Verifying the moderating role of satisfaction on service quality and students' accomplishment in ODL perspective

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Abstract

Purpose – Service quality and satisfaction in the ODL setting related to students' accomplishments (performance, loyalty and career) were reconsidered. It was aimed at exposing the moderating role of satisfaction on service quality and accomplishment. It was also of interest to scrutinize how, in what routines determinants engaged interdepended. The paper aims to discuss these issues.

Design/methodology/approach – This study utilized an exploratory design. It was qualitatively identified first that service quality included tangible, empathy, assurance, reliability, responsiveness and referral factors. It preceded to satisfaction (perceived from academic, operational and managerial attitudes). Satisfaction led to accomplishment. Quantitatively, service quality, satisfaction and accomplishment were identified as independent, moderating, and dependent variables, respectively. Respondents, 500 Universitas Terbuka graduates, were randomly pursued to accumulate data by a survey. Methodically, importance-performance analysis (IPA) and customer-satisfaction index (CSI) were used to figure out satisfaction and their importance degree. Nine hypotheses were developed and examined using structural-equation modeling to visualize the loading factors.

Findings – Replies from 163 respondents were completed. Seven of nine hypotheses were validated. It was distinguished that reliability influencing satisfaction, they were empathy, assurance and responsiveness; excluding tangible and referral. Satisfaction influenced performance, career, and loyalty. IPA-CSI analysis recognized 15 (of 21) attributes as the pillars of service quality.

Originality/value – Despite the qualitative framework was improperly approved by quantitative procedure, they were methodically reliable. It was supported by the fact that nine cut-off values of goodness-of-fit requirements harmonized. Additional inquiry is therefore required to tail off variances by integrating a more appropriate approach, amplifying theoretical coverage, and/or extending population/sample size.

Keywords Satisfaction, Service quality, SEM, IPA-CSI

Paper type Research paper

1. Introduction

Student satisfaction, as the origin of service quality, in association with persistence, academic performance, retention and career advancement were formerly reviewed. It was understood that to a certain extent responsiveness, assurance, tangibles, reliability and empathy were interrelated to student satisfaction. Moreover, career advancement,

retention, academic performance, and persistence were influenced by satisfaction. These upshots were observed by students of Universitas Terbuka Indonesia domiciled overseas within an open distance learning, or ODL, perspectives (Sembiring, 2015). In this inquiry, the respondents were graduates and the dependent variables were students' performance, future career and loyalty.

Service quality framework leading to satisfaction in more general outlooks had been framed by Parasuraman *et al.* (1988). It was also further elaborated by Tan and Kek (2004), Petruzzellis *et al.* (2006) and Rojas-Mendez *et al.* (2009), particularly in educational areas. Correspondingly, some factors leading to student satisfaction and its relations to student retention observed from service quality outlooks had been underlined by Brown (2006) and Arokiasamy and Abdullah (2012). These endeavors are both pertinent and essential for ODL institutions since many students who struggled to secure a degree failed to persist as the service delivered was below the required quality standard (Roberts and Styron, 2009).

Respectively, there is still a trivial question left on service provided and delivered through ODL modes in assuring student achievements. Some basic queries, for example, are concerning: students grade point average (GPA); whether they are able to accomplish the program up to the finish as scheduled; or on the social recognition of their study in ODL mode. Moreover, it is relevant to have uncertainties about whether ODL graduates will be equipped with adequate hard and soft skills as compared to graduates of conventional universities. To a certain extent, these facts are still relatable to the Universitas Terbuka condition as documented by Sembiring (2017).

Universitas Terbuka was established in 1984 with a single mode of delivery, ODL. The University currently has 320,000 students managed through 40 regional offices; including one regional office to serve students domiciled overseas. They reside in 34 overseas countries. Since the establishment, the University has now around 1,700,000 graduates. The vast majority of them are teachers.

