

**QUALITY IMPROVEMENT IN HIGHER EDUCATION THROUGH QMS ISO 9001: 2000**

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**ABSTRACT**

*Quality improvement is one of the key success factors for any enterprise to increase the performance through its services to customers. In order to create high value of services, the quality should be developed as a respond to the market or costumers needs and wants. As a Higher Education institution in increasing competitive environment of private education sector in Indonesia, Universitas Widyatama has also seen itself as an enterprise that need to satisfy its customers. The Universitas Widyatama's aim to satisfy its customers then defined in its quality objectives among others "60% of the students graduated on time and has final GPA above 2.55"*

*Realizing the importance of quality and the customers satisfaction, Universitas Widyatama has been adopting the quality system based on ISO 9001:2000 since 2003 in addition to the national accreditation system. The object of this study is to identify whether the implementation of ISO 9001:2000 in Universitas Widyatama has increased the achievement of the main quality objective. In this study we compare the student graduation result from 2002 until 2005. The implementation of ISO 9001:2000 should lower the fluctuation of graduate student quality. However, the result shows that although the quality objective is always achieved but there is no significance difference before and after the implementation of ISO 9001:2000. There are several questions and inquiries that need to be clarified and the result emphasizes the need to conduct inspections as well as corrective and preventive action to improve the quality continuously.*

**Keywords:** Quality Improvement, QMS ISO 9001:2000

**INTRODUCTION**

Quality improvement i.e. standardization is one of the key success factors to increase the enterprise performance through its services to customers. In order to create high value of services that yield profit, the quality should be developed as a respond to the market or costumers needs and wants. High value services created, in its turn will help increasing the market image in national or even international level.

Vincent Gaspersz (2003:1) gives the definition of quality improvement as:

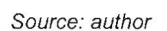
"The methodology of collecting and analysis of quality data, also determine and interpret measurements describing the process in an industrial system, to improve quality of products, in order to fulfill the needs and expectations of customer"

In practice, many enterprises found out that their quality improvement does not meet the expectation. They fail to create services that meet its own quality standard. If this happen, they need to conduct inspections as well as corrective and preventive action to prevent the failure occurred in the next process.

In order to achieve the enterprise's goal such as maintain its long term sustainability or short term strategy to create profit, they need to make sure that their services standard is recognized by other organization that representing the customers/public or government at the national level and international level.

Each country has its quality standard that is applied and recognized by its society. The quality standard that recognized nation wide in Indonesia is the Indonesian National Standard (SNI), previously known as Indonesian Standard Certificate (SII) issued by the National Standardization Body (BSN). Some certification bodies have given the authority to give the SNI to organizations that has meet the requirement.

As a Higher Education institution in increasing competitive environment of private education sector in Indonesia, Universitas Widyatama has also seen itself as an enterprise that need to satisfy its customers. Universitas Widyatama is aware that customer satisfaction is essential in order to survive and maintain its sustainability in the long term. As an enterprise Universitas Widyatama has the commitment to give all of its stakeholders the best as well as commitment to fulfill the social responsibility.



Therefore, the aim of quality assurance standard implemented in Universitas Widyatama is not just to improve the enterprise assurance, in conventional terms, but also to achieve its customer satisfaction. Since the dominant factors of higher education success and improvement depend a lot on it. Therefore the quality standard shall be built in line with costumers requirement. Those considerations is taken into account when Universitas Widyatama defined its quality objectives, among others, *"60% of the students graduated has completed their study in due time with GPA better than 2.55"*

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By implementing the ISO 9001:2000 quality management system, Universitas Widyatama expects to have management system more standardized and as the basis, for long term quality improvement continuously, as described on Figure 1.

## RESEARCH OBJECTIVES

- a. To study the impact of ISO 9001:2000 implementation on quality objective achievement.
- b. To identify constraints being faced to the achievement of the quality objectives or other factors influencing.

## HYPOTHESIS

The hypothesis is: there is a significant difference in quality objective achievement between before and after ISO 9001:2000 implementation.

## METHODOLOGY

- a. This study measures the difference in quality objective achievement between before and after ISO 9001:2000 implementation. We compare the student graduation result from 2002 until 2005,
- b. Graduation Period before ISO 9001:2000 implementation consists of 4 periods, are:
  - April 2002
  - August 2002
  - December 2002
  - April 2003
- c. Graduation Period after ISO 9001:2000 implementation consists of 6 periods, are:
  - August 2003
  - December 2003
  - April 2004
  - August 2004
  - December 2004
  - April 2005

## HYPOTHESIS TEST

The Hypothesis concerns the difference in quality objective achievement before and after ISO 9001:2000 implementation. By using t-test method for two independent sample, the purpose of the test is to compare the samples, to find out whether there is any difference of quality objective achievement or not.

### The Hypothesis

Ho: There is no difference in quality objective achievement before and after ISO 9001:2000 implementation.

