Combining the eTransQual Scale and Importance-Performance Analysis to Assess Service Quality of Online Shopping

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***Abstract*—Electronic commerce has been grown rapidly in the last decade with the support of the Internet. Consequently, it requires retailers to improve their ability to fulfill the needs of their customers to gain satisfaction. Due to the close connection with the customer satisfaction, service quality is considered as a critical factor for the success of the service providers. This study tried to assess the service quality of an online shopping using eTransQual and attempt to combine it with the importance-performance analysis (IPA) model. The eTransQual scale was utilized since it integrates both utilitarian and hedonic facets while the other scales neglect the latter one. The hedonic aspect is regarded as a key determinant of Internet usage behavior as the feelings are aroused during electronic service encounters. The IPA model was used here to recognize what attributes have to be improved to achieve customer satisfaction. It can be done through identifying the attributes which are perceived as important by the customers. Since not all attributes have to be advanced eventually, this can reduce the excessive investment spent by the service providers. A case study was conducted in one of the most popular online shopping site in Indonesia to exhibit the applicability of the proposed methods. This study can provide the owners of the online shopping sites with valuable insights into the attributes that reflect the customers' perceptions.**

Keywords-customer satisfaction; eTransQual; IPA model; online shopping; service quality

I. INTRODUCTION

Electronic commerce (e-commerce) which is defined as all types of electronic transactions between organizations and stakeholders whether they are financial transactions or exchanges of information or other services [1], has been considered to develop rapidly in this globalization era. In 2015, sales of retail e-commerce sales worldwide amounted to 1.55 trillion US dollars and its revenues are projected to grow to 3.40 trillion US dollars in 2019 [2].

This rapid growth is inevitable since e-commerce delivers many advantages to both parties: retailers and buyers. For retailers, e-commerce might increase sales [3], [4]; reduce costs [3]–[8]; boost customer awareness of products or services [4]; provide access to new markets [9], [10]; improve operational efficiency and effectiveness [6]; and facilitate shipment tracing and control data [5]. For buyers, the benefits are plentiful. Shopping online saves time, offers a greater product selection, and allows for cost saving in terms of transportation, taxes, and the price of the product as well.

As time goes by and as competition increases, the shoppers are trying to find the best online shop that can satisfy their needs. Consequently, retailers have to improve their service quality in order to fulfill what the customers require. This service quality is believed to be an essential factor for the success of the retailers due to its close relationship with customer satisfaction [11]–[13].

There are numerous scales for assessing the service quality of e-commerce, such as SITEQUAL [14], Web-Qual 4.0 [15], WebQual™ [16], eTailQ [17], and E-S-QUAL [18]. However, those scales lack of items referring to hedonic service quality because the researchers believe that such hedonic aspects are distinct benefits that may not be relevant in all contexts or to all customers [18]. Nevertheless, if shopping journeys are assessed merely on the utilitarian benefits of products or services achieved, the various intangible and emotional aspects related to a shopping experience are excluded [19], [20].

Analog to the physical environment of the service-scape in the real world, the Web site interface is expected to provide extrinsic cues in virtual service encounters that can trigger emotional responses [14], [21]. Moreover, the feelings are aroused during electronic service encounters, according to flow theory [7], [22]. This leads to the examination of hedonic quality elements. In the end, the eTransQual [23] is developed to incorporate both utilitarian and hedonic service quality of the e-commerce.

In this paper, we attempt to combine the eTransQual scale with the importance-performance analysis (IPA) model by [24] to assess the service quality of online shopping. The addition of IPA model is because every organization is constrained by limitations on the resources they have. Thus, it has to be decided how those limited resources are best deployed to attain the highest level of customers' satisfaction. The IPA model is believed as an effective method to set the priorities. It is a two dimensional state space where the vertical axis describes the importance of selection dimensions, while the horizontal describes how well the service provider is performing the service. This IPA model has been broadly used in service industries; see for example [25]–[28].

