Applying CZSQ and CZIPA for Assessing Service Quality of Domestic Low-Cost Carriers

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Abstract—The rivalry between full-service carrier (FSC) and low-cost carrier (LCC) nowadays becomes one of the most inte-resting areas in airline industry to be studied. However, the later has been considered a profitable market niche since it eliminates some common services in order to reduce the associated costs. In addition, if LCC could provide an excellent service quality to its customers, a competitive advantage also could be attained. This paper aims to assess the service quality of domestic LCC based on the competitive zone of tolerance by benchmarking against its competitors and prioritize the service attributes to be improved. The first objective is obtained by using customer zone of tolerance-based service quality (CZSQ) and the second by CZSQ-based importance performance analysis (CZIPA). A case study to demonstrate the applicability of the methods was conducted to assess the service quality of Citilink, which is an LCC hosted in Indonesia. Result shows that respondents are satisfied enough with the service provided by the airline. Nevertheless, there are rooms of improvement since most of the service attributes belong to the "possibly overkill" quadrant, i.e. high performance but less important. If the efforts for reaching customer satisfaction associated with these attributes are app- lied to other areas, it is supposed to bring better results and reduce costs.

Index Terms—Airline service, benchmarking, CZIPA, CZSQ, low-cost carriers, service quality.

I. INTRODUCTION

The airline industry is considered as the second most risky industry—after hospitality industry—to invest. However, the investors are still constantly attracted to it despite of its eco-nomic state. One of the main reasons is that it is one of a few industries that can provide a large payback if this work out well [1]. Mostly, there are two kind of services that can be provided by the airlines for scheduled flights, i.e. full-service carrier (FSC) and low-cost carrier (LCC). The FSC provides a reliable, professional, and comfortable service to its custo-mers. On the other hand, the later sacrifices much of those in order to provide the customers with a cheaper flight, since the reduction of costs lies at its cores; hence it is also popularly known as "no-frills", discount, or budget carrier (airline). It aims to offer lower fares as well as eliminating some luxuries and services that were commonly guaranteed [2]. In FSC, if things go wrong, such as delays or lost baggage, there is a customer service that will help and compensate the customers for these inconveniences. However, in LCC, it offers very limited customer service to its passengers. Other treatment occurs when a flight is being cancelled: the FSC can use its alliance partners to help get the passengers home; while the LCC mostly does not have partner airlines to do this.

Although the FSC seems surpasses the LCC in providing a better service to the customers, the LCC won recognition as a relevant and distinct business strategy as well as a profitable market niche [3]. The use of an on-line booking system, the suppression of free in-flight catering, the use of secondary airports connected through a point-to-point network, and the use of homogeneous fleets are only a part of the innovative choices made by LCC [4]. Recently, the competition between FSC and LCC has become one of the most significant issues regarding the airline industry.

Back in time, the low-cost business model was introduced by Southwest Airlines in the US at the beginning of the 1970s after deregulation of the airlines markets. Ryanair was one of the first airlines in Europe to adopt the low-cost model in 1992; and now becomes one of the most successful LCC. Following the successful paradigm of Southwest Airlines and Ryanair, the low-cost business model has spread worldwide.

Southeast Asia has emerged over the past two and half decades as one of the world's fastest growing developing markets. This rapid growth also has primarily been driven by fast expansion of the LCC. This is supported by the fact that a growing segment of middle-income people started to switch from bus, rail, and ferry to air transport for their domestic and international trips, as air transport became more affordable [5]. This phenomenon has occurred mainly in Indonesia, Malaysia, Thailand, and the Philippines. Since now, air trans-port is not a common traveling mode for the developing Asian countries prior to the recent emergence of LCC.

