ANTECEDENTS OF PRIVATE UNIVERSITY STUDENTS' SATISFACTION: THE EFFECTS OF TRADITIONAL AND ELECTRONIC SERVICE QUALITY

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ABSTRACT

High competition in the higher education sector, especially private universities, has brought a high attention to service quality that can increase students' satisfaction and their retention rates. This study aimed to investigate the effect of traditional and electronic service quality of private universities in Jakarta on students' satisfaction. A total of 151 students' responses from three private universities in Jakarta were collected. A factor analysis with the Principal Component Analysis method with Varimax rotation, Partial Least Square-Structural Equation Modeling (SEM) and Importance Performance Map Analysis (IPMA) were performed. The results proved that perceived value of traditional service quality and perceived web value significantly affected student satisfaction. The three indicators of perceived quality provided by administrative staff (β = 0.198), perceived quality of university infrastructure (β = 0.333), and perceived quality of support services (β = 0.362) significantly affected students' satisfaction while in the context of electronic service quality, only accessibility (β = 0.469) and attractiveness (β = 0.123) had significant effects on students' satisfaction. Furthermore, the two-dimensional IPMA matrix indicated the dominance of importance (score = 0.621) and performance (score = 66.438) of perceived value over the perceived web value

KEYWORDS

e-Service quality, private universities, students' satisfaction, traditional service quality

HOW TO CITE

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Highlights

- *Traditional and e-Service quality have significant and positive effects on student satisfaction.*
- *The perceived value of traditional service quality has a greater effect to increase students' satisfaction at private universities than the perceived value of electronic service quality.*

INTRODUCTION

High competition in the educational sector has encouraged universities to focus on providing high service quality. This factor has become the main criterion used by students to select universities with all existing uncertainties and risks (Donaldson and McNicholas, 2004). Private universities as one of the higher education institutions have faced intense competition to attract students and to maximize demand. According to Indonesian Law Number 12 of 2012, private universities do not receive operating funds from the government, thus they have to raise funds independently for operating expenses, lecturer as well as education staff salaries, investment and university development (Kemdikbud, 2014). This is in accordance with the statement by the Asian Development Bank (2012) that private universities in Indonesia face three key problems of quality variation, higher education costs, and difficulty in gaining financial assistance. This prevalence causes the continuity of universities, highly depending on the number of student enrollment and their retention rates. Apart from funding, the number of students is also one of the indicators of a decent university since the Indonesian Ministry of Research and Technology requires those with fewer than 1,000 students to merge (Oebaidillah, 2021).

DKI Jakarta Province has the highest number of private universities in Indonesia. The number of private universities in 2018 reached 413 units, consisting of 116 Academies, 11 Polytechnics, 206 Colleges, 26 Institutes, and 54 Universities with the number of students reached 489,496 students (RISTEKDIKTI, 2019). This number shows a significant increase compared to that of in 2015 which only reached 315 units (BPS, 2017) indicating that the market turns to be more competitive. Institutions that are not able to attract students will confront financial risks that have a high impact on business development and sustainability. This problem in macro-level context will not only become a threat for the institutions, but also the society as a whole. Private universities have benefited from limitations of state universities.

Studies on service quality and its effect on students' satisfaction have gained increasingly significant attention due to the above conditions. However, differences in dimensions and measurement scales used are often raising problems in evaluation process. Furthermore, the widely used measurement methods are mainly less valid and reliable for educational sectors (Galeeva, 2016). The development of information technology has also brought changes to the type of quality service provided to students. The service quality provided is now differentiated into traditional and electronic service quality (e-Service quality). Most of the previous studies consent that traditional service quality proved to have a significant effect on students' satisfaction (Leonnard et al, 2015, Joung, Choi and Wang, 2016, Leonnard, 2018a, Leonnard, 2018b, Leonnard and Susanti, 2019). Despite a large number of studies on higher education service quality, there is still a gap in terms of the effect of e-Service quality on students' satisfaction and the difference obtained from both types of services. Some studies have examined the effect of web and portal service quality on students' satisfaction such as Carlos and Rodrigues (2012), Nasirun et al (2012), Chen (2015) and others evaluate the effect of e-Service quality of e-learning activity (Headar, Elaref and Yacout, 2013). However, to the best of our knowledge, there are still limited studies that compare the effect of both types of service quality on students' satisfaction. Therefore, this study examines the effects of traditional dan e-service quality on students' satisfaction to address the gap and provide appropriate managerial implications.

LITERATURE REVIEW

Traditional service quality in educational services

During the past few decades, significant developments have occurred in the concept of service quality. Various measures were developed to precisely measure service quality in various service industries, including Grönroos model, SERVQUAL, SERVPERF, INDSERV, and HEdPERF (Abdullah, 2005; Sultan and Yin Wong, 2010). The Grönroos model divides perceived service quality into technical quality, functional quality, and corporate image (Grönroos, 1984). SERVQUAL consists of five dimensions of tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman, Zeithaml and Berry, 1988; Yarimoglu, 2015). Based on Darawong and Sanmaung (2019) responsiveness is the most significant dimension of service quality that affected students satisfaction, followed by empathy and facility, accordingly. The improvement of these important dimensions would enhance student satisfaction.