Having considered on the critical issues formerly particularized, this study was initiated to investigate the plausible and pertinent determinants (variables, dimensions and/or attributes) as the origins of service quality toward students' accomplishments (performance, loyalty and future career) moderated by satisfaction. In a more detail perspective, this study explores: What are the variables/dimensions/attributes underpinning satisfaction; How satisfaction affects academic performance, students' loyalty and their future career; How are interrelations amongst determinants engaged and in what routines they interconnected; How are the existing facts on service quality and satisfaction associated with accomplishment in Universitas Terbuka tradition experienced by graduates from the Makassar Regional Office.

2. Related studies and the frameworks

Parasuraman *et al.* (1988) essentially confirmed five main key elements of service quality, consisted of tangible, empathy, assurance, responsiveness and reliability. Additionally, the referral element was included as another origin of service quality adjacent to those first five elements described (Sembiring, 2017, 2018b). Service quality also leads to satisfaction. Service quality in this context, behold by and from graduates' standpoints, was viewed from academic, operational, and managerial service outlooks. Moreover, graduates' satisfaction has a positive and direct effect on students' performance, loyalty, and future career.

Service quality and satisfaction, mainly in the educational sector, magnetized academics in a wide variety of disciplines (Kitcharoen, 2004). An earlier piece of work completed by Tileng *et al.* (2013), for example, gave the confidence to make use of this basis within Universitas Terbuka milieu. The origin of the study was service quality and satisfaction integrated with some other prominent constructs in conjunction with accomplishment, loyalty, and career advancement (Sembiring, 2015). Additionally, Ilias *et al.* (2008),

Mailany (2011) and Martirosyan *et al.* (2014) have identified that evaluation on satisfaction leads to a positive increase in academic performance. Students are also searching for a program that will prepare them for guaranteeing good career advancement for their future. It is believed that many students expected to gain more established forthcoming jobs (Archambault, 2008).

After expansively elaborating those related theoretical foundations, they are now much easier to comprehend, as illustrated in Figure 1, referred to as the so-called conceptual framework of this inquiry. All elaborated key elements as illustrated in Figure 1 are related to the main mission of the University to produce world quality graduates. It can be achieved by providing good service quality with respect to assuring satisfaction. Satisfaction is expected to lead to students' academic performance, loyalty and their promising future career through Universitas Terbuka tradition.

It was understood that in an exploratory design procedure qualitative processes consisted of a literature review, interview, and focus group discussion series prior to and after establishing the conceptual framework. Conceptually, graduate satisfaction was therefore defined as the ultimate of service quality that leads to accomplishments. Service quality consisted of tangible, empathy, assurance, reliability, responsiveness (Parasuraman *et al.*, 1988) and referral factors (Sembiring, 2017). Students' accomplishments consisted of academic performance, loyalty and their future career.

After completing the conceptual framework, we proceed to the operational stage. It was constructed that the operational framework following the conceptual framework. In the operational stage, there will be an elaboration of all determinants engaged leading to the operational definition and they will be used in and for this study.

Operationally, tangible (X_1) was defined as the first dimension of service quality with respect to graduate satisfaction that has a well-designed web with complete information and they are interactive as the main entry accessing and interacting with the University. Empathy (X_2) was defined as the second dimension of service quality with respect to graduate satisfaction on receiving service and getting feedback with sincere cordiality and authentic relations in responding to students' needs and complaints. Assurance (X_3) was
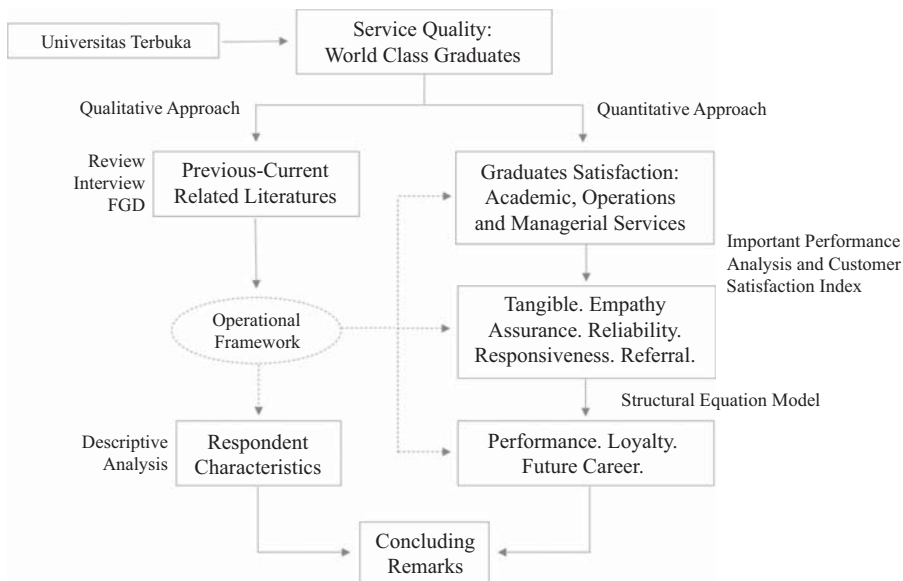
Figure 1.
Conceptual framework
the study