LCC capacity in Southeast Asia has increased eight-fold over the last 10 years, from about 25 million seats in 2004 to nearly 200 million in 2014, see Fig. 1. However, this figure is expected to increase by at least ten aircraft per annum over the next several years. In contrast, FSC capacity in the same period has only increased by approximately 45%, or less than 5% per annum, from about 180 million seats in 2004 to 260 million seats in 2014 [6]. In Indonesia, the data by Statistics Indonesia (known in Indonesia as BPS or *Badan Pusat Sta-tistik*) shows that the number of passengers in 2015 reached 82.5 million people as 13.7 million for international pas-sengers while the rests are domestic passengers. The amount of domestic passengers increased by 16.74% while for inter-national raised by 0.27% from last year [7].

While the demand for LCC is considerably high and

promising in Southeast Asia region, the development of LCC lags behind the LCC development in North America and Europe. There, LCCs have been forced to compete with the large FSC, especially on the lower-end of the fare spectrum. In addition to lowering fares, FSCs have often resorted to the launch of their own low-cost offshoots in response to low-cost competition [5].

From the LCC managerial perspective, understanding and retaining the quality of the service could be one of the most effective way to be competitive in this global market. The service quality has been considered as a critical factor for the success of the service providers because of its close connection with customer satisfaction [8]-[10]. Moreover, the customer satisfaction might lead to repeat purchase [11], [12], customer retention [13], customer loyalty [14], retailer sales performance [15], as well as profitability [16]-[18].

This research tried to apply the customer zone of tolerance-based service quality (CZSQ) to assess the service quality of the domestic LCC based on the competitive zone of tolerance by benchmarking against its competitors, as well as to prioritize the service attributes to be improved using CZSQ-based IPA (CZIPA) [19]. The CZSQ is a novel assessment tool which was proposed to handle the inability of zone of tolerance (ZOT) by [20] to evaluate the priority of improving the service quality of the attributes [21]. The prioritization must be done by the service providers since they are constrained by limitations on the resources they have. Although the importance-performance analysis (IPA) by [22] could be utilized to do so, its applicability has certain limitations [23]. First, because there is no definitive standard for setting the range of horizontal and vertical axes, measurement scale, and placement of the vertical and horizontal lines, it might lead to the measurement bias [24], [25]. IPA is also criticized that it only regards the firm's own performance but disregards the relative performance of its competitors [26]. Another limitation is that IPA does not account for differences between the characteristics of service attributes. The CZIPA as a brand new framework by [19] is considered capable of managing those issues.
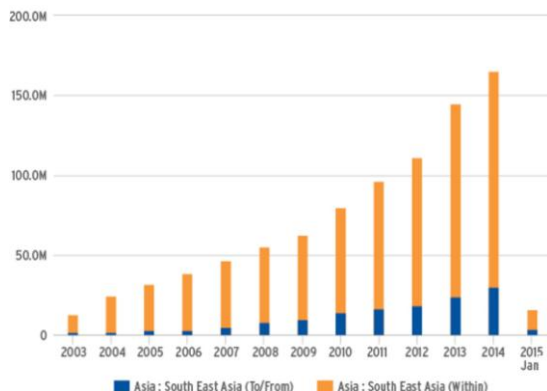

Fig. 1. Total number of LCC seats within Southeast Asia and to/from Southeast Asia: 2003 to January 2015. Source: [6] .

Despite of the superiority of CZSQ and CZIPA on ZOT and IPA, the applications in the airline services, especially in domestic LCC, remain limited; hence, this study is intended to make a contribution by applying those in a domestic LCC environment. This can considerably assists the managers of

the domestic LCC to determine comprehensively their service performance and position in a competitive market. In this study, these CZSQ and CZIPA are applied to the one of the most prominent domestic LCC in Indonesia, i.e. Citilink, a subsidiary of Garuda Indonesia. Although there are a plenty of domestic LCC in Indonesia beside Citilink, e.g. AirAsia Indonesia (subsidiary of AirAsia), Lion Air, and Wings Air (subsidiary of Lion Air), the Citilink has been chosen as the subject of this research as it is elected as Indonesia's leading low cost airline in Indonesia Travel and Tourism Awards (ITTA) 2015/2016. The award was achieved as Citilink did balance between affordable prices and comfortable services.

