# ZONE OF TOLERANCE: MODERATING THE EFFECT OF SERVICE QUALITY ON SATISFACTION AND IMAGE AND ITS EFFECT

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# ZONE OF TOLERANCE: MODERATING THE EFFECT OF SERVICE QUALITY ON SATISFACTION AND IMAGE AND ITS EFFECT ON CUSTOMER LOYALTY

## Slamet Ahmadi & Susanti Widhiastuti

### ABSTRACT

The purpose of this research is to analyze the zone of tolerance in moderating the influence of tangible and intangible, service quality to satisfaction and image, and its influence on customer loyalty. Data collection method uses a questionnaire with a sample of 409 respondents from five management departments in five private universities at region Kopertis III Jakarta. The data are analyzed by using SEM (structural equation modeling) and multigroup analysis for moderating variables. The result shows that tangible and intangible service quality has a positive significant influence on satisfaction and image, then have a significant influence on customer loyalty. Zone of tolerance is significantly moderating the influence of tangible and intangible service quality to satisfaction. Zone of tolerance is also significantly moderate the influence of tangible service quality to the image. The result of the moderate test shows the significant differences between groups of the respondent who has a narrow zone of tolerance with a wide zone of tolerance. Based on the coefficient value, on the group of the respondent who has a narrow zone of tolerance, tangible service quality have stronger positive significant influence to satisfaction and image compared to a group of the respondent who has a wide zone of tolerance. Group of the respondent who has a wide zone of tolerance, intangible service quality have a stronger positive significant influence on satisfaction compared to a group of the respondent who has a narrow zone of tolerance. On the other hand, ZOT is not significantly moderating the influence of intangible service quality to the image, since the moderating test shows that there is no significant difference between groups of the respondent with a narrow zone of tolerance with a wide zone of tolerance. This study contributes to the service quality theory by examining zone of tolerance that proved as moderating variable between tangible and intangible service quality to satisfaction, and zone of tolerance also proved as moderating variable between tangible service quality to the image. Based on the study of research, managers are recommended to consider and understand and zone of tolerance in giving service quality in order to increase consumer satisfaction and image.

**Keywords:** Tangible, Intangible, Satisfaction, Image, and Zone Of Tolerance

## INTRODUCTION

Universities (PT) are obliged to carry out tri dharma, namely education, research, and community service. Universities (PT) with complete facilities can provide good quality service in the implementation of the tri dharma. Universities and its programs must strive to improve service quality so that student image and satisfaction, which has an impact on increasing student loyalty.

Universities and colleges in the fierce competition require proper management of service quality and the impact on WOM. Research Songan et. al (2010) showed that the main sources of information that influence student choice are WOM from friends, relatives and web's campus.

Narteh (2015), states that service quality is important to build customer satisfaction and service quality level. The consumers make purchases of services by paying attention to the image of the company's services to be purchased, therefore it is important for companies to provide information to the public in order to establish a good image. The major components that cause the image on a college campus can be the appearance, location, infrastructure, possibilities for future careers and college activities (Qomariah, 2012). The image is considered to represent the totality of one's knowledge of something. Image of an institution that will either affect customer loyalty (Phan, 2013).

There are several previous studies regarding service quality such as Bakti and Sumedi (2013), Rinala (2013), Kitapci (2013), Salam and Tawfik (2013), Sultan and Wong (2014), Izogo and Ogba (2015), and Narteh 2015). The results showed that loyalty can be created through service quality, satisfaction, and image of the organization. Service quality has been identified as a key factor for increasing satisfaction, image and customer loyalty.

Zone of tolerance is a level of performance that is associated with the state of inertia, so that consumers do not care about the increase or decrease in service quality within the range of their tolerance zone, (Wu, 2011). ZOT is very useful to improve the effectiveness of investment in improved service quality.

Some recommendations for further research of previous researchers follow:
Yap and Sweeney (2007) conducted a study of the effect of service quality on satisfaction and value and its implications for the loyalty of Australian banking customers using the Zone of Tolerance concept. In his research, the researcher stated that there were limitations which were only done in the banking industry, so Yap and Sweeney (2007) recommended conducting further research using the concept of Zone of Tolerance in different industries such as education and health.

Wu and Wang (2012) in Taiwan investigated the influence of ZOT and satisfaction to loyalty is also recommended to carry out further research on the different countries and industries. Yap and Sweeney (2007) conducted a study on service quality with the two dimensions of the process and the physical dimensions. Nadiri (2011) states that service quality is classified into two dimensions: tangible and intangible. Intangible dimension is a combination of the dimensions of responsiveness, assurance, empathy, and reliability. These dimensions derived from SERVQUAL Parasuraman (1994) which has been adapted by Nadiri et al (2011) for the measurement of higher education.

Zone of tolerance is a level of performance expected services as a top-level service, reducing the minimum service of quality as a lower level that can be tolerated. Service quality tangible dimensions and intangible dimensions, the zone of tolerance, customer satisfaction, and college image are important factors to create customer loyalty, while student loyalty is very important for the continuity of study programs at private universities.

