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Effect of Service Quality and Infrastructure Facilities on Competency of Nautical Cadet in Maritime Simulator

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Abstract : *The need for educational equipment, especially the simulator in this STCW convention. Not always explicitly written in either type or specification, but depicted in competency forms that must be achieved through a particular method. Methods to show that the competency has been fulfilled (the most commonly used in STCW) is through Examination and assessment of evidence obtained from practical instruction dan approved simulator training.This research was conducted by using descriptive quantitative method and implemented in Merchant Marine Higher Education Jakarta. The research instrument consists of three of which measure Quality Services, Facilities, and Competence of cadets in each Maritime Simulator which have four Indicators. Hypothesis using correlation and multiple regression techniques as well accompanied by normality test, homogeneity test and Linearity testThe result of analysis shows that there is a positive influence between Quality of Service to Competence Cadet in Merchant Marine Higher Education Jakarta. This can be reviewed from the coefficients of the correlation between the variable of Service Quality and Competence variable of cadet is 0.183 as well as the effect of Infrastructure Condition on Competence of cadet viewed from coefficient of the correlation of 0.450. Quality of Service and Condition of Infrastructure have positive effect and significant to Competence cadet in terms of determinant coefficient of 28.40%, whereas multiple regression Y = Y = 24,838 + 0,290 X_1+ 0,287 X_2 means improvement of QualityService and Condition Infrastructure will increase Competence of the cadets of Merchant Marine Higher Educarion Jakarta. Service Quality has a positive and significant impact on cadet's competence, seen from t test count bigger than t table 1,776> 1,70, so also condition of Infrastructure have positive and significant effect 2,686> 2,46.There is a positive and significant influence simultaneously between Quality of Service and Condition of Infrastructure Facility for Cadet's Competency at Merchant Marine Higher Education Jakarta is viewed by F test count is greater than F table 5.54> 5.36.*

Keywords*: Quality of Service, infrastructure, maritime simulator.*

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I. Introduction

The need for educational equipment, especially the simulators in the STCW convention is not always explicitly written both types and specifications, but described in the form of Competence which must be achieved through a particular method. Method to show that the competence already fulfilled (most often used in STCW) is through examination and assessment of evidence obtained from practical instruction and approved simulator training. Means in general, Sailing Training education should certainly have simulator to support its learning activities to achieve the desired competence. The learning system using the simulator is implemented in stages. It starts from the stage of familiarization, test scenarios until the time will be done assessment (assessment) of its competence. All carried out in groups and individually dependent scenarios in the course. Because the number of Cadet in one class who can reach maximum 30 people then it takes quite a long time. Even in subjects certain like maneuvering (2 SKS) that uses Bridge Simulator with the capacity maximum only 5 people then in one semester (16 times meeting) then respectively cadet only get 2 chances. Can be imagined if the service and advice in the unit simulator is disrupted it will greatly affect the success in achieving the desired level of competence. Because it can be ascertained not only one subject that course and not only that class that uses the simulator. Based on the background mentioned above then encourage writers to further do research by taking the title:-Relations Between Quality of Service and Infrastructure with Competence of nautical department cadet in Maritime Simulator.

II. Literature Review

1. Understanding Service Quality.

Service Quality can be synthesized as the level of completeness of the task which provided by the institution / company in supporting the activities of Production or Service of the institution / company to satisfy its consumers with the Indicators of Convenience, Speed, Administration and Expertise of Human Resources.

2. Understanding of Facilities and Infrastructure
Facilities and infrastructure is all facilities, tools, materials and media that can be used as a device either directly or indirectly in supporting and facilitate the implementation of the process of Production or Service of an Institution / Company with Indicators of completeness, technology, reliability and ease of use.

3. Understanding of Nautical Cadets Competence In Maritime Simulator
Nautical cadets competence is a special operational capability that cadet possesses by combining the Knowledge, Expertise and Work Attitude of various types of functions on board in order to meet internationally agreed criteria at a certain level of responsibility and according to the size of the ship with Material Mastery indicators, Analytical Skills, Skills Application and Attitude.

4. Understanding of Maritime Simulator.
The Maritime Simulator is a tool that can execute certain conditions created through an intermediate model and animation system viewer, to simulate the situation in the work in the field of Maritime.

III. Methodology

A. Method Used
Approach method used in this research is case study and quantitative method. Quantitativemethods are the sciences and arts related to the method of data collection, data analysis, and interpretation of the results of the analysis to obtain information for conclusion and decision making (Silohun, 2001).

B. Data Collection Technique
1. Literature Review
2. Field Research

C. Requirements Test
1. Data Normality Test
2. Linearity Test
3. Homogeneity Test

D. Hypothesis Test
1. Correlation Test
2. Regression Test

Software Statistical Product and Service Solution (SPSS) is used to analyze the research data.