II. METHODS

A. CZSQ

To assess the service quality of the LCC and the position against its competitors, in this study, the CZSQ was well-applied. The CZSQ is based on the competitive zone of tolerance (CZOT) which was inspired by ZOT by [20]. ZOT refers to the area between the service level which the customer believes that an excellent service provider should offer (desired service/DS or ideal service performance) and the service level which a customer can barely accept (adequate service/AS) [20], [27]. Moreover, ZOT evaluates how perceived service (PS) differs from desired service (DS), a difference referred to as service superiority (SS). ZOT also determines how PS and AS differ from each other, a difference referred to as service adequacy (SA). If customers' perceived service falls below the adequate service then they become frustrated and dissatisfied; when the customers' perceived service exceeds a desired service, they feel delighted.

According to [19], the concept of ZOT was refined and referred as CZOT. The customers' perceived service of competitors (CPS) is regarded as the minimum level of service performance or adequate service (AS). Therefore, the CZOT can be viewed as the gap between customers' desired service performance (CDS) of the service provider to be studied and the CPS. Based on CZOT, the CZSQ was proposed to assess the service quality of the service providers. It is based on the concept of the performance ratio in the customer satisfaction area [28]; hence the CZSQ can be expressed as follows:

$$CZSQ = \frac{PS - CPS}{CDS - CPS} = \frac{CSA}{CZOT} \qquad (1)$$

In (1), CDS can be regarded as the maximum value of the goal and CPS as the minimum value of the goal. The gap between CDS and CPS determines the size of CZOT, while the gap between PS and CPS represents the service adequacy, which is referred as the competitive service adequacy (CSA). The meaning of CSA divided by the CZOT represents the performance ratio of competitive service quality according to the customers' expectation [19].

The different values of CZSQ have different implication for service quality as follows:
1) CZSQ < 0: PS is lower than CPS. Customers may be dissatisfied with the performance of the service provider and possibly create a negative word-of-mouth; managers

should actively make some improvements. A smaller value of CZSQ implies that the corresponding improvement must be made with a higher priority.

2) $0 \leq CZSQ \leq 1$: PS is approximately equal to, or higher than, CPS; hence, the performance has not yet reached the highest expectation of customers. In this situation, the customer is satisfied, and the company has a competitive advantage [29]. A larger CZSQ implies that the corresponding improvement has a lower priority.

3) $1 < CZSQ$: PS exceeds FDS. In this situation, the customer is delighted and feel satisfied, so that the service provider enjoys high customer loyalty [29].

B. CZIPA

The traditional IPA by [22] is well known as an approach for prioritizing improvements to the service quality. It is popular due to the fact that every service provider is limited by its resources, so that it has to be decided how those limited resources are best deployed to attain the highest level of customers' satisfaction. It is a two dimensional state space where the vertical axis describes the importance of the service quality's attributes, while the horizontal describes how well the service provider is performing the service.

The IPA's two-dimensional state space were categorized into four quadrants: concentrate here, keep up with the good work, low priority, and possible overkill. The first quadrant, i.e. concentrate here, which is located in the north-west corner, had the attributes that become the priority of the management due to having high importance but indicates low performance ratings. The second quadrant: keep up with the good work, identified that both importance and performance of the customers already high rated and should be maintained well by the management. Attributes that were rated low in both importance and performance were put in the third quadrant: low priority, which is located in the south-west corner. The last is possibly overkill, where there were unnecessary attributes that need to be maintained by the management due to having low importance but high performance rating. This IPA has been widely used in service industries; see for example [30]-[32].

Despite of its simplicity, the IPA suffers for several conditions, such as: (a) its application is hindered by measurement bias; (b) it needs a crosshair placement mechanism to enhance the reliability of managerial interpretations; (c) it does not account for differences between the characteristics of quality attributes; (d) it ignores the relative performance of competitors in the competitive marketplace. As a result, the CZIPA concept extends the applicability of the traditional IPA in market competition, eliminates measurement bias, and solves the problem of crosshair placement [19].