Ha: There is a difference in quality objective achievement before and after ISO 9001:2000 implementation

### Statistic model hypothesis

Ho:  $\mu_1 = \mu_2$

Ha:  $\mu_1 \neq \mu_2$

**Calculating average score, deviation standards, Varians using the formula:**

- a. Calculating average score ( $\bar{x}$ ), deviation standards (s)  
Formula:



$$\bar{x} = \frac{\sum x_i}{n} \text{ and } s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

Result:

$s_1 = 8,346656$  (Deviation Standard of quality objective achievement before ISO 9001:2000 implementation.

$s_2 = 6,218253$  (Deviation Standard of quality objective achievement after ISO 9001:2000 implementation.

$\bar{x}_1 = 65,5$  (Average of quality objective achievement before ISO 9001:2000 implementation

$\bar{x}_2 = 66,66667$  (Average of quality objective achievement after ISO 9001: 2000 implementation.

- b. Finding  $t_{\text{calculation}}$  with formula

$$t_{\text{calculation}} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

→  $t_{\text{calculation}} = -0,23884$

- c. Determine  $t_{\text{table}}$  with:  
Significant degrees,  $\alpha=0.05$ ,  
Degrees of freedom (Df) =  $n_1+n_2-2=4+6-2=8$   
→  $t_{\text{table}} = 2.306$

- d. Determine criteria of test

If  $-t_{\text{table}} \leq t_{\text{calculation}} \leq +t_{\text{table}}$ , then  $H_0$  is accepted and  $H_a$  is rejected

If  $-t_{\text{table}} \leq -t_{\text{calculation}}$  or  $t_{\text{calculation}} \geq +t_{\text{table}}$ , then  $H_0$  is rejected and  $H_a$  is accepted

- e. Comparing between  $t_{\text{calculation}}$  with  $t_{\text{table}}$   
It appears:  $-2.306 \leq -0.23884 \leq 2.306$   
→  $-t_{\text{table}} < t_{\text{calculation}} < +t_{\text{table}}$

- f. Conclusion

**$H_0$  is accepted and  $H_a$  is rejected**

(There is not any difference in quality objective achievement between before and after ISO 9001:2000 implementation)

So, the quality objective achievement between before and after ISO 9001:2000 implementation has no significance difference.

## QUANTITATIVE FINDINGS

Data of quality objectives achievement in the period of April 2002 until April 2005 is shown in Table 1 below.

**Table 1** Quality Objective Achievement Period of April 2002 - April 2005

| No. | Graduation Period | Number of Graduate | Number of On time & Satisfied Final GPA Graduate | Percentage |
|-----|-------------------|--------------------|--------------------------------------------------|------------|
| 1   | April 2002        | 316                | 192                                              | 61%        |
| 2   | August 2002       | 174                | 132                                              | 76%        |
| 3   | December 2002     | 298                | 203                                              | 68%        |
| 4   | April 2003        | 306                | 175                                              | 57%        |
| 5   | August 2003       | 305                | 182                                              | 60%        |
| 6   | December 2003     | 366                | 253                                              | 69%        |
| 7   | April 2004        | 394                | 297                                              | 75%        |
| 8   | August 2004       | 266                | 167                                              | 63%        |
| 9   | December 2004     | 358                | 219                                              | 61%        |
| 10  | April 2005        | 327                | 234                                              | 72%        |