SERVPERF consists of similar dimensions as SERVQUAL but it is based on performance only (Cronin and Taylor, 1992). INDSERV consists of dimensions of potential quality, hard process quality, soft process quality, and output quality (Gounaris and Venetis, 2002) while HedPERF (Higher Education Performance only) consists of six factors to evaluate service quality in the education sector. The six factors are non-academic aspects, academic aspects, reputation, access, program issues, and understanding (Abdullah, 2006). SERVQUAL and SERVPERF are the most widely used measures. However, both measures have several disadvantages, including the dimensional issue. Not all dimensions used in SERVQUAL and SERVPERF can be adapted to any service industry (Carrillat, Jaramillo and Mulki, 2007). Most of the previous studies used SERVQUAL to evaluate service quality in educational sectors (Calvo-Porral, Lévy-Mangin and Novo-Corti, 2013; Yousapronpaiboon, 2014; Galeeva, 2016; Leonard, 2018; Leonard and Susanti, 2019). However, some limitations are rising, especially in terms of debatable validity and reliability. Brochado (2009) signified that SERVPERF and HEdPERF are more valid than SERVQUAL.

Therefore, most researchers argue that it is important to improvise basic measurement to be more suitable to evaluate service quality on educational institutions holistically (Galeeva, 2016). On the other hand, several researchers chose to use uni-dimensional measurement scales to assess the service quality of higher educational institutions, such as physical facilities, support facilities, academic facilities, industry relations, and curriculum (Jain, Sinha and De, 2010) while others employ four dimensions of infrastructure, teaching staff, administrative staff, and support services (Douglas et al, 2015; Doña-Toledo, Luque-Martínez and Del Barrio-García, 2017).

Web service quality in educational services

Effective website design and services have become the main criteria adopted by most researchers to explain e-Service quality (Yarimoglu, 2015). Primarily, the measurement scales focus on three important things, including website technical aspects, website service quality, and other factors that affect e-satisfaction (Akinci, Atilgan-Inan and Aksoy, 2010). Based on these three points, several other measures are proposed to evaluate e-Service quality. Among the most widely used are SITEQUAL (Yoo and Donthu, 2001), WebQual (Loiacono, Watson, and Goodhue, 2002), e-SERVQUAL (Zeithaml, Parasuraman and Malhotra, 2002), ES-QUAL, E-RecS-QUAL (Parasuraman, Zeithaml and Malhotra, 2005), and OA-SQ (Liu, Guo and Hsieh, 2010). Of these measures, ES-QUAL is the most frequently used measure. The measurement method is claimed to be applicable to a wide range of industries.

Generally, the selection of valid measurement scales has been a challenge, especially in educational sectors. Most of the measurement scales above are used in commercial context while educational sectors require non-commercial web and portals, of which sales and purchase transactions do not occur (Yang et al, 2005). Instead of using widely applied measurement scales, some researchers settle upon uni-dimensional measurement scales that are more suitable for educational institutions. For instance, Al-Hawari and Mouakket (2010), Chen (2011) Farahat (2012), Nasirun et al (2012) adopt the constructs of usability, responsiveness, accessibility, and attractiveness based on the Technology Adoption Model (TAM). The results indicate that usefulness has a positive influence on student satisfaction (Al-Hawari and Mouakket, 2010; Farahat, 2012). Similar results are also associated with accessibility (Chen, 2011; Farahat, 2012), responsiveness (Chen, 2011), and attractiveness (Nasirun et al, 2012).

To summarize, most researchers used ES-QUAL to explain e-Service quality because of its applicability to be used in a wide range of commercial context. However, some researchers employed uni-dimensional measurement scales suitable for the education context. The Technology Adoption Model (TAM) was adopted to construct usability, responsiveness, accessibility, and attractiveness evaluating e-Service quality in educational services.

Perceived value and perceived web value

Perceived value is the overall assessment of services based on perceptions of what students should receive based on their sacrifice (Doña-Toledo, Luque-Martínez and Del Barrio-García, 2017). The sacrifices are in terms of enrollment and tuition fees. Service quality is the main antecedent of perceived value. Both have proven to significantly affect student satisfaction (Joung, Choi and Wang, 2016; Lunarindiah, 2018). As well as the perceived value of traditional service quality, perceived web quality also thoroughly evaluates what students should receive in the context of online services based on the cost they have spent. Web service quality and perceived web value have proven to significantly affect students' satisfaction (Kilburn, Kilburn and Davis, 2016). Therefore, perceived value and perceived web value were considered to have significant implications on students' satisfaction.

Satisfaction

Satisfaction is the accumulation of consumer perceptions and behaviors derived from the total benefits obtained (Wu, Tennyson and Hsia, 2010). Student satisfaction has gained much attention lately due to rising competition among universities to attract and retain students (Leonnard and Susanti, 2019). This issue takes a special concern, especially in private universities, since universities do not receive any subsidy from the government which increases the effect of student enrollments on profits and university operating expenses. Furthermore, students' satisfaction significantly mediated the relationship between academics, non-academics, reputation, and campus access towards students' loyalty (Mulyono et al, 2020). Thus, it is important to improve students' academic abilities, programs for administrative staff, marketing campaigns, and also students' direct access to the staff.

Among many factors that have positive effects on students' satisfaction, service quality has been considered a key factor (Leonnard et al, 2015, Alemu and Cordier, 2017, Leonnard and Susanti, 2019) as well as perceived value (Doña-Toledo, Luque-Martínez and Del Barrio-García, 2017, Leonnard, 2018a, Leonnard, 2018b).