In CZIPA, the horizontal axis represents the CZSQ, and the vertical axis represents the difference in importance (service provider to be studied vs. its competitors). It deduces the following equation:

$$d = CZSQ - DI, \qquad (2)$$

where the DI refers to the difference in importance, or I_1 - I_2 (subscript 1 refers to the service provider to be studied and subscript 2 refers to its competitors).

The CZIPA is then divided the two dimensional state space into four quadrants which have the same meanings as the quadrants in traditional IPA. A diagonal line (ideal line) where CZSQ = DI pass through the original; thus, service attributes that fall to the left of the diagonal line are associated with a service level that is worse than that of its competitors. According to this principle, service attributes on a diagonal line that is parallel to the ideal line have the same gap (CZSQ - DI). Additionally, when two service attributes fall on different diagonal lines parallel to the ideal lines, the one on the diagonal that is further to the right has a larger positive gap, i.e. better performance. The example of CZIPA diagram is depicted in Fig. 2.

The different values of *d* have different implication as follows [19]:

1) $d \geq 0$: a situation in which not only the particular service attributes fall on the ideal line or to the right of it, but also that the service performance equals or exceeds the service performance of competitors. Therefore, the improvement of this particular service attributes has a low priority.

2) $d < 0$: a situation in which a particular service attribute falls to the left of the ideal line, indicating that the performance in terms of this service attribute is worse than the competitors. Hence, the improvement of this particular service attribute has a high priority.

C. Service Quality Attributes of the Domestic LCC

The objectives of this study are twofold: to assess the service quality of the domestic LCC by benchmarking against its competitors using CZSQ, as well as to prioritize the service attributes to be improved using CZIPA. Among the popular domestic LCC in Indonesia, Citilink, as a subsidiary of Garuda Indonesia is selected as the subject of this study due to its superior service performance as it is elected as Indonesia's leading low cost airline in ITTA 2015/2016.

The research questionnaire used in this study has been developed to assess the service quality of airline services by [33]. The service quality measurement consists of eight dimensions, which are employees, tangibles, responsiveness, reliability and assurance, flight patterns availability, image, as well as empathy. However, the item statements belong to each dimension had been slightly modified since this study was conducted in domestic LCC.
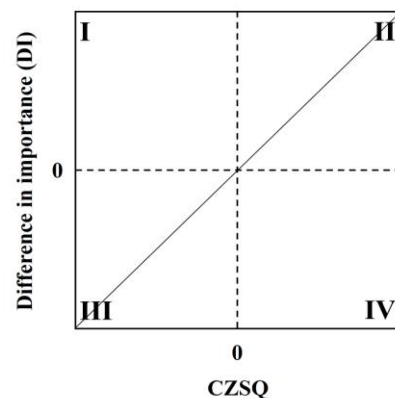

Fig. 2. Example of CZIPA analysis diagram.

The first dimension, i.e. employees, refers to all aspects belong to the employee of the domestic LCC, from behavior of the employees to knowledge of the employees. The second dimension, tangibles, is about physically viable aspects. It could be viewed from the availability of waiting lounges, in-flight entertainment facilities, and the quality of the food and beverages. Responsiveness on the other hand, is willingness to respond to the wishes or needs of the customers' support and fast services. It includes the handling of baggage or delays, employees' speed handling request, and employees' willingness to help the customers. Reliability and assurance as the fourth dimension is the ability to provide service immediately and accurately. It relates to the safety, on time departure and arrival, as well as clean and comfortable seat. Flight patterns consists of the ability to handle flight problems, non-stop flights, and convenient flight schedules and enough frequencies. Move to the sixth dimension, availability, consists of the performing the services right at the first time and availability of travel related partners. Image as the seventh dimension refers to the reputation of the airline company. It contains from the image of the domestic LCC from the customers' point of view to the employees' foreign language level. The last dimension, i.e. empathy, means the ease of relationships, personal attention, and understand the needs of the customers. It can be observed from handling of the availability of air/accommodation packages, employees' behavior to delayed passengers, and understanding of the passengers' specific needs. The item statements to assess the service quality of the domestic LCC can be seen in Table I.