Research on the zone of tolerance in higher education has not been done much, even researchers have not found a study that places a zone of tolerance to moderate the influence of tangible and intangible on satisfaction and image in a private university management study program in Jakarta. The problem in this study about the tangible towards satisfaction, and Image, and Image Intangible towards satisfaction,

Satisfaction, and image to the customer loyalty, ZOT moderating effect of tangible and intangible against perhaps satisfaction and image.

The significance of the study was 1) Obtaining a model to establish loyalty program management studies student at the university. 2) Obtain information about the tolerance zone of the students, through the performance of tangible and intangible services expected, the performance is reduced by a minimum of tangible and intangible services that can be tolerated by students. The research also obtains information regarding the gap between perceived service performance with the performance of the services expected of students. 3) Obtain information about the role of ZOT tangible and intangible moderating influence on satisfaction and image.

## THEORETICAL

### Service Quality

Chou et al (2011), quality of service is the difference between consumer perceptions about the services offered by the company with their expectations for the companies that offer such services while according to Kitapchi (2013), service quality is the ratio between the expected service consumers with service obtained.

Nadiri and Ampully (2011), had a similar view to formulate a quality service in his research consists of two dimensions of tangibles and intangibles.

1.  **Tangible** is the performance of services provided consistently to customers in the form of physical facilities, equipment, materials services, and the appearance of staff.
2.  **Intangible** is the performance of services provided consistently to customers in the dimensions of reliability, responsiveness, assurance, and empathy (Nadiri and Ampully, 2011).

### Zone of Tolerance

Nadiri and Ampully (2011), formulated as a tolerance zone between the desired level of service performance serves as an upper limit and a lower limit adequate service. They define the desired service as a combination of customer perception of services that can and should be accepted, while adequate service is the level of the minimum rated customer service is unacceptable.

Zeithaml et al (1993), ZOT is a tolerance of customers to differences in the level of service quality, between those who want and the quality of service that is adequate. Wu and Wang (2012), ZOT is a variety of levels of service performance that are considered satisfactory by consumers, with a range of "desired" service levels on the upside and "adequate" service levels on the lower side.

Regarding some ZOT above definition, the researchers found different levels ZOT is deemed satisfactory performance of services by consumers, between the performance of the services expected at the upper side and adequate performance of services on the lower side.

Nadiri and Ampully (2011) states.The gap between perceived service and desired service called superiority measure of service (MSS). The difference between perceived service and adequate service or minimum service referred to as a measure of service adequacy (MSA).

### Satisfaction

Zeithamel & Bithner (2003) is a consumer evaluation of a product or service that can meet their needs and expectations. Kotler and Keller (2006) satisfaction and disappointment as feeling happy or disappointed someone who emerged after comparing the perceptual impression of the performance (yield) of a product with expectations.

Phan (2013), as a function of cognitive comparisons between expectations before consuming with actual experiences.

## Image

Thomas (2012), is the perception of a person based on experience or the results of the analysis of incomplete information about the organization. Concluding the above definition, researchers argue that the image is all the impressions stored in memory as an accumulation of thoughts, feelings, and attitudes based on experience with the organization. The image formed through a person's perception based on experience or the results of the analysis of incomplete information about the organization (Thomas, 2012).

## Loyalty

Cardozo (1965), states that customer satisfaction will increase repurchase behavior. Service quality and customer satisfaction affect the subsequent impact on customer loyalty. Customer satisfaction is determined by how the level of compatibility between the services provided by the service expected customer (Parasuraman et al, 1994). The higher the perceived service quality will be higher levels of customer satisfaction and the subsequent effect on customer loyalty.

Demonstrated loyalty to the purchase of a regular behavior based on a decision (Kettinger, 2005).

## CONCEPTUAL FRAMEWORK

Noting the theory outlined above, the conceptual framework can be described as follows: Zone of tolerance moderating effect of tangible and intangible service quality to satisfaction and image and their influence on customer loyalty.
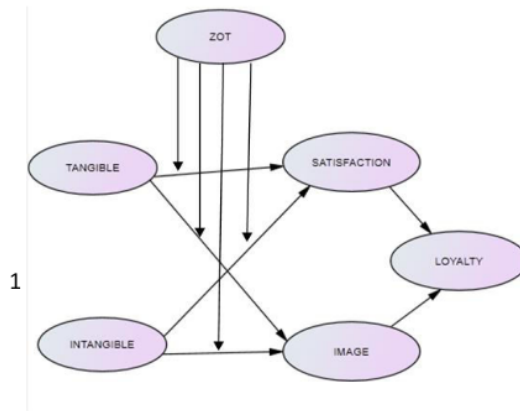


**Figure 1: Conceptual Framework**

**Based on these frameworks the hypothesis is:**

H 1 and H2. Tangible has a significant positive effect on satisfaction and Image
H 3 and H4. Intangible has a significant positive effect on satisfaction and image.
H 5 and H 6. Satisfaction and Image have a significant positive effect on loyalty.
H 7 and H8. ZOT moderates the influence of tangible and intangible on satisfaction.
H 9 and H 10. ZOT moderates the influence of tangible and Intangible on Image

## RESEARCH METHODOLOGY

**Research Design**

This research was conducted in order to test the hypothesis that moderate the zone of tolerance effect of tangible and intangible service quality on satisfaction and loyalty image and its influence. This type of relationship between the variables under study is causal and terms of the time horizon is a cross-sectional study.