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TABLE I. DIMENSIONS AND ITEM STATEMENTS OF ETRANSQUAL

Dimensions	Item Statements
Functionality/ Design	S1: Efficiency of navigation S2: Accessibility of relevant content S3: Clarity of the Web site S4: Relevance of information S5: Timeliness of information S6: Visual appeal S7: Professional Web site design
Enjoyment	S8: Personalization of information and offerings S9: Fun of using the Web site S10: Excitement when shopping online S11: Entertainment provided by the Web site
Process	S12: Availability of the Web site S13: Stability of data transmission S14: Efficiency of online order processing S15: Waiting time
Reliability	S16: Timeliness of order delivery S17: Accuracy of order delivery S18: Product availability S19: Breadth and depth of product range S20: Encoding of personal information S21: Confidentiality
Responsiveness	S22: Availability of alternative communication channels S23: Return policy S24: Availability of service personnel S25: Promptness of reactions to requests

A case study was conducted in one of the popular online shopping Web site in Indonesia to show the applicability of the methods proposed. In Indonesia, retail e-commerce sales expenses 4.61 billion US dollars in revenues and projected to grow 22.56% in 2016 and 50.98% in 2017 [29], such a promising market. Thus, the objectives of this research are twofold. The first is to show how to evaluate the service quality of online shop-ping site using the eTransQual scale. The second is to identify the object of the research's selection attributes that perceived as important by the customers to offer strategic implications that should be pursued to boost the competitiveness as well as attract more customers.

II. RESEARCH METHODS

eTransQual scale consists of five dimensions, namely, functionality/design, enjoyment, process, reliability, and responsiveness. The original eTransQual scale only com-prises with 25 item statements belong to the previous five dimensions aforementioned to assess the performance of the object of the research. However, in this study, another 25 item statements are added to assess what items are considered important according to the customers. The description of each dimension is as follows.

Functionality/design refers to the aesthetic appeal of the Web site and its utility. It consists of seven indicators, such as: (i) efficiency of navigation, (ii) accessibility of relevant content, (iii) clarity of the Website, (iv) relevance of information, (v) timeliness of information, (vi) visual appeal, and (vii) professional Web site design. The second dimension is enjoyment which is the hedonic aspect of the online shopping. The second dimension is enjoyment, which refers to the hedonic aspects of online shopping. It can be regarded as a major determinant of Internet usage behavior [21]. The Web site interface that is amusing and exciting for the customers could generate more emotional than cognitive customer reactions during the service experience.

The third dimension is process that can be defined as the Web site's ability to maintain its availability, its stability of data transmission, and its efficiency of online order processing. For the fourth dimension, the retailers are considered reliable if they accurately display the product that matches with its description, so that the customers would receive what they thought they ordered [17]. In addition, reliability also can be defined as the delivery of the right product within the period which is promised by the retailers [17]. The last dimension is responsiveness, which refers to the ability of the online shopping to effectively manage problems aroused. It relates to the return policy as well as willingness to respond promptly to the requests of the customers. The total 25 of item statements for each dimension are shown in Table I.

The service quality is measured by multiplying the weights with the performance scores:

$$EQ_j = \sum_{j=1}^{k} W_{ij} \cdot P_{ij} \quad (1)$$

where EQ_j refers to the scores of service quality of item statement j, W_{ij} is the weighting factor of item statement j to an individual i, and P_{ij} is the score obtained from perception of individual i with respect to the performance of object of the research on item statement j. The weighting factors is the standardized importance score and can be calculated as follows:

$$W_{ij} = \frac{I_{ij} - \min_i I_{ij}}{\max_i I_{ij} - \min_i I_{ij}} \quad (2)$$

where I_{ij} is the score of importance of item statement j to an individual i.

The 25 item statements are then used to analyze the performance of the object of the research. The importance of each item statements along with its corresponding performance score are employed to establish the IPA diagram. The vertical axis illustrates the importance score of the 25 item statements aforementioned; while the performance score is described by the horizontal axis.

There are four quadrants of the IPA's two-dimensional state space, i.e., concentrate here, keep up with the good work, low priority, and possible overkill. The first quadrant, i.e., concentrate here, is located in the north-west corner. Item statements belong to this quadrant have an extremely importance but indicates low performance ratings, which becomes the priority of the firm. The second quadrant is keep up with the good work. It identifies that both importance and performance of the item statements are already excellent and should be preserved well by the firm. Item statements that were slightly importance and have low performance ratings are located in the third quadrant, i.e., low priority. This quadrant is located in the south-west corner. The last is possibly over-kill, where there are

unnecessary item statements due to having less importance ratings but excellent performance. Thus, there might be no good reason to improve these item statements.