defined as the third dimension of service quality with respect to graduate satisfaction on an integrated set of procedures, schedules, and support mechanisms in confirming the success of their study.

Additionally, reliability (X_4) was defined as the fourth dimension of service quality with respect to graduate satisfaction on quality assurance system, practiced curriculum, and existing accreditation for social recognition. Responsiveness (X_5) was defined as the fifth dimension of service quality with respect to graduate satisfaction in accessing helpdesk and making communication with an effective feedback loop in dealing with students' queries. Referral (X_6) was defined as the sixth dimension of service quality with respect to graduate satisfaction in providing direct supervision, customary counseling, and academic assistance to fully helping them achieve their optimal academic performance.

Again, still at the operational level, graduate satisfaction (Y_1) was defined as a condition where the ultimate service quality thoroughly covered academic, operational and managerial services. Likewise, academic performance (Y_2) was defined as achieving a good GPA with good capability in absorbing hard and soft skills after completing their program. Loyalty (Y_3) was defined as the function of (graduates) satisfaction to enable them finishing their program on time, willing to continue their study at the same university, and be available to promote the University to others. Future career (Y_4) was defined as the belief that the ultimate of graduates' satisfaction should equip them to achieve a high level of job performance, getting advantages in terms of civil effect and annexing social recognition in the real work.

The elaboration of the conceptual and operational definitions defined beforehand is fundamentals and the furtherance of the conceptual framework. This structure will be employed to establish an operational framework. Prior to launching the operational framework, it is worth noting that graduate satisfaction (Y_1) was determined by service quality and it leads to academic performance, loyalty and a future career.

Having elaborated and defined variables and dimensions engaged in the conceptual and operational arrangement, they (all elaborated and defined variables and dimensions) will be much easier to follow by putting them all as exhibited in Table 1. This table will be utilized to establish the operational framework that will afterward be scrutinized under a quantitative approach.

3. Research design and the hypotheses

The launching of the operational framework is consolidated by reflecting the grand design (Figure 1). Besides, it is the manifestation of variables and dimensions involved (Table 1). This operational framework is then utilized as a basis to determine the research design and approach of resulting in the analysis. This is done prior to statistically deducing conclusions as an integral part of the quantitative procedure. It will technically be executed with the help of structural-equation modeling (SEM) as well as importance-performance analysis (IPA) and customer-satisfaction index (CSI) as previously adopted by Sembiring (2018a, b).

This inquiry used mixed methods; that is exploratory design (Creswell and Clark, 2011). It is initially organized under a qualitative approach first and then followed by a quantitative sequence. Two kinds of instruments were established. They are a list of questions for the interview and focus group discussion sessions (qualitative process) and questionnaire as an instrument to accumulate data from eligible respondents (quantitative purpose).

For the qualitative purpose, three experts and five graduates are purposely chosen. They are included in the two different sessions, namely, interview sessions and focus group discussions. In the first session, the three experts are asked to comment on the potential variables of graduate satisfaction in the ODL mode of delivery. The experts were also asked to discuss what types of services are included viewed from institutional perspectives.