Based on the argument above, the working hypotheses to be tested in this study are:

H1: Perceived value has a positive effect on students' satisfaction.

H2: Perceived web value has a positive effect on students' satisfaction.

H3: Perceived quality delivered by teaching staff has an indirect impact on students' satisfaction.

H4: Perceived quality delivered by administrative staff has an indirect impact on students' satisfaction.

H5: Perceived quality of university infrastructure has an indirect impact on students' satisfaction.

H6: Perceived quality of support services has an indirect impact on students' satisfaction.

H7: Usability has an indirect impact on students' satisfaction.

H8: Responsiveness has an indirect impact on students' satisfaction.

H9: Accessibility has an indirect impact on students' satisfaction.

H10: Attractiveness has an indirect impact on students' satisfaction.

RESEARCH METHOD

Research instruments

The measurement scale of traditional perceived service quality, perceived value, and satisfaction was adopted from Doña-Toledo, Luque-Martínez and Del Barrio-García (2017) while the scale of perceived web service quality was perceived from Nasirun et al (2012). Totally, there are 57 indicators that summarize 11 constructs. Traditional perceived service quality is explained by constructing perceived quality delivered by teaching staff (3 indicators), perceived quality delivered by administrative staff (6 indicators), perceived quality of university infrastructure (6 indicators), and perceived quality of support services (3 indicators). On the other hand, perceived web service quality is explained by usability (4 indicators), responsiveness (5 indicators), accessibility (4 indicators), and attractiveness (indicators). In the final model, perceived value consists of 6 indicators, perceived web value consists of 3 indicators, and satisfaction consists of 4 indicators. A detailed summary of each indicator is provided in Appendix 1.

Sampling and data collection

In accordance with the rules for determining samples on PLS-SEM by Hair Jr. et al (2016), the minimum number of respondents should be greater than 10 times the maximum

number of inner or outer model links pointing at any latent variable in the model. The PLS-SEM is a variance-based structural equation modeling and a non-parametric method since it does not have any distributional assumption; thus, it is suitable in cases found to be insufficient sample size and non-normal distribution (Hair Jr., Ringle and Sarstedt, 2011).

The maximum number of inner or outer model links of the construct is 10 (explaining formative measures of satisfaction), therefore the minimum number of samples to be fulfilled was 100 students. To satisfy the criterion, this study surveyed 151 students from three private universities in Jakarta, namely IPMI International Business School, Binus University, and London School of Public Relations through a random selection method by using 5-points Likert scale questionnaires. The final questionnaires consist of 57 indicators and 11 constructs. Of the total respondents, 60.26 % were women and 39.73 % were men aged between 20 and 30 years. Most of the respondents were undergraduate students (89.40 %) and only 10.59 % were master program students.

Research method

To test the hypotheses, this study was conducted using the Partial Least Square-Structural Equation Modeling (PLS-SEM) method. The first step analysis was performed to validate the questionnaire through one-factor analysis as suggested by Podsakoff et al (2013). Principal Component Analysis (PCA) with a varimax rotation was performed against 57 indicators. The results bring 11 constructs that were formed into 4 constructs for traditional perceived quality, 4 constructs for perceived web quality, 1 construct for perceived value, 1 construct for perceived web value, and 1 construct for students' satisfaction. The second step is to analyze structural paths of the latent constructs using the SEM-PLS. The process consists of outer model analysis, inner model analysis, and hypothesis testing. The next stage is analyzing the Importance Performance Map Analysis (IPMA), which is an extension of PLS-SEM analysis. Finally, all direct and indirect effects of PLS-SEM estimate the final importance score (Hair, Ringle and Sarstedt, 2013), while scaling the mean value of indicators is the performance score index (Ringle and Sarstedt, 2016).

RESULTS

Outer model results for exogenous latent constructs

The analysis explains the relationship of indicators with constructs through the significant outer loading values and constructs' reliability and validity (Hair Jr. et al, 2016). Each construct (perceived quality delivered by teaching staff, perceived quality of university infrastructure, perceived quality of administrative staff, perceived quality of support services, usability, responsiveness, accessibility, attractiveness, perceived value, and perceived web value) was analyzed separately. The results validate that all constructs have high loading value factors of 0.70 to 0.90. All composite reliability values CR) are above 0.80, rho_A values are above 0.70, and Cronbach's Alpha values are above 0.60 (Table 1). All values are above the cut-off values of 0.70, except for Cronbach's Alpha but it is still considered moderate (Cohen, 2013).

Furthermore, Fornell-Larcker Criterion and cross loading values to evaluate discriminant validity signify that the Average Variance Extracted (AVE) values from the Fornell-Larcker Criterion table (Table 2) are higher than the square root AVE (Table 1) and the correlation of each indicator with each construct is higher than other constructs (Hair Jr. et al, 2016). For instance, the Fornell-Larcker Criterion value for PQT is 0.786, while the AVE value is only 0.618, also the value for PWV is 0.987 compared to 0.859.

Outer model results for endogenous latent constructs

Satisfaction is an endogenous construct that is affected by other constructs directly (perceived value and perceived web value) and indirectly (perceived quality delivered by teaching staff, perceived quality of university infrastructure, perceived quality of administrative staff, perceived quality of support services, usability, responsiveness, accessibility, and attractiveness). The various dimensions of the satisfaction construct implied a formative measurement of satisfaction. This formative measurement explained measures as causes of constructs (Edwards, 2011). Besides, Edwards (2011) concluded that formative measures are not necessarily expected to demonstrate internal consistency and not incorporate measurement error.