TABLE II. PROFILE OF THE RESPONDENTS

Variable	Percentage
Age in years	
< 18	3
18 – 24	96
25 – 40	1
Sex	
Male	51
Female	49
Occupation	
Student	91
Employee	7
Entrepreneur	1
Others	1

TABLE III. CRONBACH'S ALPHA FOR EACH DIMENSION OF ETRANSQUAL

Dimensions	Number of Item Statements	Cronbach's Alpha
Functionality/ Design	7	0.780
Enjoyment	4	0.634
Process	4	0.709
Reliability	6	0.748
Responsiveness	4	0.640

TABLE IV. RESULT OF THE CASE STUDY

Dimensions		I_j	W_j	P_j	EQ_j
Functionality/ Design	S1	4.343	0.836	3.848	3.216
	S2	4.444	0.861	3.919	3.374
	S3	3.439	0.610	3.253	1.984
	S4	4.394	0.849	3.475	2.949
	S5	3.419	0.605	3.793	2.294
	S6	4.192	0.798	3.343	2.668
	S7	3.793	0.698	3.374	2.356
Enjoyment	S8	4.081	0.770	2.955	2.276
	S9	4.131	0.783	3.490	2.732
	S10	3.434	0.609	3.576	2.176
	S11	3.429	0.607	2.753	1.672
Process	S12	4.187	0.797	3.338	2.660
	S13	4.293	0.823	3.591	2.956
	S14	4.394	0.849	3.667	3.111
	S15	4.318	0.830	3.641	3.020
Reliability	S16	4.535	0.884	3.500	3.039
	S17	4.636	0.909	3.702	3.365
	S18	4.298	0.825	3.126	2.577
	S19	4.369	0.842	3.929	3.309
	S20	4.470	0.868	3.848	3.338
	S21	4.409	0.852	3.793	3.233
Responsive-ness	S22	4.116	0.779	3.510	2.734
	S23	4.525	0.881	3.641	3.209
	S24	4.434	0.859	3.485	2.992
	S25	4.591	0.898	3.364	3.020
Average		4.187	0.797	3.517	2.813

III. CASE STUDY

The objective of this research is to analyze the performance of the service quality of online shopping using the eTransQual scale combining with IPA. The object of the research was one of the most popular online shopping sites in Indonesia.

There are two parts of the survey: the first is to assess the performance of the object of the research using the eTransQual scale; and the second is to identify the relative importance of each item statements belong to the corresponding dimensions of the eTransQual.

The participants of this survey were required to be over 18 years old and have been experienced in doing transactions on the object of the research. The potential participants were first approached and asked if they agreed to participate in the survey. All item statements were measured on a 5-point Likert-type scale, ranging from 1 (strongly disagree for performance-type—and unimportant for importance-type questionnaire) to 5 (strongly agree for performance-type—and important for importance-type questionnaire). One hundred and ninety eight respondents were participated in this survey. They consist of students, employees, entrepreneurs, etc., indicates plenty diversity for the purpose of the research. The profile of the respondents is shown in Table II.

The reliability test with Cronbach's alpha [30] was conducted to verify if the respondents' answers for any questions tend to relate one and another. The results are shown in Table III. Note that all of the dimensions have the value of Cronbach's alpha more than 0.6, indicated that the questionnaire being utilized is reliable [31].

The average values for each item statements are then computed throughout all respondents using (1) and (2). The results are shown in Table IV, respect to each item statement and each section: importance and performance.

In the importance part, the item statements for each dimension with the highest average score are: S2 of functionality/design, S9 of enjoyment, S14 of process, S17 of reliability, and S25 of responsiveness. Among all the dimensions, reliability has the highest average score. Providing various and diverse products, giving correct description about the products that are exposed, as well as delivering the products exactly what the customers ordered are believed to be the most important aspects for the respondents. On the other hand, the item statements which have lowest score for the corresponding dimensions are S5 of functionality/design, S11 of enjoyment, S12 of process, S18 of reliability, and S22 of responsiveness; while enjoyment has the lowest importance score among all the dimensions. It seems like the customers do not put a big concern regarding to the existence of the amusing and exciting features in the Web site.

In the performance part, again, reliability has the highest average value, which is 3.650. This means that the object of the research has the best service performance at delivering precisely what customers ordered as well as providing the correct description about the product being displayed. The item statements with the highest average score for each dimension are: S2 of functionality/design, S10 of enjoyment, S14 of process, S19 of reliability, and S23 of responsiveness. The dimension that has the lowest performance score is enjoyment. It seems that the object of the research has a little

attentions to give the shoppers such entertainment while they are surfing the Web site to look for the products they want.