No.	Variables	Dimensions	Notes
1	X_1 Tangible	X_{11}: Web design X_{12}: Information on the web X_{13}: Web Interactivity	$X_1 - X_6$, Y_1, and $Y_2 - Y_4$ are independent, moderating and dependent variables respectively
2	X_2 Empathy	X_{21}: Hospitability X_{22}: Relations X_{21}: Handling complaint	Each variable has 3 dimensions; each dimension is accordingly measured by a single statement Statements in $X_1 - X_6$, and Y_1 will be answered two times simultaneously by respondents
3	X_3 Assurance	X_{31}: Procedure X_{32}: Schedule X_{33}: Support mechanism	The first answer is measuring their satisfaction level; the second answer of the same statements is measuring the importance degree
4	X_4 Reliability	X_{41}: Quality assurance X_{42}: Curriculum X_{43}: Accreditation	Y_1 was influenced by $X_1 - X_6$ $Y_2 - Y_4$ are influenced by Y_1
5	X_5 Responsiveness	X_{51}: Access to helpdesk X_{52}: Communication X_{53}: a Feedback loop	Statements included in $Y_2 - Y_4$ are answered just one time Total attributes $= 21$ (X_{1-6} and Y_1)
6	X_6 Referral	X_{61}: Direct supervision X_{62}: Customary counseling X_{63}: Academic assistance	Total statements: $((21 \times 2) + (1 \times 12) + 1*) = 55$ The last statement [*] is on the overall perception of respondents about the existing service quality
7	Y_1 Service quality satisfaction	Y_{11}: Academic services Y_{12}: Operational services Y_{13}: Managerial services	
8	Y_2 Performance	Y_{21}: GPA Y_{22}: Hard skills Y_{23}: Soft skills	
9	Y_3 Loyalty	Y_{31}: Study up to graduating Y_{32}: Further study Y_{33}: Promoting to others	
10	Y_4 Future career	Y_{41}: Job performance Y_{42}: Civil effect Y_{43}: Social recognition	

Table 1.
Variables and
dimension of
the study

Then, the experts are further asked to elaborate on factors involved related to graduates' satisfaction. Finally, the experts, both in the interview session and focus group discussion, are asked the dimensions of each potential variable related to graduates' satisfaction including their corollaries. Besides, the five graduates are also asked relatively the same questions to give remarks on the conceptual framework resulted from experts construct. Table 1 and Figure 2 underlined the essentials of graduate satisfaction with respect to academic performance, loyalty, and future career. Graduate satisfaction (Y_1) includes academic, operational and managerial service attributes. Besides, graduate satisfaction (Y_1) was measured by recognizing dimensions/attributes of: X_1 (tangible: web design, information on the web and interactivity), X_2 (empathy: hospitability, relations and handling complaints), X_3 (assurance: procedure, schedule and support mechanism), X_4 (reliability: quality assurance, curriculum and accreditation), X_5 (responsiveness: access to help desk, communication and feedback loop), X_6 (referral: direct supervision, customary counseling and academic assistance). Graphically, they are entirely arranged in Figure 2.

An instrument for a qualitative process included four specific queries. They are: What are conceivable factors (dimensions/attributes) with respect to satisfaction; How the interrelation behavior of factors involved is demonstrated; Why graduate satisfaction is pertinent to ODL institutions; How the basic ideas of satisfaction are relevant to the ODL institution, primarily to Universitas Terbuka.