TABLE I: DIMENSIONS AND ITEM STATEMENTS USED IN THIS STUDY

Dimensions	Item Statements
Employees	E1: Behavior of employees
	E2: Knowledge of employees
	E3: Courtesy of employees
	E4: Neat and tidy employees
Tangibles	T1: In-flight newspaper, book, etc., facilities
	T2: In-flight internet/email/fax/phone facilities
	T3: Availability of waiting lounges
	T4: Quality of food and beverage
	T5: In-flight entertainment facilities/programs
Responsiveness	R1: Handling of delayed, etc. baggage
	R2: Efficient check-in/baggage handling services
	R3: Employees' speed handling request/ complaints
	R4: Quality of the reservation services
	R5: Employees' approach against unexpected situations
	R6: Employees' willingness to help
Reliability and assurance	RA1: Safety
	RA2: On-time departure and arrival
	RA3: Clean and comfortable interior/seat
	RA4: Consistent ground/in-flight services
Flight patterns	F1: Flight problems
	F2: Convenient flight schedules and enough frequencies
	F3: Non-stop flights
Availability	A1: Performing the services right at the first time
	A2: Availability of travel related partners
Image	I1: Image of the airline company
	I2: External appearance of the airplane
	I3: Employees' foreign language level

Empathy	EM1: Employees' behavior to delayed passenger
	EM2: Individual attention to passengers
	EM3: Availability of air/accommodation packages
	EM4: Advertising of the airline company
	EM5: Handling of the fare problems
	EM6: Understanding of passengers' specific needs

III. CASE STUDY

A. Survey Method and Respondents Profile

The survey was conducted to assess the service quality of the Citilink against its competitors. The questionnaire comprises three sections. The first section of the questionnaire collects demographic data concerning the respondents. The second section addresses 33 service attributes, in which customers evaluated the importance of each service attribute. The respondents (customers of the Citilink) were asked to provide the names of other domestic LCCs in Indonesia that they visited frequently before they answered the questions in the second section. These domestic LCCs were then regarded as the competitors. Designed in a two-column format, the second section of the questionnaire asks the respondents, "Based on your experience of the service you received after you flight with Citilink, evaluate the importance of each following service attributes (column 1: Citilink and column 2: compete- tors). The question items were measured using a Likert five- point scale: ranging from "very unimportant" (1) to "very important" (5).

The third section has a three-column format. Its content is largely similar to that of the first section and it also addresses the 33 service attributes. This section evaluates the service quality provided by Citilink that is perceived and desired by the respondents. The first column asks the respondents to score the service level that is provided by the competitors; the second column asks the respondents to rate the service they receive from Citilink, and the third column asks them to indicate their desired service levels. The question items are also measured on a Likert five-point scale, ranging from "very low" (1) to "very high" (5).

The requirements to participate in this survey are over 18 years of age and have been experienced in flight with Citilink and another experienced in flight with other domestic LCC, such as AirAsia Indonesia, Lion Air, and Wings Air. The potential respondents were first approached and asked if they agreed to participate in the survey. Two hundred and eight respondents were participated in the survey. They consist of students, employees, civil workers, doctors, housewives, and entrepreneurs, indicates plenty diversity for the purpose of the research. Of the 208 respondents, most of the respondents interviewed were female (55%). Approximately, 85% of the respondents ranged from 18-25 years old; 2% ranged from 26-40 years old; and the rests are 41-60 years old. In sum, the profile of the respondents is shown in Table II.