**Measurement of research variables can be seen in the table:**

**Table 1: Variable of Measurement**

| Variable | Indicator | Source |
|---|---|---|
| *Tangible* | 1. The study program has modern equipment.<br>2. The study program has attractive physical facilities.<br>3. Employees groomed courses.<br>4. The materials relating to the service in the course interesting to see. | (Nadiri and Ampully 2011) |
| *Intangible* | 1. When the study program promises to do something at a certain time, it will happen.<br>2. When you have problems, the course showed a deep concern in addressing the issue.<br>3. The study program provides the right service from the first time.<br>4. The study program provides services at the promised time.<br>5. The study program records error-free data.<br>6. Employees communicate the study with timely service program.<br>7. Employees of study programs provide services to you immediately.<br>8. Employees course always willing to help you.<br>9. Employees course never felt busy to fulfill your request. The behavior of the study program staff convinced students.<br>10. You feel safe when dealing with the study program.<br>11. Employees college always polite.<br>12. Employees have knowledge in answering questions.<br>13. The study program gives you the individual attention.<br>14. The study program has working hours that are in accordance with the student's schedule.<br>15. The study program has employees who give personal attention to you. | (Nadiri and Ampully 2011) |

|  |  |  |
|---|---|---|
|  | 16. The study program has the thing you really want.<br>17. Employees of courses to understand your specific needs. |  |
| *Satisfaction* | 1. I am satisfied with the facilities provided by the study program.<br>2. I am satisfied with academic administration services.<br>3. I am satisfied with the lectures from the lecturers.<br>4. I am satisfied with the reputation of the study program. | Ueda dan Nojima (2012) |
| *Image* | 1. Management study programs have a good image in the minds of students.<br>2. Management study programs have a good image in serving students.<br>3. The management study program has a good image in accordance with the actual conditions.<br>4. The management study program where I study has a good image compared to other universities.<br>5. The management study program is my choice because I have a good image. | Salam dan Tawfik. (2013). |
| *Loyalty.* | 1. I say positive things about this study program to others.<br>2. I encourage friends to register in this study program.<br>3. I pay attention to the reputation of the study program. | Ueda dan Nojima (2012). |
| *Zone of tolerance (Zot)* | The quality of service expected of tangible and intangible net tangible and intangible quality of service of at least tolerable. The indicator used to measure ZOT is the same as the Indicator used for tangible and intangible variables. | (Nadiri dan Ampully 2011), Yap (2007) |

Source: data processed

**Population, Samples and Data Collection Methods**

The population includes all active students from five undergraduate management study programs at five private universities in Kopertis Region III Jakarta. The five universities are Bina Nusantara University, Gunadarma University, Mercu Buana University, Trisakti University, and Tarumanegara University. Samples were active students of the 2011- 2014 class, the samples were selected from the three classes on the grounds that they had experience in obtaining services and were expected to represent the population. Analysis techniques using SEM, with 34 indicators. The sampling technique used proportionate stratified random sampling. The number of samples obtained by 409 students.

Validity and Reliability using Confirmatory Factor Analysis (CFA). The criteria in the assessment by observing the value of Factor Loading (Hair. At.al, 2010). Based on the results of the test it was concluded

that all indicators were declared valid because the Factor Loading value was greater than 0.30 which ranged from 0.682 - 0.919. Reliability testing using Cronbach's Alpha (CA). If a variable is said to be reliable, based on test results concluded that all variables declared reliable because the value of Cronbach's Alpha (CA) ≥ 0.75 ranged between 0.847 to 0.955.

