

The Effect of Total Quality Management Factors on Employee Satisfaction in Telkom University

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Abstract - Quality is inseparable part in an educational institution. Human Resources in Educational Institutions need to be observed, because most processes in institutions dealing with employees. Total Quality Management was believed to be a tool that can improve employee satisfaction. This study was conducted to identify factors of Total Quality Management in Telkom University and its effect on employee satisfaction. Based on the method, this study included into the quantitative research with the approach of factor analysis and multiple regression. Data processing was performed using SPSS 20 for Windows. Research sample are employees of Telkom University with 261 respondents and sampling technique used cluster random sampling consist of lecturers, academic support personnel, and officials (structural). The results obtained seven factors of Total Quality Management in Telkom University consist of leadership, measurement and evaluation, curriculum design, process control and environment, the implementation of the academic program, Top Management planning, and employee involvement. In addition, Total Quality Management has significant effect on employee satisfaction amounted to 35.9%.

Keywords—Total Quality Management, Higher Education, Employee Satisfaction

I. INTRODUCTION

Bandung is one of the biggest cities in Indonesia, which has many education institutions in it. Data about the University in Bandung and accreditation are as follows [1]:

TABLE I. RANK LIST OF UNIVERSITY IN BANDUNG AND ACCREDITED BAN PT

Rank of University in Bandung	University Name	Rank in Indonesia	Year Established
1	Universitas Padjadjaran	7	September 11, 1957
2	Universitas Pendidikan Indonesia	12	October 20, 1954
3	Universitas Komputer Indonesia	33	August 8, 2000
4	Universitas Kristen Maranata	49	September 11, 1965
5	Universitas Katolik Parahyangan	58	January 17, 1955

Rank of University in Bandung	University Name	Rank in Indonesia	Year Established
6	UIN Sunan Gunung Djati	59	August 8, 1968
7	Universitas Widyatama	69	August 2, 2001
8	Universitas Telkom	78	August 14, 2013
9	Universitas Islam Nusantara	90	November 30, 1959
10	Universitas Islam Bandung	93	November 15, 1958
11	Universitas Pasundan	96	November 14, 1960
12	Universitas Jenderal Achmad Yani Cimahi	202	May 20, 1990
13	Universitas Langlangbuana Bandung	225	April 5, 1982
14	Universitas Nasional PASIM Bandung	324	September 25, 2006
15	Universitas Nurtanio Bandung	334	August 9, 1999
16	Universitas Sangga Buana Bandung	339	August 24, 2006
17	Universitas Al-Ghifari Bandung	395	August 15, 2002

From Table 1 known that from top 10 universities in Bandung, Telkom University is the youngest university among the other universities. Although only established in 2015, but it has quite a lot of demand. In 2015, the number of registrants Telkom University nearly 27,000 peoples, but Telkom University only accept 6,500 persons. While foreign students who enroll are 435 peoples, but only 40 were accepted. Additionally, the achievement earned by Telkom University is very significant in which several majors are accredited A and B.

On the other side, the quality of becomes the main thing that must be provided by Telkom University. Processes in Institutions need to be ensured to run properly. Almost all of processes in the institutions directly related to the employee. As a part that directly involved in the process of transferring services to students, requires competent employee who is support by good facilities from the institution.

One of the factors which indicate that the employee has been optimized in work is the satisfaction of the employees have been met by the Institution. Data about employee satisfaction is [2]:

TABLE II. TABLE OF EMPLOYEE SATISFACTION (YEAR 2015)

Number	Questions	Percentage (%)
1.	Internal communication and collaboration on your unit	80
2.	Jobs or tasks performed on your unit	79.2
3.	Assessment of performance / achievement on your unit	76.4
4.	Transparency and clarity of the work program on your unit	75.6
5.	The opportunity to develop competence on your unit	75.2
6.	Career development opportunities / promotions on your unit	74.6
7.	The availability and reliability of facilities working on your unit	72.8
8.	Remuneration and welfare system	72.4
9.	Organizational structure, management, and administration of the University	69.4
10.	Safety and environmental hygiene work	69
11.	Health facility	65.6
12.	The reliability of management information systems	64.6
Average		72.9

Of the 12 indicators regarding employee satisfaction, there are five indicators that have reached the target of the Institution which is above 75%.