The reliability test with Cronbach's alpha [34] was conducted to check whether the participants' scores on any item statements tend to relate to other items or not. The Cronbach's alpha for each dimension of the performance section of the Citilink are shown in Table III. Note that all of the dimensions have the value of Cronbach's alpha more than 0.7, indicated that the questionnaire being utilized is reliable [35].

B. CZSQ Result

All item statements of each dimension that are shown in Table 1 are computed throughout all respondents to obtain the value of CZSQ, as a measurement unit to assess the service performance of Citilink by comparing with its competitors. The results are shown in Table 4. Overall, the highest score of service attributes is I1, i.e. image of the Citilink, with the score of CZQS of 0.61. It seems that the Citilink gained a good reputation from the customers' point of view rather than its competitors because Citilink has provided decent services to its customers. The customers are then pleased with the performance of Citilink; hence, they put a good mark, a high score on the questionnaire associate with the item statements.

TABLE II: PROFILE OF THE RESPONDENTS

Variable	Percentage
Age in Year	
18 - 25	85%
26 - 40	2%
41 - 60	13%
Sex	
Male	45%
Female	55%
Occupation	
Student	65%
Employee	14%
Civil Worker	7%
Entrepreneur	3%
Others	10%
Education	
High school	59%
University	41%
Average use of airline services	
Once a week or less	2%
Once a month	11%
Once three month	26%
Once six month	40%
Once a year	12%
More than once a year	9%

TABLE III: CRONBACH'S ALPHA FOR EACH DIMENSION OF THE SERVICE QUALITY OF DOMESTIC LCC (THE PERFORMANCE)

Dimensions	Number of Item Statements	Cronbach's Alpha
Employees	4	0.854
Tangibles	5	0.865
Responsiveness	6	0.909
Reliability and assurance	4	0.864
Flight patterns	3	0.768
Availability	2	0.730
Image	3	0.808
Empathy	6	0.881

The other highest CZSQ scores of item statements for each dimension are as follows. For the employees dimension behavior of the employees (E1) has the highest score of 0.39. It seems that the employees behave in a good manner, greet the passengers politely, and treat them in a proper way. The second dimension, i.e. tangibles, the highest score of CZSQ is obtained by T1, i.e. in-flight newspaper, books, etc. facilities. It is considered as a must for airline service to provide the passengers a newspaper when they went into the aircraft. However, the respondents of the survey might think that across the domestic LCC in Indonesia, the Citilink offers various kind of newspapers to the passengers. R1 which is handling of delays and baggage gets the highest score in responsiveness dimension. It seems that comparing to the other competitors, Citilink did the best to handle problems related to delays and baggage issue. Move to the next dimension, reliability and assurance, the item statement which has the highest score is RA2, i.e. on-time departure and arrival. On-time is considered as one of a major issue in LCC. Most of LCC face the problem related to on-time departure. In Indonesia, the passengers even could wait for more than three hours for boarding! Citilink might be thought by the res- pondents as a superior LCC rather than others in the case of on-time departure and arrival. It is regarded as a good signal since the passengers must select the airline that has punctual records. F2 which is convenient flight schedules and enough frequencies has the highest score on flight patterns dimension. Among the other competitors, the respondents might believe that the Citilink provides enough flight frequencies to its passengers and convenient flight schedules. If these two factors are managed well, the airline service could gain customer satisfaction since the passengers can be very flexible to arrange their schedules if the airline provides sufficient flight frequencies in one day. The last two dimensions, i.e. availability and empathy, the item statements which have the highest scores are A1: performing the service right at the first time and EM1: employees' behavior to delayed passengers. Comparing among Citilink's competitors, it is regarded to provide better service performance in the case of those item statements.