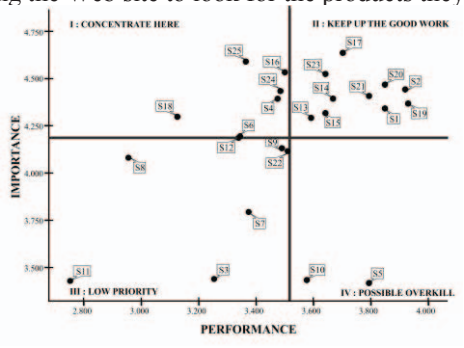

Figure 1. IPA of the object of the research

The overall performance of the object of the research is considered not good, based on the average score of 2.813 from the maximum score of 5. It means that the online shopping has many things to do to advance its service performance as a part of continuous improvement. The IPA model then can be utilized to establish strategic strategies to achieve the customer satisfaction based on the performance and the importance of the item statements from the customers' point of view. The conventional approaches only examined one side of the customer acceptance, usually the performance. However, empirical research has demonstrated that customer satisfaction is a function of both expectations related to certain important attributes and judgments of attribute performance [11], [32]–[35]. The IPA then combines both the importance and performance facets on a unique diagram to give a useful insight through the firm's performance corresponding with its importance.

To establish the IPA diagram, the average score for each item statement were plotted in the two-dimensional state space. The horizontal axis refers to the performance or how well the object of the research is performing its service; while the vertical axis refers to the importance of the item statements. The lines which are divided the diagram into four quadrants are calculated from the average scores of performance and importance. The IPA of service quality of the object of the research is depicted in Fig. 1.

The first quadrant, i.e., concentrate here, contains functionality/design (S4, S6), reliability (S16, S18), and responsiveness (S24, S25) dimensions. These item statements belong in the first quadrant have low performance score but importantly perceived by the customers. Those attributes should be the focus of the object of the research's improvement agenda to achieve the customer's satisfaction. This result indicates that the Web site should give the relevance information as well as attractive design. The management must provide the nonstop online service, more responsive to the customers' requests, as well as deliver the products to the right destination according to the promised schedule.

The item statements belong to the second quadrant are S1 and S2 for functionality/design dimension; S13, S14, and S15 for process dimension; S17, S19, and S20 for reliability dimension; and S21 and S23 for responsiveness dimension. The customers' thought that those attributes are considered important and the object of the research has performed the excellent service. Three out of four item statements for process and reliability dimensions belong to the second quadrant; it indicates that the order processing is quite efficient and safe. The management has to maintain these aspects to keep and improve the customer's satisfaction.

The item statements in the low priority quadrant refer to the performance that are not quite satisfactory and they are considered as not important form the customers' perspective. They are S3 and S7 for the functionality/design dimension; S8, S9, and S11 for the enjoyment dimension; S12 for the process dimension; and S22 for the responsiveness dimension. Only one item statement for the enjoyment dimension which is not placed in this quadrant. It seems that the customers do not put a big attention to the entertainment side in the Web site. It is recommended that the management should not spend a lot of investment to pursue the improvement of the corresponding dimension.

Only two item statements belong to the last quadrant, i.e., S5 and S10 for functionality/design and enjoyment dimensions respectively. These item statements are regarded as less important from the respondents' point of view; yet the management gives too much attention of these, so that it takes into account as unnecessary activities. They are suggested to be reduced due to the excessive investment.

IV. Conclusion and Future Research Direction

This paper has shown how to assess the service quality of online shopping using the eTransQual scale and identified the attributes that perceived important by the customers to be further analyzed using IPA model. A case study to exhibit the applicability of the methods has been conducted in one of largest online shopping site in Indonesia. The result indicates that overall, the performance of the object of the research was not quite satisfactory. To do improvement about what attributes to be enhanced to gain customer satisfaction, the firm might utilized the IPA diagram to recognize the attributes perceived important by the customers. Note that not all attributes have to be improved eventually. This can reduce the excessive investment spent by the firm.

The proposed method is considered easy to implement, relatively simple to be interpreted, as well as inexpensive to be conducted. It has many potential benefits for the owner of an online shopping since it can gain valuable insight about what attributes that have to be improved according to their performance scores and importance scores based on the customers' perspective.

It is recommended for the future research to implement the customer zone of tolerance-based service quality (CZSQ) and CZSQ-based IPA (CZIPA) [36] to assess the service quality based on the competitive zone of tolerance by benchmarking against its competitors, as well as to prioritize the service attributes to be improved. Although these novel methods originally were developed in the area of hospitality to handle the inability of zone of tolerance (ZOT) to evaluate handle the inability of zone of tolerance to evaluate the priority of improving the service quality of the attributes and to overcome some limitations in the applicability of IPA

model [37]–[40], it can be further implemented to assess the service quality of online shopping with some adjustments and modifications. However, despite of the superiority of CZSQ and CZIPA, the applications remain limited—one modification of these methods in the area of airline service that could be worthy to be mentioned perhaps the work by [41].

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