Tight business competition and the emergence of various problems related to the decrease in productivity and product quality in the end will bring a solution by giving attention to the human factor. To improve product quality, reduce production cost, creating employee job satisfaction and increase productivity in organizations so it create customer satisfaction, approach of Total Quality Management (TQM) need to be done in the organization. Research shows that TQM influence on performance and employee satisfaction and job satisfaction affect the performance of employees [3]. Therefore, the researchers took the title of "The Effect of Total Quality Management Factors on Employee Satisfaction in Telkom University".

II. LITERATURE REVIEW

A. Quality

Quality in higher education nevertheless included into the quality of services. In fact, the context of the quality of universities is that students are not products and education is the product, the quality of service provided College students to improve their knowledge and education, which plays an important role in education [4].

The dimensions of the quality of education are [5]:

- 1) Consistency: that the education process involves specification with zero defect approach and quality culture. But limitations in achieving consistent standards and conformance standards.
- 2) Fitness to purpose: fit customer specifications, based on the minimum ability to achieve goals and customer satisfaction.
- 3) Value of money: through efficiency and effectiveness.
- 4) Transformative: education is an ongoing process of transformation which includes empowering and increasing the customer.

The focus of this study is the definition of quality in Higher Education, because it has a definition that is more difficult than manufacturing and service. No quality plays an important role in the Universities. The competition is "invisible" in the quality of education in those countries become major factors, this is because the quality of products and services is defined as an act, decision-making, and thinking of managers, engineers, workers, and teachers in the quality of work [4].

B. Total Quality Management

Total Quality Management refers to the suppression qualities include the entire organization, from suppliers to customers. Total Quality Management focuses management's commitment to get a referral company who continues to want to achieve excellence in all aspects of products and services that are essential for the company. Total Quality Management requires never stop of continuous improvement that include a people, equipment, suppliers, materials, and procedures. Basic philosophy is every aspect of the company's operations can be improved. The end goal is perfection that never be achieved, but always strived [6].

There are three general approaches of Total Quality Management in Higher Education [5]:

- 1) Customer focus: where, the idea of service to students is fostered through training and staff development, which promotes student choice and autonomy.
- 2) Staff focus: related to assessing and improving the contribution of all staff, to the effectiveness of the operations of the institution, for arrangement policies and priorities. This requires a flat management structure and acceptance of responsibility established action through working groups.
- 3) The service agreement and seek to ensure compliance with the specification of the key points key measurable in the educational process. An example is the evaluation by the faculty task within a certain period.

The principles of Total Quality Management in education based on three factors [7]:

- 1) Trust: Trust is the foundation, which depends on many aspects of the culture of the organization.

- 2) Commitment of leadership: leadership Commitment to Total Quality Management should be clear.
- 3) Empowerment: Empowerment achieved through devolution of responsibility and education.

The critical success factors of Total Quality Management in Higher Education of Pakistan are: leadership; vision; measurement and analysis; process control and evaluation; program design and resources allocation; and stakeholder focus [8].

The critical factor Total Quality Management in Higher Education are: leadership, vision ownership, standardization evaluation, and continuous process improvement, employee training, and student focus [9].

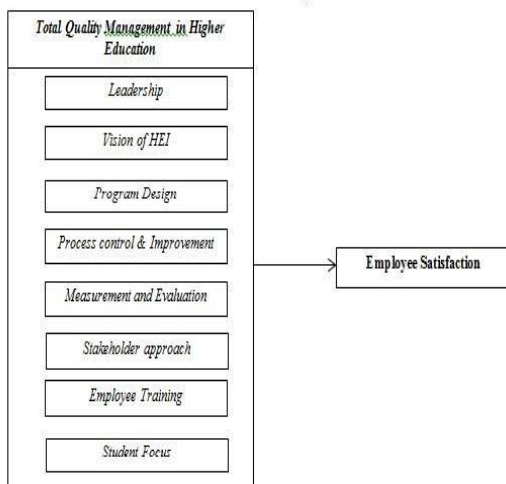
C. Employee Satisfaction

Job satisfaction is a general attitude toward one's work, the difference between the amount of reward that received by an employee and the amount they believe what they are supposed to receive. Indicators of job satisfaction are [10]:

- 1) The feeling happy to work.
- 2) The opportunity to develop and use their expertise.
- 3) The existence of a positive assessment of work.
- 4) The guarantee of the future provided by the company.
- 5) The existence of stability in employment.