On the other hand, there are the lowest performance scores that have the values near zero, i.e. T2 (in-flight internet/ e-mail/fax/phone facilities) of tangibles dimension, A2 (availability of travel related partners) of availability dimension, and EM5 (handling of the fare problems) of empathy dimension. Those have values of 0.04, 0.04, and 0.07. It implies that the management should not be proud about the current condition. Although Citilink looks superior compared with its competitors and the customers seem satisfied enough with the service provided by Citilink (all CZSQ values are positive), however, the airline still needs to maintain and improve its service in order to attain the maximum customer satisfaction, i.e. the customer's expectation. It can be seen from the values of DI (see Table IV) that indicate the level of important statements for customers only have two positive item scores. These positive scores mean that corresponding item statements are believed to be less important by the respondents than Citilink's competitors. The CZIPA model then plays a significant role to build strategies to reach the customer satisfaction based on the importance and the performance from the customers' point of view. It is described in the following section.

C. CZIPA Result

The CZIPA model is used to prioritize the service attributes to be recommended to the management for the improvement. In CZIPA diagram, four quadrants divide the item statements to be assessed (see Fig. 2). The horizontal axis refers to how well the firm provides the service to the customers compared to its competitors; while the vertical axis refers to the difference importance (DI). When the value

of DI is positive, it shows that the importance of the corresponding attributes are less important than its competitors; vice versa.

TABLE IV: CZSQ RESULT

Dimensions		CSA	CZOT	CZSQ	DI
Employees	E1	0.34	0.88	0.39	-0.27
	E2	0.18	0.75	0.24	-0.14
	E3	0.20	0.71	0.28	-0.22
	E4	0.08	0.63	0.13	-0.08
Tangibles	T1	0.27	1.05	0.26	-0.16
	T2	0.05	1.25	0.04	-0.03
	T3	0.15	1.19	0.13	-0.17
	T4	0.19	1.18	0.16	-0.07
	T5	0.19	1.35	0.14	-0.15
Responsiveness	R1	0.58	1.36	0.43	-0.37
	R2	0.29	1.04	0.28	-0.35
	R3	0.34	1.06	0.32	-0.31
	R4	0.17	0.74	0.23	-0.22
	R5	0.20	0.93	0.22	-0.21
	R6	0.18	0.75	0.24	-0.11
Reliability and assurance	RA1	0.48	1.05	0.46	-0.33
	RA2	1.04	1.82	0.57	-0.43
	RA3	0.40	1.11	0.36	-0.14
	RA4	0.35	0.95	0.37	-0.13
Flight patterns	F1	0.37	0.99	0.37	-0.35
	F2	0.82	1.57	0.52	-0.37
	F3	0.21	0.90	0.23	-0.13
Availability	A1	0.20	0.77	0.26	-0.12
	A2	0.02	0.55	0.04	0.04
Image	I1	0.89	1.47	0.61	-0.42
	I2	0.20	0.73	0.27	-0.20
	I3	0.12	0.66	0.18	-0.19
Empathy	EM1	0.29	0.92	0.32	-0.05
	EM2	0.16	0.73	0.22	-0.03
	EM3	0.06	0.93	0.06	-0.07
	EM4	0.16	0.76	0.21	-0.03
	EM5	0.06	0.83	0.07	0.01
	EM6	0.12	0.74	0.16	-0.05

The results of the case study showed that the respondents assess the importance of service attributes of Citilink's competitors are more important than Citilink itself (most all of the values of DI are negative, only A2 and EM5 are positive). However, all the values of d are positive, indicate that the service performance of Citilink equals or exceeds the service performance of its competitors. By means, the improvement of this particular service attributes has a low priority.

To form the CZIPA diagram, the zero value of the DI is used to divide the diagram into four quadrants. The result of the case study is depicted in Fig. 3. The item statements belong to the first quadrant are the ones with have low performance but are importantly perceived by the customers. There- fore, the attributes should receive the most investment to boost the customers' satisfaction. It is suspected to bring the maximum effect with the minimum investment. In this study, there are no item statements belong to this quadrant.