**Data Analysis Method and Model Test**

The method of data analysis in this study using univariate and multivariate analysis. Model test, testing the goodness of fit models, conducted to determine whether the proposed research model has a match with the data used (Hair et al., 2010). Measurement criteria have the goodness of fit if the measurement value calculation results approaching the cut-off value. A model is said to be good if there is one of the criteria of goodness of fit that can meet the criteria, (Hair, 2010). The results of model testing can be seen:
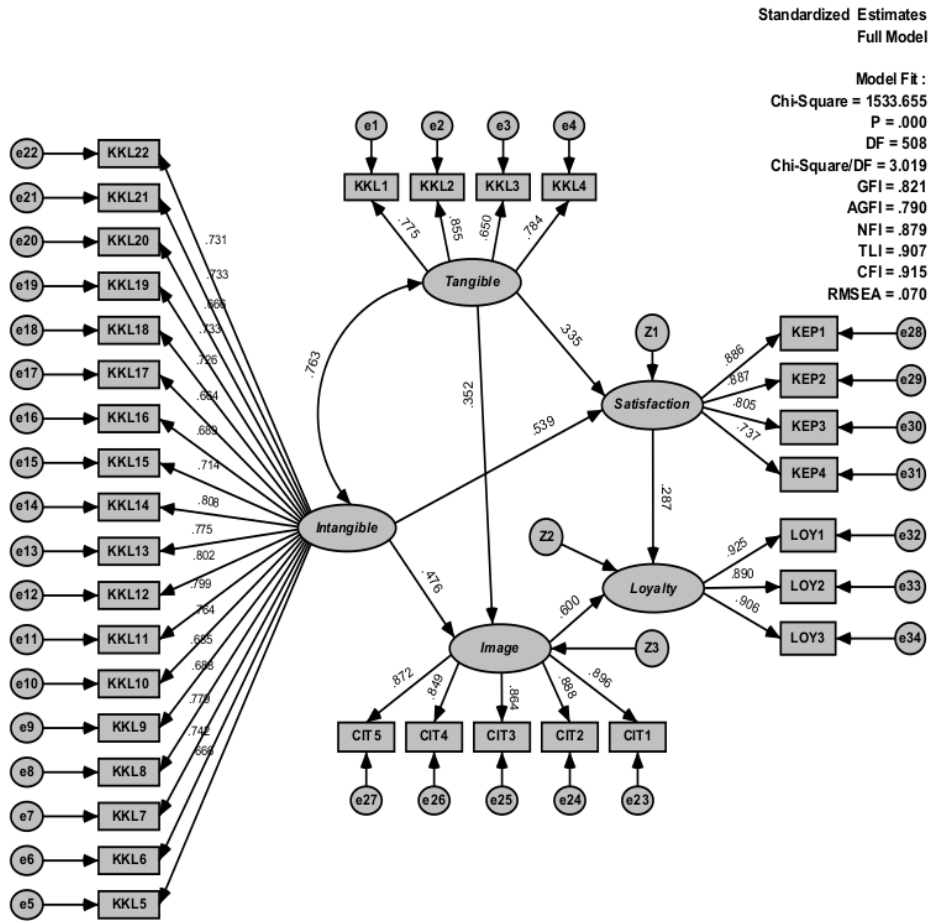


**Figure 2: Model Test**

The test results of model suitability (goodness of fit model) can be seen in Table 2 below:

**Table 2:** **Goodness of Fit Index**

| Type of Goodness-of-Fit | Goodness-of-Fit Measure | Level of Acceptable Fit (Hair, et al. 2010) | Calculation of Measure | Acceptability |
|---|---|---|---|---|
| Absolute Fit Measure | chi-square | Small chi-square | 1511,444 (df 508) | poor |
| | p-value | p-value > 0,05 | 0,000 | poor |
| | RMSEA | < 0.08 | 0,070 | good fit |
| Incremental Fit Measures | TLI | > 0,90 or closed to 1 | 0,908 | good fit |
| Parsimonious Fit Measures | Normed chi-square | Lower limit: 1,0 | | |
| | | Upper limit: 2,0/3,0 or 5,0 | 2.975 | good fit |

Source: Data Processed

Noting table 3 above shows that the default value of the model with RMSEA criteria shows the number 0.070, TLI shows the number 0.907, meaning that the model has fulfilled one of the Goodnesses of Fit criteria with existing data, while several other criteria indicate a poor. Test research hypotheses can be done because the test results the model has to meet several criteria for goodness of fit.

**Modernize Test**

In SEM analysis, there are two testing approaches moderating variables (Hair et al, 2010), namely:

1. Interaction model approach, this analysis is chosen when the moderating variable and moderated variable are continued.
2. The multi-sample or multi-group approach, this analysis is chosen when the moderating variable is categorical. The moderation impact will be seen when there are differences in the results of parameter estimates on the same model with different but related samples.

This study uses a variable ZOT as a moderating variable. To test the hypothesis moderation approach used multiple samples or multi-group approach for moderating variables in the form of categorical.

**Research Hypothesis Testing**

Hypothesis testing using multivariate analysis techniques through Structural Equation Modeling (SEM). The test is performed on all the hypotheses. to see the value of Critical Ratio (C.R) on regression weights, the AMOS program. When CR> 1,967 or probability value of $p < 0.05$ then Ho is rejected and the research hypothesis is supported. Hypothesis testing can also be done by comparing the amount of p-value with significant alpha level of 0.05 as follows: If the p-value $\geq \alpha$ of 0.05, the null hypothesis (Ho) failed rejected and Ha is rejected and if the p-value $< \alpha$ 0, 05 then the null hypothesis (Ho) is rejected and Ha fails to be rejected (Now & Bogie, 2013).

## RESEARCH RESULTS AND DISCUSSION

The respondents comprised 409 students, male as much as 45%, while 55% of women. The analysis was performed on each of the variables and indicators to look for central tendency, in this case, the mean and standard deviation.