The model was tested through convergent validity and discriminant validity. Since satisfaction does not affect any other construct, convergent validity was evaluated from the constructs reflective correlation (perceived value and perceived web value) which are 0.783 and 0.646, respectively. Additionally, the weight value of each formative indicator in Table 3 signifies a positive relationship to satisfaction at $\alpha = 0.01$. The Variance Inflation Factor (VIF) value less than 5.00 indicates the model is free from multicollinearity issues. Through the analysis, the robust reflective model has been achieved (Hair Jr. et al, 2016).

Constructs	Indicators	Loading factors	AVE	CR	Cronbach's Alpha
Perceived quality delivered by teaching staff (PQT)	*PQT1*	0.705	0.618	0.829	0.690
	PQT2	0.836			
	PQT3	0.812			
Perceived quality delivered by administrative staff (PQA)	*PQA1*	0.781	0.688	0.930	0.909
	PQA2	0.842			
	PQA3	0.767			
	PQA4	0.845			
	PQA5	0.865			
	PQA6	0.871			
Perceived quality of university infrastructure (PQI)	*PQI1*	0.763	0.641	0.914	0.888
	PQI2	0.764			
	PQI3	0.783			
	PQI4	0.817			
	PQI5	0.856			
	PQI6	0.817			
Perceived quality of support services (PQS)	*PQS1*	0.810	0.605	0.820	0.673
	PQS2	0.657			
	PQS3	0.854			
Usability (USA)	*USA1*	0.838	0.822	0.949	0.928
	USA2	0.904			
	USA3	0.939			
	USA4	0.943			
Responsiveness (RES)	*RES1*	0.798	0.748	0.937	0.915
	RES2	0.889			
	RES3	0.913			
	RES4	0.886			
	RES5	0.834			
Accessibility (ACC)	*ACC1*	0.861	0.746	0.921	0.886
	ACC2	0.847			
	ACC3	0.888			
	ACC4	0.857			
Attractiveness (ATT)	*ATT1*	0.903	0.831	0.908	0.797
	ATT2	0.920			
Perceived value (PV)	*PV1*	0.847	0.697	0.932	0.913
	PV2	0.841			
	PV3	0.821			
	PV4	0.826			
	PV5	0.830			
	PV6	0.844			
Perceived web value (PWV)	*PWV1*	0.886	0.859	0.948	0.917
	PWV2	0.947			
	PWV3	0.946			

Note: Abreviation explanation is available on Appendix Table

Table 1: Validity and reliability test results, 2019 (Source: Calculated data)

	PQT	PQA	PQI	PQS	USA	RES	ACC	ATT	PV	PWV
PQT	0.786									
PQA	0.745	0.830								
PQI	0.567	0.676	0.801							
PQS	0.598	0.628	0.550	0.778						
USA	0.572	0.597	0.630	0.578	0.907					
RES	0.491	0.500	0.582	0.585	0.779	0.865				
ACC	0.517	0.607	0.657	0.570	0.822	0.797	0.863			
ATT	0.464	0.489	0.524	0.578	0.518	0.625	0.536	0.912		
PV	0.657	0.728	0.725	0.732	0.629	0.557	0.633	0.494	0.835	
PWV	0.489	0.516	0.617	0.611	0.716	0.701	0.756	0.532	0.622	0.927

Note: Abbreviation explanation is available in Appendix Table

Table 2: Fornell-Larcker Criterion test results, 2019 (Source: Calculated data)

	Outer weights	*T* Statistics (|O/STDEV|)
SAT1 –> SAT	0.265	16.827***
SAT2 –> SAT	0.263	16.816***
SAT3 –> SAT	0.260	17.260***
SAT4 –> SAT	0.204	12.113***
SAT5 –> SAT	0.193	8.640***

*Note: *** significant at α = 0.01*

STDEV: Standard deviation

Note: Abbreviation explanation is available on Appendix Table

Table 3:Outer weight test results, 2019 (Source: Calculated data)

Structural model results

The evaluation of inner models indicates that satisfaction has R^2 value of 0.654, perceived value has R^2 value of 0.718, and perceived web value has R^2 value of 0.611. The Q^2 value of 0.962 is above the cut-off value of zero, which represents a good predictive power of exogenous latent construct (Chin, 2010). Similarly, the Goodness of Fit (GoF) value of 0.544 is above the high cut-off value for GoF of 0.360 (Tenenhaus et al, 2005). Therefore, the proposed structural model has satisfied the robust criteria. The path relationship in Table 4 indicates the relationship between perceived value and student satisfaction is confirmed and positive (β = 0.621; *t*-value = 11.175) as well as the relationship between perceived web value and student satisfaction (β = 0.259; *t*-value = 3.655). Both statistics provide support for H1 and H2. In addition, there are five indirect effects that are significantly confirmed on student satisfaction. First, the indirect relationship of perceived quality delivered by administrative staff (β = 0.198; *t*-value = 2.338). Second, the indirect relationship of perceived quality of university infrastructure (β = 0.333; *t*-value = 4.291). Third, the indirect relationship of perceived quality of support services (β = 0.362; *t*-value = 5.084). Lastly, the indirect relationship of accessibility (β = 0.469; *t*-value = 4.233) and attractiveness (β = 0.123; *t*-value = 1.699). All of the results provide support for H4, H5, H6, H9, and H10.