Frame of mind research is as follows :

Fig. 1. Frame of Mind



III. RESEARCH METHODOLOGY

Based on the method, this research is a quantitative study with statistical approach of factor analysis and regression. Based on the type of research investigation include causal

research. The data processing is done with tools SPSS 20 for Windows. Technical analysis in studies using factor analysis were used to identify factors of Total Quality Management in the Telkom University, while the multiple regression analysis is used to determine how much Total Quality Management effect on employee satisfaction. Samples were employees of Telkom University. The amount sample was calculated using Slovin formula (an error rate of 10%) in order to obtain a sample of 100 respondents. To avoid the questionnaires are not return, the writer distributing questionnaires to 261 respondents. The scale used is by using a Likert scale based on the scale of five choices. The sampling technique is cluster random sampling with cluster lecturers, academic support staff, and structural. The purpose for this clusters are to represent actual conditions that all levels of the job status can represented. The variables in the study consisted of independent variables (Total Quality Management) and the dependent variable (Employee Satisfaction). Data obtained by questionnaires distributed to employees in Telkom University. The sample in this study amounted to 160 respondents. The numbers of questions are 60 items consist of 55 Total Quality Management questions and 5 employee satisfaction questions. Hypothesis proposed in the study is Total Quality Management has significant effect on employee satisfaction.

IV. RESULT

The numbers of samples in this study are 160 respondents. Questionnaires distribute to 261 respondents to anticipate respondents that not return the questionnaires. From the 261 respondents are 113 respondents were returned, made up of 55 lecturers, 44 academic supporting staff, and 14 structural.

A. Factors Analysis of Total Quality Management

Data was processed using SPSS 20 for Windows. Before conducting factor analysis, the data was tested by Bartlett's test of Sphericity Test and Measure of Sampling Adequacy (MSA). Additionally, the value of Kaiser Meyer Olkin MSA if the value is greater than 0.5, it has a significant correlation, and can proceed to the next stage. In the table Anti Image Matrix, especially on the Anti Image Correlation shows MSA value of each variable studied. If MSA Values greater than 0.5 indicate that these variables influence of the variables studied.

TABLE III. KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.837
Bartlett's Test of Sphericity	Approx. Chi-Square	3964.917
	df	1275
	Sig.	.000

In Table III shows the results of KMO and Bartlett's Test. Sign value of the research are 0000 <Alpa 5%, showed that among variables have a significant correlation. Meanwhile, for

the value of Kaiser Meyer Olkin MSA value is 0837 > 0.5 then it happened a significant correlation. With this, factor analysis can proceed to the next stage.

TABLE IV. MSA VALUE

Question Number	MSA Value	Question Number	MSA Value	Question Number	MSA Value
1	0.819	21	0.789	41	0.839
2	0.825	22	0.719	42	0.848
3	0.853	23	0.735	43	0.898
4	0.823	24	0.768	44	0.879
5	0.884	25	0.782	45	0.867
6	0.836	26	0.898	46	0.89
7	0.862	27	0.816	47	0.733
8	0.876	28	0.838	48	0.79
9	0.891	29	0.905	49	0.86
10	0.848	30	0.448	50	0.78
11	0.836	31	0.788	51	0.872
12	0.827	32	0.792		
13	0.819	33	0.772		
14	0.756	34	0.869		
15	0.875	35	0.894		
16	0.875	36	0.849		
17	0.85	37	0.872		
18	0.88	38	0.795		
19	0.872	39	0.837		
20	0.742	40	0.716		

Based on Table IV, number 30 has MSA value less than 0.5, so number 30 must remove. Table V show output data after number 30 remove.