1.  The average quality of tangible and intangible services scores is 6.3704 and 6.3711. This shows that the quality of tangible and intangible services is in a good category.
2.  The student satisfaction and the image of the average score of satisfaction variables are 6.5177 and 6.9033. This indicates that the level of student satisfaction and the image of the facilities provided, the satisfied category.
3.  Loyalty average score variable loyalty is 6.8435. This shows that student loyalty is in the loyal category.
4.  Zone of tolerance is measured using the difference between the level of performance of the services it calls with a minimum service performance level that can be tolerated student of tangible and intangible variables. Average score variable zone of tolerance is 2.80. The average performance expected is 8.56, this shows that the service performance expected by students in the category tends to be high. The average performance of the minimum acceptable average student is 5.75, indicating that the minimum tolerable performance of students in the category enough. The average zone of tolerance as the difference between the average performance expectations (8.56) with an average of minimum performance (5.75) is 2.80 out of 9 points meaning that students expect a high quality of service tends however students can still be tolerated when the quality of service is in the category enough. Based at Zot University can be seen:

**Table 3: Zone Of Tolerance (Difference Performance Expectations with Minimum Performance)**

| | Management Study Program | Average expectation performance | The average minimum performance | Zot full data |
|---|---|---|---|---|
| 1 | Universitas Bina Nusantara | 8,572 | 5,627 | 2,945 |
| 2 | Universitas Gunadarma | 8,592 | 5,732 | 2.860 |
| 3 | Universitas Mercu Buana | 8,570 | 5,933 | 2,636 |
| 4 | Universitas Trisakti | 8,573 | 5,933 | 2,604 |
| 5 | Universitas Tarumanegara | 8,422 | 5,675 | 2,747 |

Based on Table 3 above in ZOT, it appears that the performance expectations of students between 8-9. This shows that the performance of the services expected of students in a category tends to be high. Minimum performance between 5- 6, this shows that the minimum tolerable performance of students in the category enough. This means that students expect excellent service quality.

**Test Results Moderation and Hypotheses**

The test results showed RMSEA models for 0070, amounting to 0.907 TLI, CFI for 0915 which means that meet the criteria of Goodness of Fit (Hair, 2010). The test results can be seen in Figure 3 below.
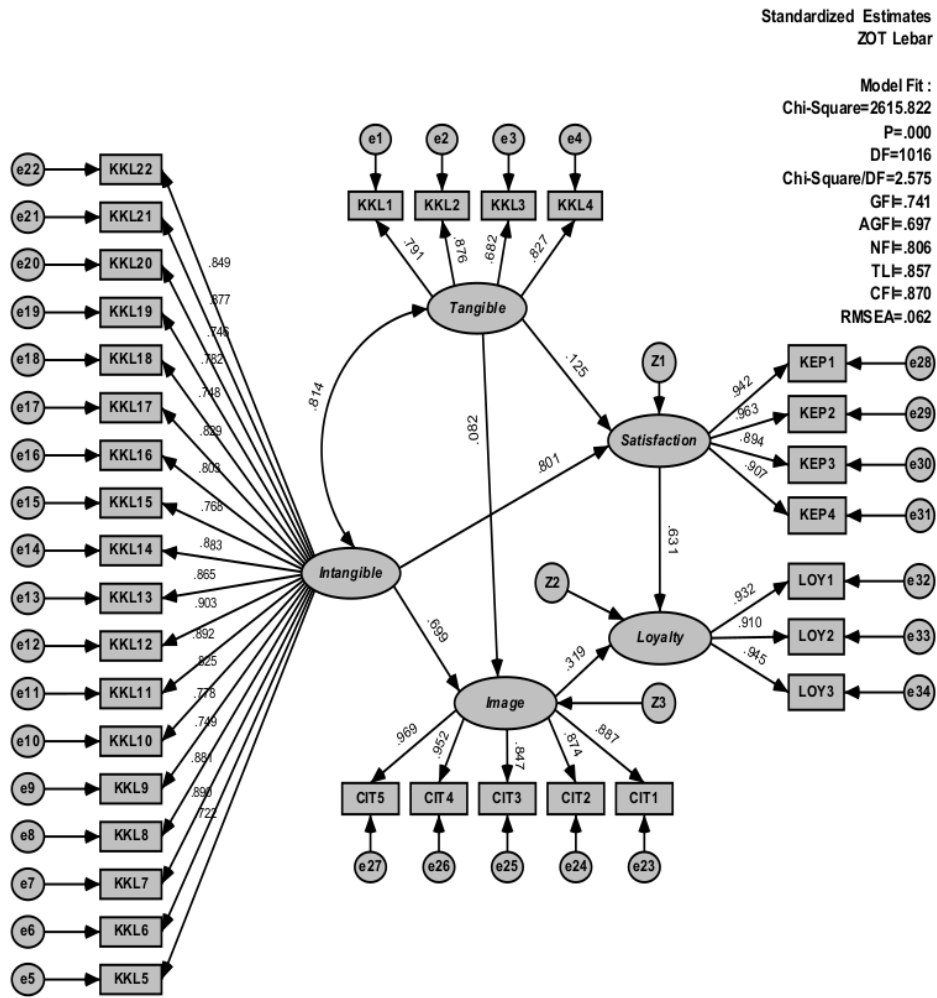
**Figure 3: Zot Based on University**