Hypotheses	Path	Coeff.		*T* Statistics (|O/STDEV|)	Findings
H1	Perceived value –> Student satisfaction	0.621	direct	11.175***	Supported
H2	Perceived web value –> Student satisfaction	0.259	direct	3.655***	Supported
H3	Perceived quality delivered by teaching staff --> Student satisfaction	0.104	indirect	1.300	Unsupported
H4	Perceived quality delivered by administrative staff --> Student satisfaction	0.198	indirect	2.338**	Supported
H5	Perceived quality of university infrastructure --> Student satisfaction	0.333	indirect	4.291***	Supported
H6	Perceived quality of support services --> Student satisfaction	0.362	indirect	5.084***	Supported
H7	Usability --> Student satisfaction	0.112	indirect	0.953	Unsupported
H8	Responsiveness --> Student satisfaction	0.165	indirect	1.324	Unsupported
H9	Accessibility --> Student satisfaction	0.469	indirect	4.233***	Supported
H10	Attractiveness --> Student satisfaction	0.123	indirect	1.699*	Supported

*Note: *** significant at α= 0.01, **α= 0.05, *α= 0.1*

Table 4:Path coefficients (Source: Calculated data)

To summarize, on the basis of the table above, performed statistical testing confirms:

1. H1 fails to reject; thus the perceived value has a positive effect on students' satisfaction
2. H2 fails to reject; thus the perceived web value has a positive effect on students' satisfaction
3. H3 rejects; thus the perceived quality delivered by teaching staff has no indirect impact on students' satisfaction
4. H4 fails to reject; thus the perceived quality delivered by administrative staff has a positive indirect impact on students' satisfaction
5. H5 fails to reject; thus the perceived quality of university infrastructure has a positive indirect impact on students' satisfaction
6. H6 fails to reject; thus the perceived quality of support services has a positive indirect impact on students' satisfaction
7. H7 rejects; thus the usability has no indirect impact on students' satisfaction
8. H8 rejects; thus the responsiveness has no indirect impact on students' satisfaction
9. H9 fails to reject; thus the accessibility has a positive indirect impact on students' satisfaction
10. H10 fails to reject; thus the attractiveness has a positive indirect impact on students' satisfaction

The full relationship is presented in Figure 1.