TABLE V. MSA VALUE

Question Number	MSA Value	Question Number	MSA Value	Question Number	MSA Value
1	0.818	21	0.853	41	0.837
2	0.825	22	0.712	42	0.842
3	0.844	23	0.752	43	0.899
4	0.824	24	0.765	44	0.883
5	0.886	25	0.787	45	0.867
6	0.828	26	0.901	46	0.9
7	0.858	27	0.814	47	0.754
8	0.878	28	0.842	48	0.799
9	0.907	29	0.903	49	0.865
10	0.845	31	0.845	50	0.792
11	0.841	32	0.785	51	0.87
12	0.818	33	0.805		
13	0.818	34	0.87		
14	0.82	35	0.896		
15	0.871	36	0.862		
16	0.889	37	0.867		
17	0.862	38	0.793		
18	0.876	39	0.845		
19	0.89	40	0.719		
20	0.848				

After the second stage of data processing by eliminating the item that has a value of less than 0.5. All items have a value statement $MSA > 0.5$. With this, factor analysis can proceed to the next stage. The next step is to conduct factoring.

After doing factoring process and rotation, with regard to the Total Variance Explained formed twelve (12) factors table. The data processing needs to be done to see some considerations:

- 1) In Table Anti Image if the value < 0.5 , then the statement is issued and is not entered at the time of subsequent second stage of data processing (anti-image tables in the appendix in this study).
- 2) In Table communalities if the value < 0.5 , then the statement is issued and is not entered at the time of subsequent second stage of data processing (communalities table in appendix in this study).
- 3) Cross loading, with look Table Rotated Component Matrix. If the questions have unclear group, they not to be process for next step.

After literacy four times, form seven factors with Anti-Image and communalities values above 0.5. The grouping are:

TABLE VI. ROTATED COMPONENT MATRIX

Question Number	Component						
	1	2	3	4	5	6	7
1	0.808	0.092	0.048	0.169	0.019	0.342	-0.024
2	0.873	0.019	0.01	0.225	0.074	0.156	0.041
3	0.787	0.16	0.184	0.008	0.255	-0.081	-0.015
4	0.811	0.201	0.041	0.107	0.17	0.036	0.046
10	0.112	0.162	0.017	0.213	0.122	0.856	0.083
11	0.221	0.181	0.203	0.052	0.212	0.808	0.076
12	0.073	0.397	0.045	0.188	0.629	0.27	-0.145
13	0.29	0.08	-0.017	0.159	0.726	0.13	0.094
14	0.154	0.044	0.251	-0.016	0.748	0.048	0.208
23	0.086	0.084	0.845	0.118	0.06	-0.018	0.107
24	0.218	0.098	0.801	0.234	-0.05	0.089	0.159
27	0.17	0.088	0.099	0.858	0.173	0.115	0.016
28	0.222	0.168	0.151	0.761	0.145	0.013	0.125
31	0.049	0.26	0.116	0.494	-0.089	0.217	0.107
34	0.23	0.837	0.143	0.134	0.028	-0.023	0.21
35	0.125	0.827	0	0.224	0.198	0.14	0.122
36	0.084	0.767	0.146	0.109	0.114	0.273	0.036
40	-0.062	0.079	0.552	0.004	0.294	0.167	-0.063
47	-0.052	0.095	0.307	0.074	-0.048	0.166	0.791
48	0.077	0.205	-0.08	0.138	0.248	-0.013	0.834

TABLE VII. GROUPING AND FACTORS NAME

Factor	Question Number	Questions	Factors Name
1	1	Top Management of Telkom University have knowledge regarding the implementation of quality management.	Leadership
	2	Top Management of Telkom University actively participate in the running of management quality	