The test results of moderation can be seen in Table 4 below:

**Table 4: Evaluation of Parameter Differences Between Groups with ZAT as Moderating Variables**

| | Unconstrained Group Model | Constrained Group Model | Model Differences | Conclusion |
|---|---|---|---|---|
| *Tangible* ➜ *Satisfaction* | 0,465 ** narrow<br>0,125 ns wide | - | - | - |
| *Chi Square*<br>*Df* | 2615,822<br>1016 | 2620,124<br>1017 | 4,302<br>1 | *P value* 0,038<br>moderenize |

| | | | | |
|---|---|---|---|---|
| *Intangible* ➜ *Satisfaction* | 0,366 ** narrow  0,801 ** wide | - | - | - |
| *Chi Square*  *Df* | 2615,822  1016 | 2622,631  1017 | 6,809  1 | *P value 0,009*  Moderenize |
| *Tangible* ➜  *image* | 0,422 ** narrow  0,082 ns wide | | | |
| *Chi Square*  *Df* | 2615,822  1016 | 2619,830  1017 | 4,008  1 | *P value 0,045*  Moderenize |
| *Intangible* ➜  *image* | 0,401** narrow  0,699** wide | | | |
| *Chi-Square*  1016  *Df* | 2615,822 | 2616,803  1017 | 0,981  1 | *P value 0,322*  Not moderenize |

Source: results of a questionnaire prepared by AMOS

*** p < 0,05        ns = not significant*

Noting Table 4 above, the results of test analysis moderation tangible influence on satisfaction with using multi Estimation models on AMOS group showed differences between the groups with group Zot Zot narrow width with a p-value of 0.038 <0.05 then H0 is rejected. That is moderating significantly ZOT tangible influence on satisfaction. Based on the known coefficient tangible influence on satisfaction was stronger in the narrow ZOT group ($\beta = 0.465$ **) compared with the group ZOT width ($\beta = 0,125ns$).

Noting Table 4 above, it is also seen that the results of the analysis ZOT intangible moderating influence on satisfaction with using multi-group model estimates indicate different AMOS Group with Group ZOT ZOT narrow width with a P value of 0.009 <alpha of 0.05, then H0 has rejected it means ZOT moderating intangible effect on satisfaction. Based on the intangible influence coefficient is known to the satisfaction was stronger in-group ZOT width ($\beta = 0.801$ **) as compared with the narrow ZOT group ($\beta = 0.366$ **).

From Table 4 above, shows that the results of the analysis ZOT tangible moderating influence on the image by using a multi-group models diAMOS Estimates show there are differences between the Group with Group ZOT ZOT narrow width with a P value of 0.045 <alpha of 0.05, then H0 is rejected and Ha is supported ZOT moderate means tangible effect to the image. Based on the known coefficient tangible influence on the image is stronger in the narrow ZOT group ($\beta = 0.422$ **) compared with the group ZOT width ($\beta = 0.082$ ns).

From Table 4 above, the results of the analysis of the influence of intangible ZOT moderate to images using multi-group models diAMOS Estimates show there is no difference between the group with Group Zot Zot narrow width, with a P value of 0.322> 0.05 alpha, H0 failed rejected it means ZOT does not moderate the influence of intangibles on the image. Based on the known effects of intangible coefficient against a stronger image on a narrow group ZOT group ($\beta = 0, 401$ **) compared with the group ZOT width ($\beta = 0.699$ **).

**Research hypothesis test results**

Based on the stages of hypothesis testing as described above, the results of hypothesis testing can be seen in table 5 below:

**Table 5: Research Hypothesis Test Results**

| Hipotesis | Coefisien | | P.Value | Kesimpulan |
|---|---|---|---|---|
| $H_1$.*Tangible* berpengaruh positif signifikan terhadap *satisfaction*. | 0,335 | | *** | H1 didukung |
| $H_2$.*Tangible* berpengaruh positif signifikan terhadap *image*. | 0,352 | | *** | H2 didukung |
| $H_3$. *Intangible* berpengaruh positif signifikan terhadap satisfaction. | 0.539 | | *** | H3 didukung |
| $H_4$. *Intangible* berpengaruh positif signifikan terhadap image | 0,476 | | *** | H4 didukung |
| $H_5$. *Satisfaction* berpengaruh positif signifikan terhadap loyalty | 0,287 | | *** | H5 didukung |
| $H_6$. *Image* berpengaruh positif signifikan terhadap loyalty | 0,600 | | *** | H6 didukung |
| $H_7$. ZOT memoderasi pengaruh tangible terhadap satisfaction | Sempit 0,465. ** | 0,038 | | H7didukung |
| | lebar 0,125 NS | | | |
| $H_8$. ZOT memoderasi pengaruh intangible terhadap satisfaction | sempit 0,366 ** | 0,009 | | H8 didukung |
| | lebar 0,801** | | | |
| $H_9$. ZOT memoderasi pengaruh tangible terhadap image | sempit 0,422** | 0,045 | | H9 didukung |
| | lebar 0,082 ns | | | |
| $H_{10}$. ZOT memoderasi pengaruh intangible terhadap image | sempit 0,401 ** | 0,322 | | H10 tidak didukung |
| | lebar 0,699** | | | |