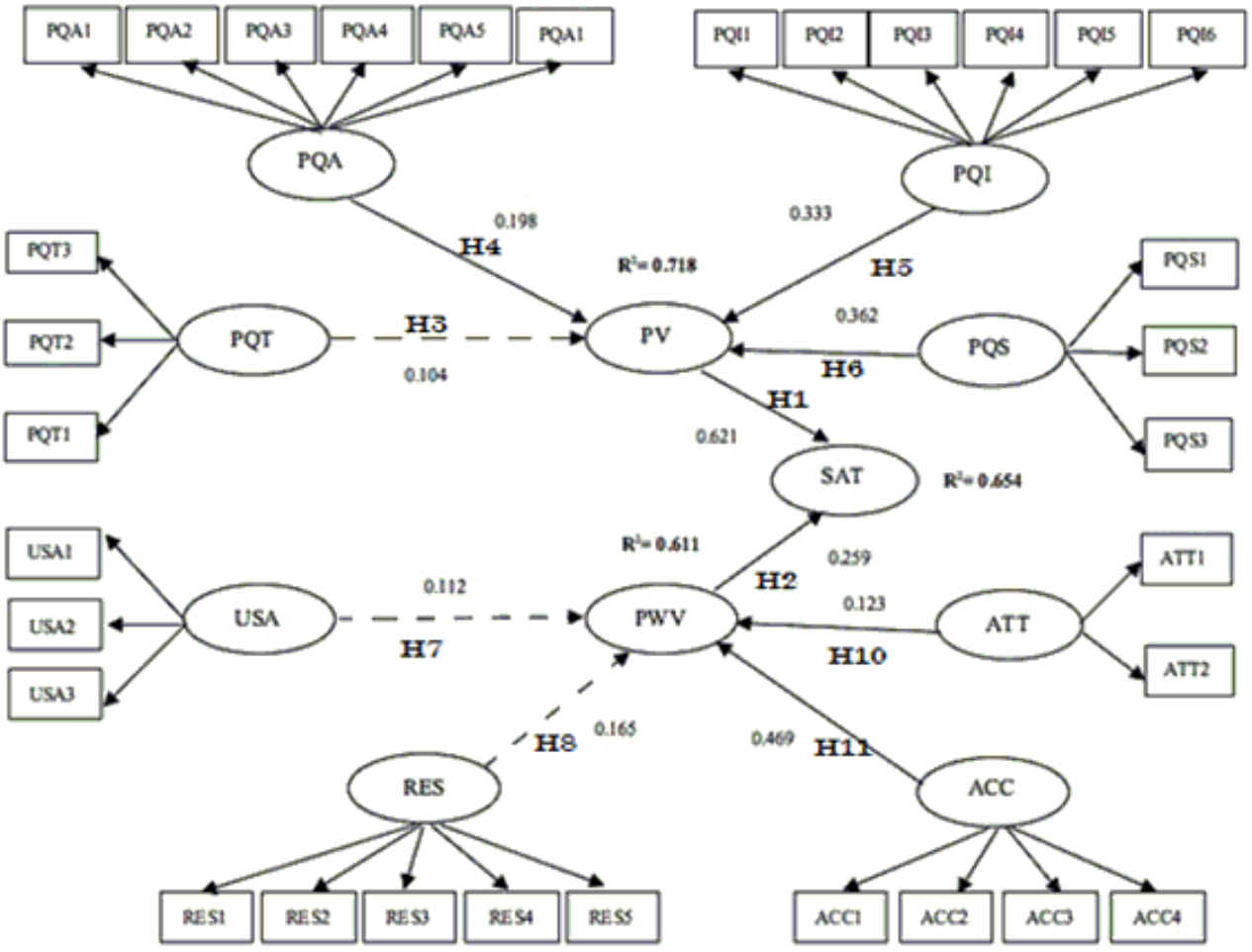

Figure 1:The structural path model, 2019 (Source: Calculated data)

Importance Performance Map Analysis (IPMA) results

The Importance of Performance Map Analysis (IPMA) is used to measure the importance level of perceived value and perceived web value towards students' satisfaction. Figure 2 indicates that perceived value has higher importance and performance scores (0.621 and 66.438, respectively) than the perceived web value (importance score = 0.259; performance score = 62.669). Therefore, statistically, one point increase in private university performance will increase students' satisfaction by 0.621 points, ceteris paribus. On the contrary, a similar increasing point of perceived web value will only increase students' satisfaction by 0.259 points.

Further IPMA analysis is also carried out on the constructs of perceived quality delivered by teaching staff, perceived quality delivered by administrative staff, perceived quality of university infrastructure, perceived quality of support services, usability, responsiveness, accessibility, and attractiveness towards students' satisfaction. Figure 3 indicates that perceived quality delivered by support services

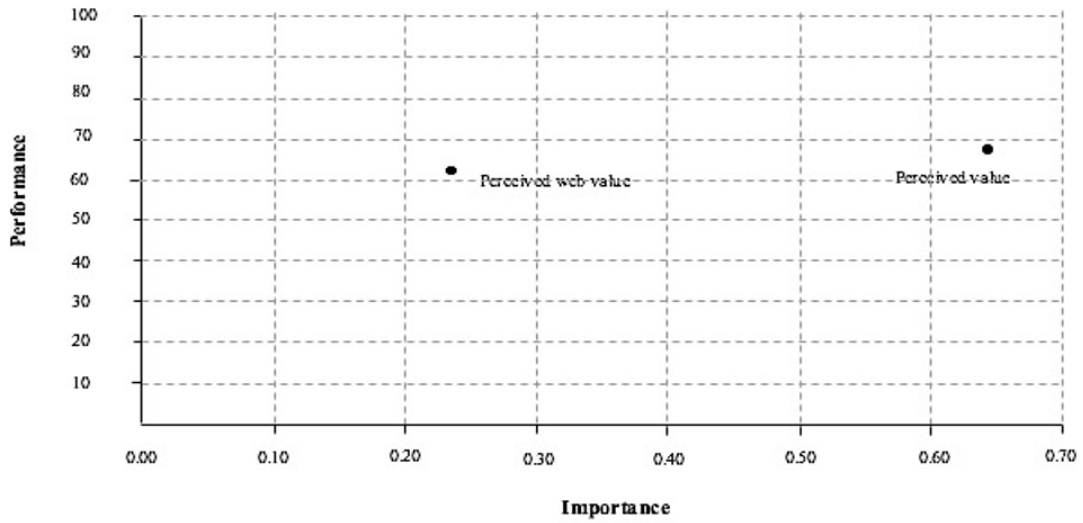

Figure 2: Unstandardized IPMA results of perceived value and perceived web value (Source: Calculated data)

has an importance score of 0.241 and a performance score of 69.690. The score is relatively higher than the perceived quality delivered by teaching staff (0.070), perceived quality delivered by administrative staff (0.123), and perceived quality of university infrastructure (0.213). An increase of the performance level of perceived quality of support services will increase students' satisfaction significantly higher than an increase in other constructs, ceteris paribus (Table 5).