	3	Top Management of Telkom University know very well about the concept of quality.	
	4	Top Management of Telkom University strongly encourages employee involvement in quality management.	
2	34	Institutions have a performance standard size (eg number of publications, lectures evaluation, attendance, job satisfaction) for evaluate the performance of the institution.	Measurement and evaluation
	35	Measurement of performance standards have been used to evaluate Top Management.	
	36	Measurement of performance standards have been used to evaluate the academic performance and unit.	
3	23	The needs of the business world considered in designing the curriculum.	Curriculum Design
	24	The curriculum is evaluated every year.	
	40	Institutions do an evaluation of employee complaints.	
4	27	Employee expectations have been fulfilled by the Institution.	Process control and improvement
	28	The University has modern facilities (eg laboratories, libraries, computer, internet) for enhance the effectiveness of education.	
	31	Institutions collect statistical data (eg attendance) to control the process.	
5	12	Top Management of Telkom University developed a system to monitor academic activities.	Implementation of Academics Program
	13	Top Management of Telkom University provides facilities for improve the quality of education.	
	14	Top Management of Telkom University assess market needs before launching any program.	
6	10	Top Management of Telkom University designed the short and long term planning.	Top Management Planning
	11	Top Management of Telkom University documenting the long and short term planning.	
7	47	Coordination and collaboration between management and employees has been improved.	Employee Involvement
	48	Employees actively been involved in activities related to quality management.	

With this, after iteration is conducted four time the seven factors are formed: Leadership, Measurement and Evaluation, Curriculum Design, Process control and improvement, Implementation of Academics Program, Top Management Planning, and Employee Involvement.

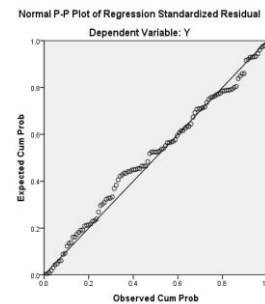
B. Multiple regression

The classical assumptions for multiple regression are:

1. Normality Test

Tests conducted to determine the normality is to see the images P-Plot. The test results for P-plot in this study are the points spread around the diagonal line, with this it can be seen that the data is normal.

Fig. 2. P Plot



2) Multicollinearity Test

The regression model must be free of problems multicollinearity. If the tolerance value is more than 0.1 and less from 10 VIF, which means there is no correlation between the independent variables. The results of processing output data for multicollinearity test are for each variable X tolerance value is greater from 0.1 and VIF is less than 10. With this, there is no correlation between independent variables and free from multicollinearity problems.

TABLE VIII. VIF VALUE

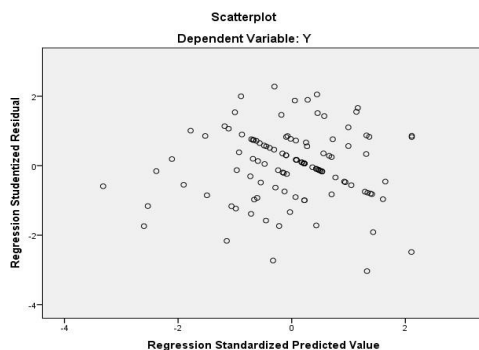
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.931	0.431		2.163	0.033		
Leadership	0.128	0.073	0.162	1.749	0.083	0.714	1.4
Measurement and evaluation	0.086	0.085	0.099	1.017	0.312	0.65	1.538
Curriculum Design	-0.108	0.073	-0.129	-1.478	0.143	0.797	1.255
Process control and improvement	0.253	0.103	0.234	2.446	0.016	0.666	1.503
Implementation of Academic Program	0.048	0.1	0.045	0.477	0.635	0.677	1.477
Top Management Planning	0.163	0.078	0.194	2.088	0.039	0.708	1.412
Employee Involvement	0.19	0.075	0.218	2.518	0.013	0.816	1.225

a. Dependent Variable: Y

3) Heteroscedasticity Test

A good regression model requires no problem for heteroscedasticity which is the points on Scatterplot spread above and below or around 0 and does not form a specific pattern. The output data processing indicates that the points spread above and below or around 0 and does not form a specific pattern, so data has no problem for heteroscedasticity.