Refer to Table 1. Instruments for quantitative approach consisted of 55 statements ($(21 \times 2) + (1 \times 12) + 1* = 55$) and Likert Scale 1–5. They are developed related to the
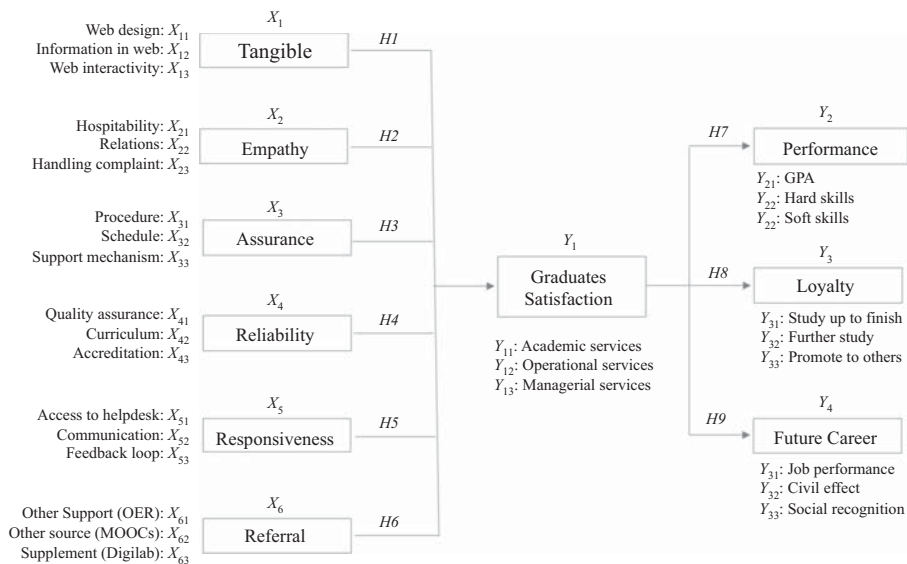
Figure 2.
The operational
framework of
the study

satisfaction level and their importance degree. Besides, 14 items are proposed as additional statements to validate independent variables (service quality) with respect to dependent variables (students' accomplishment) moderated by graduates' satisfaction (Y_1). The questionnaire is explored by considering variables and dimensions engaged following Shahzavar and Tan (2011).

Purposive sampling was chosen to select resource persons (experts) for qualitative purposes. Simple random sampling was used to determine respondents for quantitative purposes (Cochran, 1977). A survey was started to accumulate data from eligible respondents (Fowler, 2014). The IPA-CSI were applied with the intent to simultaneously measure the satisfaction level of graduate satisfaction along with their importance degree (Wong *et al.*, 2011). SEM is then applied to detect relations power among variables/dimensions/attributes engaged following Marks *et al.* (2005).

This inquiry finally establishes and then scrutinizes nine hypotheses (*H1–H9*, Figure 2). Explicitly, the graduates' satisfaction (Y_1) is influenced by: tangible (*H1*), empathy (*H2*), assurance (*H3*), reliability (*H4*), responsiveness (*H5*) and referral (*H6*). Besides, academic performance (*H7*), loyalty (*H8*) and future career (*H9*) are influenced by graduates' satisfaction (Y_1).

These nine hypotheses will be examined under the SEM technique to validate the relations amongst variables and dimensions engaged. The validation is to examine the significance level of the relations. Having validated the significance of relations, it is finally utilized to scrutinize the power of their relations for inferring statistical upshots.

4. Results and discussions

Prior to inferring the result, it is useful to notice the features of the respondents. This will give us a basis to clearly interpret the outcomes afterward. The results of the analyses will be described in more detail after following the following respondents' characteristics (Table 2).

The population was 500 graduates who attended graduation ceremony organized by Universitas Terbuka Makassar Regional Office, April 10–11, 2019. In total, 500 questionnaires are provided and then distributed to participants of the ceremony. In all, 163 questionnaires

were completed and then analyzed. Respondents are entirely from the Faculty of Teacher Training and Education; they are all teachers. Most of them are teachers in primary school (59 percent) and early childhood program (37 percent); while another 4 percent were teachers in junior or high schools. The vast majority of them are categorized as the graduates of the basic education programs. Therefore, this result is the representation of graduates from the Basic Education Program of Universitas Terbuka under the management of Makassar Regional Office; one of 40 regional offices at Universitas Terbuka; in Sulawesi Selatan Province (in Sulawesi or Celebes island).

Respondents are a full-time worker (teacher) and dominated, in terms of number, by women, and they are married. More than 65 percent of them can be categorized as a young and energetic teacher with a good GPA. Besides, they are smart students as most of them are able to accomplish their program in less than seven years. This is a good measurement considering they are a full-time worker as well as an independent learner, for they attend the program through ODL mode. They mostly resided in relatively remote areas with high constraints in time and space issues. In other words, most of them confronted both limited access to communication and high transportation problem.