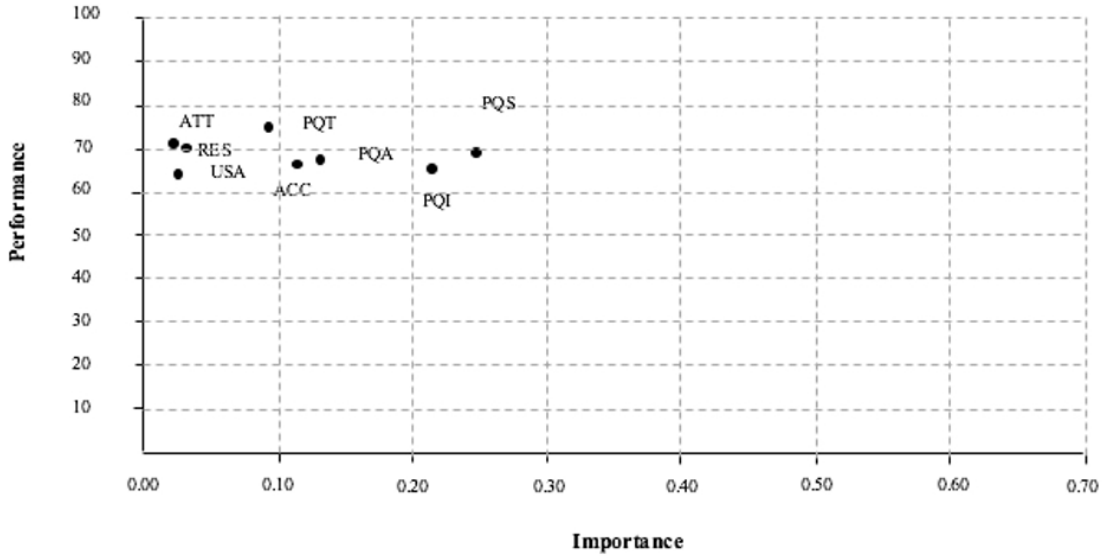

Figure 3: Unstandardized IPMA results of exogenous constructs, 2019 (Source: Calculated data)

Constructs	Importance scores (Total effects)	Performance scores (Index values)
Perceived value	0.619	66.438
Perceived web value	0.231	62.669
Perceived quality delivered by teaching staff	0.070	73.753
Perceived quality delivered by administrative staff	0.123	67.799
Perceived quality of university infrastructure	0.213	65.918
Perceived quality of support services	0.241	69.690
Usability	0.026	64.139
Responsiveness	0.041	69.639
Accessibility	0.116	66.196
Attractiveness	0.030	72.566

Table 5: IPMA total effects and index values, 2019 (Source: Calculated data)

DISCUSSIONS

The results of this study confirm that seven of ten hypotheses tested were supported. Perceived value and perceived web value significantly affect student satisfaction. The result supports previous studies by Joung, Choi and Wang (2016), Doña-Toledo, Luque-Martínez and Del Barrio-García (2017), and Lunarindiah (2018). The effect of the perceived value obtained from traditional service quality is higher than the effect obtained from web service quality. Due to a limited application in educational sectors, we compared the results with other studies in other industries. The result is in accordance with the study of Silva and Goncalves (2016). Even though, some other studies revealed otherwise, such as Broekhuizen (2006) found that the perceived value of online shopping was higher than offline and Walsh et al (2010) stated that perceived value in online and offline service quality was relatively no different. The difference is possibly caused by specific industry differences and the indicators' coverage of traditional and electronic service quality. In the context of online shopping, activities carried out offline can be fully interchangeable into online based. However, in the context of educational services, especially in conventional learning methods, there is a substantial difference between traditional and electronic service quality. There is a limitation to convert all traditional service quality into online based activities. However, a different assumption is expected in e-learning methods.

Technological developments, internet access, innovation, and market needs have changed the way universities provide their services and the types of services offered. The needs and market competition have demanded universities to change their systems and services from traditional to innovation such as the adoption of web and portal-based systems, online sources, online courses, and other electronic services. Adoption of the new system has been proven to provide added value for universities in improving their quality to the traditional standards such as academic standards, accreditation, and conventional education and research standards (Munteanu et al, 2010). However, whether the electronic service quality can replace the role of traditional service quality has become an interesting question for universities and policymakers. Technology plays a role as media and tools to add value and increase influence on student satisfaction to maintain university's competitiveness. However, the replacement of interpersonal interaction with human-machine interaction cannot be fully carried out. Some of the human interactions cannot be replaced by technology, such as friendliness, helpfulness, care, empathy, commitment, and cleanliness (Shauchenka et al, 2010).

The three dimensions of traditional perceived quality, including perceived quality delivered by administrative staff, perceived quality of university infrastructure, and perceived quality of support services are significantly able to improve students' satisfaction. These results are consistent with Douglas et al (2015) and Doña-Toledo, Luque-Martínez and Del Barrio-García (2017). Perceived quality of support services has a higher effect than others which is consistent with the Doña-Toledo, Luque-Martínez and Del Barrio-García (2017) study. In the context of web service quality, only accessibility and attractiveness significantly affect students' satisfaction. This result is in accordance with Chen (2011) and Farahat (2012) and in contrast with the study by Nasirun et al (2012) which stated that the four dimensions significantly affect students' satisfaction.

Perceived quality delivered by administrative staff includes appropriate services, speed, accuracy, and prudence in providing services. These aspects become a traditional differentiator with e-Service quality. Those aspects focus on humans. Interpersonal relationships of support staff in higher education institutions can impact internal service quality; and therefore, affected on job performance, motivation, and commitment of the staff on delivering service (Gibbs and Kharouf, 2020).

Perceived quality of university infrastructure includes physical buildings, interior and exterior design, scientific forums, access to reputable publications and supporting facilities for community service activities. Those factors are traditional service quality which mostly becomes the main facility of academic activities at the university. Perceived quality of support services includes staff fairness, staff competency, and university activeness in social activities. In terms of e-Service quality, the factors of ease, speed of access, designs, fonts, colors, multimedia, and attractive graphics and security influence student satisfaction through websites and portals. It should be underlined that in this study e-service quality is limited to the use of websites and portals. The separation of the two types of service quality is intended to examine how much added value is given by e-Service quality to student satisfaction. However, the form of human-machine interaction that directly replaces interpersonal interaction as in the case of electronic or distance learning is not analyzed.