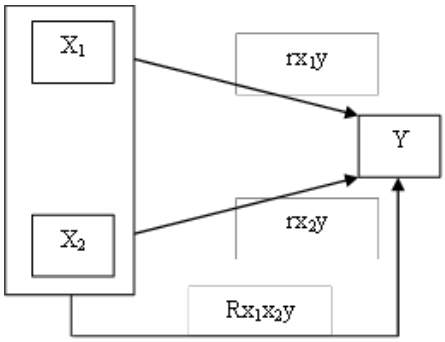

Figure 3.1. Framework of thinking

Information:
X_1 : Quality of service
X_2 : Facilities - infrastructure
Y : Competence of Nautical cadets in maritime simulator
rx_1y : Correlation value between X_1 and Y
RX_2y : Correlation value between X_2 and Y
Rx_1X_2y : Correlation value between X_1; X_2 and Y

IV. Analysis And Discussion

1. Service Quality Score

Service Quality Data consists of 22 valid questions so that theoretically the score is in the range of 47 to 68. The calculation of the distribution of the score results in the total score of 1744 standard deviation = 4.60411 variance = 21,198 mode = 55.00 medians
= 56,0000 and average = 56,2581.

2. Scores of Facilities and Infrastructure

Service Quality Data consists of 24 items of valid questions so theoretically the score is in the range between 46 - 74. The calculation of the distribution of the score results in the total score of 1784 standard deviation 8.14796 variance = 66,389 mode = 60.00 median =
59,0000 and average = 57,5484

3. Competency Score of Cadet

Service Quality Data consists of 20 items of valid questions so that theoretically the score is in the range between 39 - 60. The calculation of the distribution of the score results in the total score of 1555 standard deviation = 4.69820 variance = 22.073 mode = 50.00 median
= 50,0000 and average = 50,1613.

4. Hypothesis Testing

A. The relation between Quality of Service with Competence of Cadet

The first hypothesis proposed in this study states that there is a positive relationship between Quality of Service (X_1) with Competence of cadet (Y). Calculation of simple regression analysis on variable data of Competence of cadet on Service Quality yields regression "b" direction equal to 0,137 and constant "a" equal to 42.40. Thus, the relation between the two variables can be described by the regression equation $Y = 42.40 + 0.137X_1$ (Complete calculation in appendix 5). Prior to use for predictive purposes, this regression equation must meet the requirements of linearity and significance. To determine the degree of significance and linearity regression equation.

Table 4.1 Variance Analysis for Linear Regression Y over $X_1$with the equation $Y = 42.40 + 0.137\ X_1$

Source of Variance	dk	JK	RJK	F count	F table	
					α=0,05	α=0,01
Total Reduced	31	78663,000				
Regression	1	78000,806	78000,806	5,54**	4,183	7,40
Rest	29	650,096	22,417			
Lack of Compliance	18	447,013	24,834			
Error	11	203,083	18,462	$1{,}345^{ns}$	2,671	3,45

Information:
** = significant F count (5,54)> F table (4,183)
Ns = not significant F count (1,345) < F table (2,671), linear regression

B. The relation between Infrastructure Conditions (X_2) with Competence of cadet (Y)

The first hypothesis states there is a positive relationship between the condition of facilities and Infrastructure ($\mathbf{X_2}$) with Competence of cadet (Y). Relationship between Condition of Facilities and Infrastructure ($\mathbf{X_2}$) with Competence of cadet (Y) is shown by the regression equation $Y = 41.68 + 0.147\ \mathbf{X_2}$, (full calculation can be seen on appendix 5). From JK prices obtained, arranged in a list of variance analyses abbreviated as ANOVA for simple regression and linear.

C. The Relation between Quality of Service (X_1) and Condition of Infrastructure (X_2) together with Competence of Cadet (Y)

The fourth hypothesis states there is a positive relationship between Quality of Service (X_1), and Condition of Infrastructure (X_2) together with Competence of Cadet (Y). The relationship between Quality of Service (X_1) and self-leadership (X_2) together with Competence of cadet (Y) is shown by multiple regression equation $Y = 0.290X_1 + 0.287X_2 + 24{,}838$.

A. Discussion

From the results showed that the variable quality of service in either category because of the tendency of respondents who choose frequent indicators in this variable implemented in the teaching and learning process practicum that is equal to 58% of the number of 22 items of questions given to 31 respondents examined.