Now, we continue to the next results. First, on the hypothesis effects. The analysis disclosed that two out of nine hypotheses established (refer to Figure 2) are not authenticated by analysis. They are: tangible (*H1*) and referral (*H3*) with respect to graduates' satisfaction (Y_1), as the p-value $\leqslant 1.96$, $\alpha = 5$ percent, while the other seven hypotheses are validated, as the p-value $\geqslant 1.96$, $\alpha = 5$ percent. The seven validated hypotheses are: empathy (*H2*), assurance (*H3*), reliability (*H4*) and responsiveness (*H5*) with respect to graduate satisfaction (Y_1) and so are the graduate satisfaction (Y_1) with respect to academic performance (H7), loyalty (H8) and future career (*H9*).

In the next step, it is worth exposing the level of satisfaction and degree of their importance ensued from IPA-CSI analysis. The IPA-CSI chart generates attributes related to the relevant quadrants to understand its interrelation behaviors. Graphically, the IPA-CSI Chart has four quadrants (*Q*), they are: Q_1 (Concentrate Here!), Q_2 (Maintain Performance!), Q_3 (Low Priority!) and Q_4 (Possible Overkill!); following Deng and Pierskalla (2018).

Q_1 indicates graduate satisfaction attribute is at a low level while the degree of its importance is high. Q_2 indicates both graduate satisfaction attribute and the degree of its importance are concurrently placed at a high level. Q_3 indicates both graduate satisfaction attribute and the degree of its importance are at a low level. Q_4 indicates the satisfaction attribute is at a low level of importance but high in satisfaction. These are the results of IPA-CSI analysis:

- Q_1 (Concentrate Here): one of 21 attributes (refer to Table 1 and Figure 2) falls into this quadrant: feedback loop (X_{53}). This implies that the University must notice this single attribute into account seriously. It was considered to be important but, according to graduates, low in satisfaction. The University should handle this attribute cautiously.

Respondents: 163	%	%	%	%	%
School	High Sc: 01	Junior Sc: 02	Primary: 59	Early Ch: 37	Others: 01
Status	Public: 21	Private: 26	Agreement: 20	Contract: 32	Others: 01
GPA	2,00-2,49: 31	2,50-2,99: 41	3,00-3,49: 24	3,50-3,99: 04	4,00: 00
Study length years	$\leqslant 5$: 24	6: 39	7: 31	8: 05	$\geqslant 9$: 01
Experience years	$\leqslant 5$: 04	6-10: 26	11-15: 35	16-20: 21	$\geqslant 21$: 14
Age years	$\leqslant 25$: 03	26-30: 28	31-35: 36	36-40: 24	$\geqslant 41$: 09
Gender	Female: 83	Male: 17	Status	Married: 72	Single: 28

Table 2.
Respondents
characteristics

- Q_2 (Maintain Performance): there are 15 out of 21 attributes fall into this quadrant. They are: web design (X_{11}), hospitality (X_{21}), relations (X_{22}), handling complaint (X_{23}), procedure (X_{31}), schedule (X)$_{32}$, support mechanism (X_{33}), quality assurance (X_{41}), curriculum (X_{42}), accreditation (X_{43}), access to helpdesk (X_{51}), communication (X_{52}), academic service (Y_{11}), operational service (Y_{12}) and managerial service (Y_{13}). The University must take care and keep maintaining these attributes prudently as they are the fundamentals of satisfaction. Attributes fall in this quadrant are the strengths and pillar of satisfaction in Universitas Terbuka context. Besides, these attributes become the pride of the University as a favorable basis for maintaining satisfaction. Fortunately, most respondents have been aware of these attributes as an assurance to provide service with high satisfaction.

- Q_3 (Low Priority): there are two out of 21 attributes fall into this quadrant: information on the web (X_{12}) and academic assistance (X_{63}). The university should classify these two notions as the next focus after concentrating to maintain critical points in Q_2. Any attribute that falls into this quadrant has no significant threat. The University may redirect energy to other attributes fall in Q_1 to providing quality service and simultaneously shift them into Q_2.

- Q_4 (Possible Over Kill): there are three out of 21 attributes as members of this quadrant. They are web interactivity (X_{13}), direct supervision (X_{61}) and customary counseling (Y_{62}). Consideration of attributes in this quadrant can be much less focused. The university can save costs and effort by redirecting critical points in this quadrant by anticipating no attributes will fall again into Q_1 and simultaneously keep maintaining all-important attributes in Q_2.