However, although the perceived quality of supported or administrative staff has a positive effect on satisfaction, the perceived quality delivered by teaching staff has another way. Teaching staff quality had no effect on students' satisfaction. This result was in contrast with Goh et al (2017) that found learning design and interaction with teachers related to learning satisfaction. Additionally, the construct of several factors from the Technology Adoption Model (TAM) was not fully supported by the findings. The accessibility and attractiveness were found to have a positive effect on students' satisfaction, which supports the research from Chen (2011), and Farahat (2012) for accessibility factor, while Nasirun et al (2012) for its attractiveness factor. However, usability and responsiveness have no influence on students' satisfaction. The result was in contrast with research from Al-Hawari and Mouakket (2010) and also Farahat (2012) for usability, while responsiveness from Chen (2011).

This study brings several implications for private universities. First, this study suggests that universities should deliver a high concern on increasing traditional service quality, especially in terms of administrative services, provision of facilities and infrastructure for teaching and learning activities, and supporting facilities for research and community service. As indicated by IPMA results, that the university's performance in providing infrastructure is relatively lower than the other four dimensions. Therefore, it is suggested that universities should provide and improve the quality of the infrastructure,

such as buildings, libraries, seminar rooms, together with interior and exterior designs. Even though, the effect of web service quality on improving students' satisfaction is relatively lower than traditional service quality, but improvement should be made especially in the usability of websites and university portals. For society, the results become an input for evaluating service quality at the university. As for the government and policymakers, the results become the initial key regarding the significance of the use of technology for academic activities and environments in higher institutions. It is also worthy of consideration in formulating the concept of blended learning or the combination of traditional and electronic service quality.

CONCLUSION AND LIMITATION

This study specified that both traditional and e-Service quality have significant and positive effects on student satisfaction. However, the perceived value of traditional service quality has a greater effect to increase students' satisfaction at private universities than the perceived value of electronic service quality. The results of this study contribute to providing academic knowledge in terms of the effect of both types of service quality on student satisfaction. Besides, the emerging of internet technologies has led to an increasing trend in e-Services in higher education. The fact that the traditional service quality brings a higher influence on student satisfaction has become an interesting insight for higher education institutions.

However, the limitations of this study are in terms of a limited number of samples and the scope of electronic service quality discussed which is limited to activities carried out on the web and university portals. In practice, students often do combining activities. Activities carried out online at the portal often must be validated offline by academic staff. Therefore, further research is required to examine this specific condition. Also, different results are expected to be obtained in e-learning methods.

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APPENDIX

Constructs	Sources	Indicators	Loading factors
Perceived quality delivered by teaching staff (PQT)	Doña-Toledo, Luque-Martínez, and Del Barrio-García (2017)	*PQT1*	Lecturers have attractive and professional looking
		PQT2	Lecturers have high skill and knowledge
		PQT3	Lecturers are truly helpful and caring to student questions and problems
Perceived quality delivered by administrative staff (PQA)		*PQA1*	Employees provide appropriate academic services
		PQA2	Employees respond to student problems quickly
		PQA3	Employees provide academic services carefully
		PQA4	Student complaints are handled quickly
		PQA5	Employees provide adequate administrative services
		PQA6	Employees provide high quality academic services
Perceived quality of university infrastructure (PQI)		*PQI1*	The spacious and amazing physical building
		PQI2	The university's exterior design is very impressive
		PQI3	The university's interior design looks beautiful
		PQI4	The university has links to reputable scientific publications
		PQI5	The university facilitates scientific forums for improving academic quality
		PQI6	The university has facilities that support community service activities
Perceived quality of support services (PQS)		*PQS1*	The university actively organizes social activities
		PQS2	Support staff treat students fairly
		PQS3	Support staff are very competent
Usability (USA)	Nasirun et al (2012)	*USA1*	The web operating system and portal never stop functioning
		USA2	Web and portals regularly update information
		USA3	Information presented on the web and portal satisfy my needs
Responsiveness (RES)		*RES1*	Web and portals are easily accessible
		RES2	The pages load quickly
		RES3	Web and portals are easy to use
		RES4	I can log in to the portal quickly
		RES5	The web and portal can be accessed at any time
Accessibility (ACC)		*ACC1*	The web and portal's easy-to-use dashboard make students can find the information quickly
		ACC2	All activities through the web and portal can be performed quickly
		ACC3	Information on the web and portal is presented in a unique and interesting way
		ACC4	Designs, fonts, colors, multimedia, and graphics used on the web and portals are very interesting
Attractiveness (ATT)		*ATT1*	The web and portal keep the confidentiality of my personal information
		ATT2	I consider the university portal is very safe
Perceived value (PV)		*PV1*	Tuition fees are in accordance with the facilities received by students
		PV2	Tuition fees are in accordance with the services received by students
		PV3	Tuition fees are in accordance with the quality of the teaching staff
		PV4	Learning facilities provided are as I expected
		PV5	The quality of the teaching staff is as I expected
		PV6	The learning atmosphere at the university is fun and interesting
Perceived web value (PWV)		*PWV1*	I like to search for information through the web and portals
		PWV2	I am satisfied with the experience of using the web and portal
		PWV3	I am satisfied with the information and services provided through the web and portal
Satisfaction (SAT)	Nasirunet et al (2012); Doña-Toledo, Luque-Martínez, and Del Barrio-García (2017)	*SAT1*	I am proud to study at this university
		SAT2	I enjoy studying at this university
		SAT3	Overall, I am satisfied to study at this university
		SAT4	I will join any activity carried out by the university

Table 6: Construct operationalization