From the results of this study, in Variable facilities STIP is still considered poor by respondents consisting of lecturers / instructors own with percentage of 65%. The greatest frequency in infrastructure problems is the number of simulators sufficient to support teaching and learning process in accordance with the scenario that has been planned. Namely with a frequency of 17 times is sometimes not enough and 11 times never enough. Students are forced to queue because the number of students who will use the simulator is also quite a lot. Moreover, STIP Jakarta in addition to serving cadets as the main students also serve Student Officers

who carry out further education in the field of maritime. As an illustration STIP Jakarta has a lot of budgeted funds for the addition of practicum facilities such as in 2014 amounting to Rp17,442,568,000.00 for the construction of new building 5 (five) level for Laboratory and Simulator (Kalangie building) and in 2015 Rp36,135,000,000.00 to fill some of the building space with simulator and laboratory equipment. Likewise, also i2016 is planned to spend budget Rp.19.782.665.000,00 to fill the rest. It is hoped that the next research will be held again in the next year, the result of research on these facilities and infrastructure can be better because the number of buildings and laboratory equipment and simulators has increased.

And the last as the dependent variable is the Competence of cadet in the Maritime Simulator at STIP Jakarta, it still has a lot to be improved because based on the respondent's answer to the Competence of cadet still considered less good (55%). Not infrequently, cadets have not mastered the practical planning materials in the simulator in accordance with the scenario that is run. Still due to the limited simulator space the Lecturer / Instructor does not have sufficient time to carry out the Briefing before the scenario is run. While the other thing is related to competence in function 1 Navigation, cadet is still considered not able to fully able to make the Planning of Shipping (Passage Planning) with the actual and appropriate. This shipping planning is very important because good planning in the voyage is necessary to anticipate any possibilities arising in the voyage such as bad weather, navigation hazard and others.

This approach will be followed by the College of Shipping Science in instilling satisfaction with the participants of the short course. Quality has a close relationship with customer satisfaction. Quality provides an incentive for customers to forge strong bonds with their institutions. In the long term such ties allow the College of the Sea Sciences to understand carefully the expectations of customers as well as their needs. Thus, the College of the Sea Sciences can improve customer satisfaction by maximizing a pleasant customer experience and minimizing the unpleasant customer experience (Tjiptono, 2006).The infrastructure of this Basic Safety Training is one of the shape of input, while input is one of the subsystem.Infrastructure is very necessary to support the skills of training participants to be ready to compete against the rapid technology. Facilities infrastructure is an important part that needs to be prepared carefully and continuously, so it can be guaranteed the Teaching Learning Activities always happen smoothly. In the educational provision, the infrastructure is needed to produce effective and efficient Teaching and Learning Activities is regulated in Government Regulation No. 19 Year 2005 on National Education Standards concerning education facilities and infrastructure standards nationally in Chapter VII Article 42.Care and maintenance of infrastructure facilities must always be done so that the conditions are always excellent and ready to be used at any time. Good service is the ability of institutions in providing services that can provide satisfaction to consumers by predefined standards, where the ability is indicated by human resources and facilities and infrastructure owned.

V. Conclusions And Suggestions

A. Conclusion

1. The quality of services and infrastructure-facilities have a significant effect on the Competence of cadet within Maritime Simulator at Merchant Marine Higher Education Jakarta. The higher the quality of service and the existing infrastructure, the higher the Competence of cadet in the Maritime Simulator.
2. The quality of services and infrastructure has an impact on the Competence of cadet in the Maritime Simulator at Merchant Marine Higher Education at 28.4%, meaning that the Competence of cadet achieved in the Maritime Simulator is 28.4% due to the services and infrastructure that support it. While the rest of 71.6% influenced by other factors that are not researched.
3. Problems that contribute to the results of this study on service variables is about delivering information about the damage and about minimum service standards whose documents are not found. While the variable facilities and infrastructure problems include the number of insufficient Simulator and the need for Simulator to always keep up with technological developments on the ship that develops fast enough.

B. Suggestions

1. Improving the quality of service makes a very big contribution in establishing the Competence of cadet, so it is expected that there are minimum service standards that must be implemented by Officers who serve the use of Simulator at Merchant Marine Higher Education Jakarta. Through coordination with STIP Quality Standard System Unit and with Loyd Register as ISO quality guarantor in STIP Jakarta.
2. Quality of Service is expected to be improved through educational and training facilities that focus on simulator and computer technology as its driver.
3. Improving the quality of facilities by providing equipment with sufficient Quality and Quantity in accordance with the characteristics of Higher Education Vocational is very specific. This can be done by conducting comparative studies to many seafaring producing countries such as the Philippines, India or China.
4. The need for improved maintenance of infrastructure facilities with better and planned methods so as not to disrupt the teaching and learning process. Contracts are expected in the long run and implemented after teaching hours.

5. The need for support from governments, shipping companies, Sailing communities and other stakeholders in the Maritime field to provide comprehensive input on the competencies of cadet and how the methods to achieve them so that their services and advocacy can align with the needs of the stakeholders.

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