After locating attributes with respect to IPA-CSI Chart, it is the right moment now to associate the loading factors of quantitative framework analysis to discern the power of relations of each variable involved (factor/dimension/attribute) under the SEM technique to disclose the results (Marks *et al.*, 2005; Hair *et al.*, 2009).

Now, there are five effects left and need further analysis as a result of a quantitative procedure that needs to be comprehensively detailed further (refer again to Figure 2):

(1) The first result was on the variables and dimensions directly influencing satisfaction (Y_1). They are: reliability (X_4) and then followed by empathy (X_2), assurance (X_3) and responsiveness (X_5). While graduates' satisfaction is not influenced by tangible (X_1) and referral (X_6).

(2) The second effect is associated with the order of attributes in reliability (X_4). They are: accreditation (X_{43}), quality assurance (X_{41}), and curriculum (X_{42}). The order of attributes in empathy (X_2) is: handling complaints (X_{23}), hospitality (X_{21}) and relations (X_{22}). The order of attributes in assurance (X_3) is: supporting mechanism (X_{33}), schedule (X_{32}) and procedure (X_{31}). The order of attributes in responsiveness (X_5) is: access to helpdesk (X_{51}), communication (X_{52}) and flexible (X_{53}). The order of attributes in perspective (X_6) is: universal (X_{64}), novelty (X_{61}), corresponding (X_{63}) and insightful (X_{63}).

(3) The third consequence is related to the power of the relations of the moderating variable and the dependent variables. Satisfaction (Y_1) has direct and significant influences on: accomplishments (Y_2) and then followed by future career (Y_4) and loyalty (Y_3).

(4) The fourth concern is the order of attributes in satisfaction. They are: operational service (Y_{12}); followed by academic service (Y_{11}) and managerial service (Y_{13}).

(5) The fifth corollary is related to the rank of attributes within the academic performance (Y_2). They orderly are: GPA (Y_{21}), hard skills (Y_{22}) and soft skills. The rank of attributes in loyalty (Y_3) is: further study (Y_{32}), study up to finish (Y_{31}) and promote to others (Y_{33}). The rank of attributes in a future career (Y_4) is: a civil effect (Y_{42}), job performance (Y_{41}) and social recognition (Y_{43}).

Before confirming the results using mixed methods, we need to consider whether the SEM result is systematically in the "good-fit" category or not. If the answer is yes, it is then reliable to use the hypotheses analysis and engender the loading factors to intensify the power of interrelations of factors engaged (Table 3).

The analysis of goodness-of-fit test (Table 3) factually verified they are in the good-fit category despite the normed fit index and incremental fit index are both in marginal-fit categories. Therefore, the tested operational framework was quantitatively and positively dependable.

Referring to the effects of the goodness-of-fit analysis, it is practical to use it as a point of reference to draw the statistical inference. Three basic valuations ought to be explored. The first is on the gap obtained using an exploratory design. The second is referring to the respondents' characteristics as they are a full-time worker and domiciled in relatively remote areas. The third is on the implication of findings for future study.

Under the qualitative procedure, satisfaction was obviously interlinked with service quality (based on the six dimensions). The moderating variable (Y_1: satisfaction) was interrelated with the independent variables. In fact, there were two dimensions of independent variables (tangible and referral) that were not interrelated with the moderating variable. This implies that the qualitative and quantitative results visibly diverged despite they did not oppose one another.

The exploratory design was accomplished by evaluating and amalgamating related theories and end up with hypotheses as part of a qualitative procedure. A quantitative structure is launched prior to the elucidation of hypotheses (Creswell and Clark, 2011). It was intended to measuring the qualitative aspects of the exploratory outcomes. Before establishing the operational frame, the conceptual framework should be first established since the operational framework will be methodically examined. The results disclosed that two hypotheses were not validated. Besides, the order of dimensions/attributes engaged in the initial framework was also differed as compared to the quantitative upshots. It means, again, that the quantitative approach was still unable to thoroughly approve the qualitative exploratory discoveries.