Source: results of a questionnaire prepared by AMOS

***=0,01.   **=0,05.   *n.s.* not significant

**Hypothesis 1**

Tangible has a significant positive effect on satisfaction. The results support the research conducted by Manaf et al (2013), on higher education in Malaysia, which indicates that respondents have a positive perception of administrative services, tangible, learning processes, and placement lecturer significant positive effect on student satisfaction, but the perception of the program and empathy of academic employees are not significant. The results of this study are also consistent with studies Nadiri (2011), higher education in Cyprus on Turkey, which indicates also that the service quality tangible dimension significant positive effect on satisfaction.

**Hypothesis 2**

Tangible has a significant positive effect on the image. The results support the research conducted by Laurens et al (2012), which explains that service quality has a positive effect significant tangible dimension to the image and satisfaction as well as a positive impact on WOM.

**Hypothesis 3**

Intangible has a significant positive effect on satisfaction. The results support previous research carried out by Yap and Sweeney (2007), namely the quality of service dimension of intangible (quality processes) positive and significant impact on customer satisfaction and also the study of Nadiri and Hussain (2005), which shows that the quality of service dimension of intangible effect significant positive to satisfaction.

**Hypothesis 4**

Intangible has a significant positive effect on the image. The results support previous research conducted by Salam et al, (2013) and Thomas et al (2012), which explains that a significant positive effect on service quality to the image.

**Hypothesis 5**

Satisfaction has a significant positive effect on loyalty. The results support previous research carried out by Izogo and Ogba (2015) at Automotive Services in Nigeria; Kitapchi (2013) at the supermarket in Turkey; and Narteh (2015) on ATM users in Ghana, which states that satisfaction significant positive effect on customer loyalty.

**Hypothesis 6**

The image has a significant positive effect on loyalty. The results support previous studies conducted by Angela (2012), Salam and Shawky (2013) which states that the Image significant positive effect on customer loyalty.

**Hypothesis 7**

ZOT moderates the effect of tangible on satisfaction. These results indicate that there are significant differences between the groups of respondents with narrow ZOT with the group of respondents with ZOT width. In the group of respondents with narrow ZOT, it is known that tangible variables have a significant positive effect on satisfaction with stronger than the group of respondents with ZOT width. This means that students with narrow tolerance zones assume that improving the quality of tangible services carried out by university study programs is felt to be in their tolerance zone, so student satisfaction with the quality of tangible services will be stronger than ZOT wide. Based on the coefficient value it is known that the effect of tangible on satisfaction is stronger on narrow ZOT ($\beta = 0.465$ **) compared to ZOT width ($\beta = 0.125$ns). The results of the study also support research conducted by Baksi and Bivraj B. (2012) which states that R-ZOT moderates the effect of service recovery on customer confidence in state government banks in India.

**Hypothesis 8**

ZOT moderates the intangible influence on satisfaction. there were significant differences between the narrow ZOT respondent group and the wide ZOT respondent group on intangible variables. Based on the coefficient value it is known that the intangible effect on satisfaction is stronger at ZOT width ($\beta = 0.801$ **) than the narrow ZOT ($\beta = 0.366$ **). The results of this study support previous research conducted by We (2011) which states that tolerance zones strengthen the influence of inertia on satisfaction. The results of the study also support research conducted by Baksi and Bivraj B. (2012) which states that R-ZOT moderates the effect of service recovery on customer confidence in state government banks in India. However, the results of this study are different from Yap and Sweeney (2007) who stated that ZOT was proven not to moderate service quality to satisfaction because the quality of service perceived by consumers in their research was under ZOT.

**Hypothesis 9**

ZOT moderate tangible effect on the image, there are significant differences between the groups of respondents with ZOT narrow the group of respondents with ZOT wide. In the group of respondents with narrow ZOT tangible variables known the significant positive effect on the image with a more powerful compared to the group of respondents with ZOT wide. This means that students with a narrow tolerance zone considered that improvements made tangible service quality university courses perceived to be in their tolerance zone then the effect of tangible service quality of the image will be stronger than the group of respondents with ZOT wide.

These results are consistent with previous studies conducted by the We (2011) which states that ZOT moderate. These results also support previous studies conducted by Baksi, and Bivraj B. (2012) which states that the R-ZOT moderate the influence of service recovery on customer confidence government banks in India.