Fig. 3. Scatterplot



4) Autocorrelation Test

The regression model free of autocorrelation problem if the value of the Durbin-Watson count between dU and 4-dU which means it has no correlation between confounding variables in a given period with prior periods confounding variable. To find the value table durbin Watson by looking dU columns where k is the number of independent variables and n are the number of samples. The value of dU is 1.8264. Regression model has free from autocorrelation if Durbin Watson count between dU - 4 Du (1.8264-2.1736). With this, it can be concluded that there is no autocorrelation (1,837 were in the range dU - 4 Du).

TABLE IX. DURBIN WATSON VALUE

Model	Model Summary ^b				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.599 ^a	.359	.316	.47680	1.837

a. Predictors: (Constant), X7, X1, X3, X6, X4, X5, X2

b. Dependent Variable: Y

To find out whether the factors Total Quality Management significant effect on employee satisfaction is partially or simultaneous hypothesis test with significance test. Partial hypothesis testing are as follows:

Based on Table VIII, partial hypothesis are:

- 1) Based on the calculation SPSS Sig of the leadership value is 0.083 (0.083 > 0.05). This shows leadership has no significant effect on employee satisfaction.
- 2) Based on the calculation the value of Measurement and evaluation value is 0.312 (0.312 > 0.05). Measurement and evaluation has no significant effect on employee satisfaction.
- 3) Based on the calculation of SPSS the value of Sig Curriculum Design is 0.143 (0.143 > 0.05). Curriculum Design has no significant effect on employee satisfaction.
- 4) Based on the calculation of SPSS the value of Sig Process control and improvement value is 0.016 (0.016 < 0.05). With Process control and improvement have a significant effect on employee satisfaction.
- 5) Based on the calculation of the SPSS value of Sig Academic Program Implementation value is 0.635 (0.635 > 0.05). The Academic Program Implementation has no significant effect on employee satisfaction.
- 6) Based on the calculation SPSS of the value of Sig from Top Management Planning value is 0.039 (0.039 < 0.05) This shows Top Management Planning has significant effect on employee satisfaction.
- 7) Based on the calculation of SPSS Sig value of employee evaluation involvement value is 0.013 (0.013 < 0.05). This shows employee involvement has a significant effect on employee satisfaction.

The results are: three factors that have significant effect on employee satisfaction. They are process control and improvement, top management planning, and employee involvement. The regression equation is:

$$Y=0.931+0.128X_1+0.086X_2-0.108X_3+0.253X_4+0.048X_5+0.163X_6+0.190X_7+\epsilon \quad (1)$$

Meanwhile, to determine the simultaneous hypothesis from research is to look at the table of Anova results from SPSS. Simultaneous hypothesis proposed in this study is:

H0 : $\rho_{YX} = 0$, There is no significant effect between Total Quality Management on Employee Satisfaction in Telkom University

H1 : $\rho_{YXi} \neq 0$, There is significant effect between Total Quality Management on Employee Satisfaction in Telkom University.

TABLE X. SIMULTANEOUS TEST

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.355	7	1.908	8.393	.000 ^b
Residual	23.870	105	.227		
Total	37.226	112			

a. Dependent Variable: Y
 b. Predictors: (Constant), X7, X1, X3, X6, X4, X5, X2

As can be seen in Table VI the Sig is $0.000 > 0.05$. With this, the simultaneous hypothesis in this study is accepted that there is Total Quality Management has significant effect on Employee Satisfaction by 35.9% and the remaining 64.1% is influenced by other variables.

V. CONCLUSION

Total Quality Management factors that exist in Telkom University are: Leadership, Measurement and evaluation, Curriculum Design, Process control and improvement, Implementation Academics Program, Top Management Planning, and Employee Involvement.

Total Quality Management has significant effect on Employee Satisfaction at Telkom University amounted to 35.9%. Then the effect of each Total Quality Management factors that have significant effect are process control and improvement at 0.253, top management planning at 0.163, and employee involvement at 0.19.

Total Quality Management factor, which has a major influence on employee satisfaction is process control and improvement amounted to 0.253. The question items consist of employee expectations and modern facilities which owned by the University. This has the greatest impact among other factors. Therefore, need to be maintained and enhanced by Telkom University.

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