Only two item statements belong to the second quadrant, i.e. A2 and EM5. It means that these attributes are believed to be important and the customers are satisfied with the performance of the airline. It indicates that the airline provides travel related partners to its customers. They can easily find a travel agent who sales Citilink's ticket. The customers are also statisfied when they have a problem associated with the fare. Those item statements belong with the availability and empathy dimensions. It is supposed that Citilink can provide reliable service immediately and accurately; hence, the management has to keep these features to retain its customers.

The third quadrant, i.e. low priority classifies the service attributes that performs well yet the customers perceive them as less important compared to the competitors. In this case study, there are no item statements belong to this quadrant.

Several item statements are embraced in the fourth quadrant, i.e. E1, E2, E3, E4, T1, T2, T3, T4, T5, R1, R2, R3, R4, R5, R6, RA1, RA2, RA3, RA4, F1, F2, F3, A1, I1, I2, I3, EM1, EM2, EM3, EM4, and EM6. It means that these attribu- tes are considered less important and sensed too excessive; thus, it needs to be reduced due to the excessive investment. Almost all item statements besides A2 an EM5 belong to this quadrant. It is recommended to apply the efforts for satisfying the customers associated with these attributes to the other features. If it does so, it is suspected to bring better results.

IV. CONCLUSION AND FUTURE RESEARCH DIRECTION

This paper has demonstrated how to assess the service quality of domestic LCC by benchmarking against its competitors and prioritize the service attributes to be improved. The first was managed using CZSQ while the later using CZIPA. A case study was successfully handled to assess the service quality of Citilink, a domestic LCC, which is a subsidiary of Garuda Indonesia. The result shows that the values of CZSQ are all positive from the entire eight dimensions of the service quality to be measured, see Table IV. It means that the customers are satisfied enough with the performance of Citilink since it provides better service than its competitors do. However, it does not attain the highest expectation yet. From CZIPA diagram analysis, almost all of the service attributes are located in fourth quadrant, only A2 (availability of travel related partners) and EM5 (handling the fare problem) are located in the second quadrant. It is recommended that the management of Citilink should lower its energy to pursue the customer satisfaction through escalating the performance of the previous 31 service attributes since those are considered by the customers as less important and too excessive. By means, the management could get lower service cost.
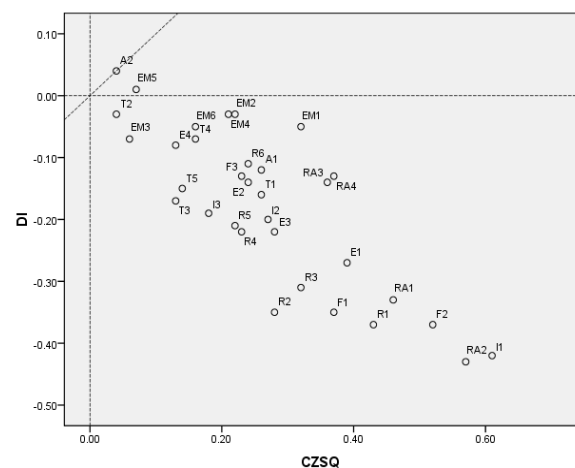

Fig. 3. CZIPA result.

One of limitations of this research is that the respondents are not divided into several groups. Since the respondents are coming from different city, with various social statutes, ages and backgrounds, they might have different frames of referen- ce when answering the questionnaire items. Therefore, for future research, when it is possible, it is suggested to divide the respondents into several different categories based on their backgrounds. Furthermore, it is also preferable to apply methods such as different in gaps [25] in order to remove measurement bias which are coming from such different fra- mes of reference.

It is also interesting to compare the methods with the multi-attributes decision making tools, such as the analytical hierarchy process (AHP) [36] or technique for order preferen- ce by similarity to ideal solution (TOPSIS) [37]. Currently, those methods are extended in the field of fuzzy set theory [38] to present the fuzzy AHP and fuzzy TOPSIS. Such methods have been successfully applied in the field of service management, see for example [39], [40].

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