Referring to Table 2, it is clear that respondents were teachers and most of them resided in relatively remote areas. This is the main justification why tangible and referral factors are excluded by the analysis. They have less interaction through the website on one hand and they also seldom using referral schemes on the other hands. This is mainly due to

Goodness of fit	Cut-off values	Results	Notes
Root mean square residual (RMR)	⩽ 0.05 or ⩽ 0.10	0.08	Good fit
Root mean square error of approximation (RMSEA)	⩽ 0.08	0.07	Good fit
Goodness of fit (GFI)	⩾ 0.90	0.93	Good fit
Adjusted goodness of fit index (AGFI)	⩾ 0.90	0.91	Good fit
Comparative fit index (CFI)	⩾ 0.90	0.92	Good fit
Normed fit index (NFI)	⩾ 0.90	0.89	Marginal fit
Non-normed fit index (NNFI)	⩾ 0.90	0.90	Good fit
Incremental fit index (IFI)	⩾ 0.90	0.88	Marginal fit
Relative fit index (RFI)	⩾ 0.90	0.92	Good fit

Table 3.
The goodness of fit of the tested framework

geographical (communication and transportation) constraints. Besides, this explains why the feedback loop falls in Q_1 and putting operational service as the first attribute as part of satisfaction instead of academic service. These all are caused by geographical conditions and then lead to registration and logistic problems. This issue, in this inquiry, is categorized as an operational service aspect.

Future research might involve respondents beyond graduates and not limited only to Makassar Regional Office. Further study should also involve students from other faculties (Faculty of Economics, Faculty of Social Science and Faculty of Mathematics and Natural Science). This attempt is related to an effort of finding a balance between qualitative and quantitative outcomes. It needs to always keep in mind that preparing, providing, and delivering high standard service quality to students are critically important to assure accomplishment (academic performance, loyalty and future career) as elucidated by this inquiry.

5. Conclusions

This study has encountered a slight difference between what was obtained under qualitative as compared to quantitative results. Two of the nine hypotheses scrutinized were not statistically validated by the analysis. This implied that the established qualitative framework is imperfectly approved by the quantitative procedure; it is clear that we need further research for this diverse outcome.

Referring back to the four basic questions of the study previously identified. First, this inquiry is able to elucidate six main factors (dimensions/attributes) underpinned satisfaction despite two of them are not significantly interdepended one another. Second, the study is also able to expose how and in what routines factors involved, including the dimensions/attributes, interrelated one another. Third, the results positively showed that satisfaction is acceptable to support accomplishment in terms of academic performance, loyalty and their future career. Fourth, the University has been in service for 35 years of experience (since 1984). It has more than 1.6m graduates and at the same time is serving more than 300,000 students per semester. Having considered those findings, facts and numbers, it is strongly believed that Universitas Terbuka is unquestionably on the right path to contribute to the nation in making higher education open to all in the Indonesia context (Universitas Terbuka, 2017) as the answer how Indonesia anticipates the fourth Industrial Revolution.

The next inquiry is needed by enlarging the scope of the study and involving other respondents not only from one but also from other 39 regional offices. This is to reach a consequence of being closer under exploratory design and move toward the real condition. Under the IPA-CSI procedure, 15 prime attributes were identified as the core evidence that satisfaction in the Universitas Terbuka context, with the tag line making higher education open to all, is promising related to educating the nations for a better future. By doing further inquiry, it will give us a more comprehensive understanding of the real factors influencing satisfaction and its implication on its practicality for ODL institutions that have comparable traits with Universitas Terbuka.

The study is categorically able to simplify factors involved underpinning graduate satisfaction. They orderly are: reliability, empathy, assurance and responsiveness. Besides, the result, again, is able to reveal how and in what behaviors factors were interrelated one another. The result is also able to convince that graduates' satisfaction is pertinent to reinforce Universitas Terbuka as the pioneer of the cyber university in Indonesia tradition (Universitas Terbuka, 2017). All these expectations can be realized if and only if the service quality delivered is able to assure accomplishment (performance, loyalty and future career) moderated by satisfaction for the sake of students.

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