the bakery is the taste indicator of product quality and courtesy indicator of service quality. Those are considered as the priorities for improvement in Quadrant A of IPA. This bakery should pay attention to both indicators. Improving the recipe by using better quality ingredients is suggested to produce preferred taste. Meanwhile, to conduct customer service, it is suggested to empower staffs with knowledge and skill to serve customers better.

The limitation of this research only describes the status of indicators, and it cannot provide direction to how all the indicators should be treated to enhance the managerial goal. This is because all indicators are treated with the same weight. Further research is suggested to perform by using Analytic Hierarchy Process (AHP). Therefore, each indicator has its weight, and the method can give direction to the company in achieving customer satisfaction. Moreover, future study by using PLS-SEM can also be considered to evaluate the influence of the indicators applied in this research.

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