**Hypothesis 10**

ZOT does not moderate the influence of intangibles on the image. because there was no significant difference between the groups of respondents with narrow ZOT with the group of respondents with ZOT wide. This means that students with a narrow or wide tolerance zone assume that the improvement in the quality of intangible services conducted by university study programs is felt to be in their tolerance zone, so the influence of the quality of intangible services on the image will not become stronger. The results showed that the quality of intangible services had a positive and significant effect on Image (both for total respondents and groups of respondents with narrow ZOT and group of respondents with wide ZOT but ZOT did not moderate).

The service quality expected by respondents on average is 8.56 in the category that tends to be high, while the service performance received by students is only 6.37 in the good category, although service performance is in the tolerance zone of students, still far below service performance which is expected. Noting some of the above, it is understandable that there are differences in the effect that is not significant between groups of respondents with a wide and narrow ZOT on the influence of the intangible service quality on the image or ZOT does not significantly moderate the intangible influence on the image.

The results of this study are in accordance with previous studies conducted by Yap and Sweeney (2007) which stated that ZOT proved to be not moderating because the quality of service felt by consumers in their research was under ZOT.

## CONCLUSION, IMPLICATIONS AND SUGGESTIONS

**Research conclusions**

Management study program managers at five universities have provided quality tangible and intangible services to students in good categories. The average student feels satisfied assuming that the management study program at five universities has a good image, and has good loyalty to the institution. The quality of tangible and intangible services is in the tolerance zone, meaning that the quality of services received is above the minimum quality of service that can be tolerated but still below the quality of services expected by students.

The results of the hypothesis test show that the quality of tangible and intangible services has a significant positive effect on satisfaction and image and then affects loyalty. Loyal students will be willing to say positive things to others, recommend friends to register as new students and care about the reputation of university study programs.

The results of the moderation test with multi-group analysis on the influence of tangible and intangible service quality on satisfaction show a significant difference between respondents who have narrow tolerance zones and respondents who have wide tolerance zones, meaning ZOT moderates the influence of tangible and intangible service quality on satisfaction.

The results of the moderation test with multi-group analysis on the effect of tangible service quality on the image showed a significant difference between respondents who had a narrow tolerance zone and respondents who had wide tolerance zones, meaning that ZOT moderated the influence of tangible service quality on the image.

The test results of moderation with multi-group analysis on the effect of intangible service quality of the images showed no significant differences between respondents who have a narrow tolerance zone of the respondents who have a wide tolerance zone means that ZOT does not moderate the effect of intangible service quality to the image. Based on the results of the research hypothesis testing, it can be concluded in detail as follows:

1. Tangible and Intangible have a significant positive effect on satisfaction, thus the hypothesis is supported by the results of the study.
2. Tangible and Intangible have a significant positive effect on Image, thus the hypothesis is supported by the results of the study.
3. Satisfaction and Image have a significant positive effect on customer loyalty, thus the hypothesis is supported by the results of the study.
4. ZOT moderates the effect of tangible and intangible on satisfaction, thus the hypothesis is supported by the results of the study.
5. ZOT moderates the influence of tangible and intangible images, thus the hypothesis is not supported by the results of the study.

## Theoretical Implications

The findings of this study contribute to enriching the theory of service quality, especially zone of tolerance, with the results of the study revealing that ZOT is a moderating variable on the influence of tangible and intangible on satisfaction in the higher education environment. ZOT is also a moderating variable on the influence of the quality of tangible services on the image. On the contrary, ZOT is not a moderating variable on the influence of the quality of intangible services on the image.

Although there are studies that discuss ZOT such as Yap and Sweeney (2007), We (2011), We and Wang (2012), Nadiri and Husain (2005) Nadiri (2011) Baksi, and Bivraj B. (2012) but not many have done research on the role of ZOT moderation in the higher education environment, so that this research can add to and enrich previous findings.

Based on the results, it can be identified that students with a narrow tolerance zone provide a more powerful influence on the impact of service quality tangible to the satisfaction compared to students with a wide tolerance zone. This means that students with a narrow tolerance zone considered that improvements made tangible service quality university courses in the zone tolerance felt they then influence the quality of tangible services to the satisfaction of the students will be strong, as well as tangible service quality to the image.

It was also identified that students with wide tolerance zones had a stronger influence on the impact of intangible service quality on satisfaction compared to students with narrow tolerance zones. This means that students with wide tolerance zones assume that the improvement in the quality of intangible services carried out by university study programs is felt to be in their time zone so that student satisfaction with the quality of intangible services will be strong.

## Managerial Implications

Based on the results of research conducted, the Study Program needs to improve loyalty, tangible, intangible, satisfaction and student image services. The university management study program needs to improve understanding of student tolerance zones on the quality of tangible and intangible services because there are differences between students with narrow tolerance zones compared to students with wide tolerance zones.

## Recommendation

1. Noting some limitations in this study, the researcher recommends:
2. Further research is expected to be carried out in the education sector by involving various types of higher education both universities, institutes, high schools, polytechnics and academies, both public and private so that the coverage is broader and in other services industries
3. Future research is expected to build a more complete model with the addition of variables and dimensions of service quality that affect customer loyalty both on a national and global scale.
4. Further research is expected to be carried out to focus more on the quality of academic services in both public and private universities.

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