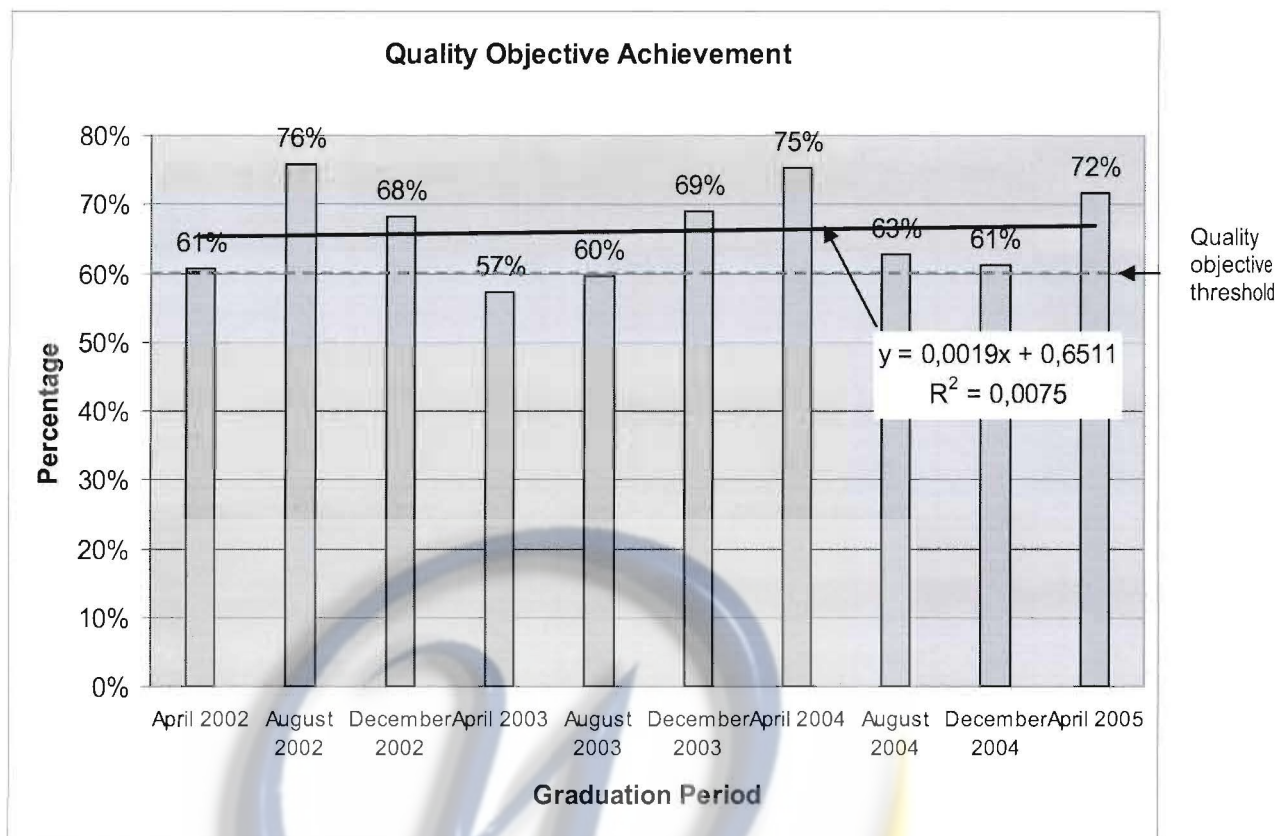
Source: Widyatama Quality Center

The Graph 1 shows that achievement of quality objective is fluctuate. This suggests that we have to identify factors that influence the stability of the achievement.

Based on the data, we have the linear regression equation as follows

$$y = 0.0019x + 0.6511$$

The value of relation is 0, 08660254, which shows weak relation. So as the  $r^2$  (determinant coefficient) is 0.0075, which shows the contribution of time is only 0.75% that influences the quality objective achievement. So, other factor is 99.25%.



Source: Widyatama Quality Center

**Figure 1** Quality objective achievement period of April 2002 - April 2005

The result of hypothesis test shows that there is no significant difference in quality objective achievement before and after the ISO 9001:2000 implementation. However, measurement of the trend of increase shows positive relation. This means there is an increase of achievement even though the contribution is very small.

## ANALYSIS

Based on previous result (point 5 and 6), several questions and inquiries are needed to be clarified and the result emphasizes the need to conduct inspections as well as corrective and preventive action to improve the quality continuously.

Several internal and external factors may be identified of having intermediately influence or hampering the expected target that could have influenced the results (currently we are conducting a research to verify this):

### a. External Factor

Government reform in Higher Education

There are some external factors that uncontrollable but has significant impact such as change in Government Regulations.

Recently, the government released a number of state owned university and changed the status to become more or less "private" in term of autonomy and financial subsidiaries.

The government has been trying to encourage those State Universities into becoming a self financed entity in their owned legal status. In line with the said policy, access to the public fund becomes more and more competitive and as the result, forces state higher education universities to find other source of financing. Some of the State Universities reacted by extending their student enrollment capacity, which in effect has decreased the demand to Private Education sector. Obviously the remaining students applied to private university are in

general having lower quality, since in Indonesian, for one and other reasons, the preference to Public Education is still higher than to the Private education sector.

b. Internal Factors:

There are also some internal factors that need to be continuously improved:

- Before the implementation of ISO 9001:2000, the selection tools (i.e. the entrance test) had not yet been standardized. In return, the quality of students in question varies considerably and consequently needs different treatment.
- Quality improvement is focused on management processes not yet teaching learning process and content
- Awareness and understanding in ISO 9001:2000 is still low and need to be strengthened

## CONCLUSIONS

- a. There is no any difference of quality objective achievement between before and after ISO 9001:2000 implementation.
- b. The trend of quality objective achievement is increase shows positive relation. This mean there is in increase of achievement even though the contribution is very small.
- c. Many factors that can influence, internal or external factors.

## SUGGESTION

- a. Comparative studies and benchmarking are probably to be conducted to reveal the real significant factors improving the ISO 9001:2000 implementation
- b. A lot of efforts and more serious determination training are to be conducted in order to increase awareness and understanding of ISO 9001:2000 quality management systems.

## REFERENCES

- Gaspersz, V., (2003). *Analyse method for quality improvement*. (2<sup>nd</sup> ed.). Jakarta: Gramedia Pustaka Utama.
- Gaspersz, V., (2003). *ISO 9001:2000 and continual quality improvement*. (3<sup>rd</sup> ed.). Jakarta: Gramedia Pustaka Utama.
- Gaspersz, V., (2002). *Quality management in industrial services*. Jakarta: PT. Gramedia Pustaka Utama.
- Indonesia National Standards 19-9000-2001. *Quality management system- Basics and vocabulary*. Indonesia: National Standardize Institute.
- Zantek, P. F., Gordon P. W., & Robert, D. P., (2002). *Process and product improvement in manufacturing systems with correlated stages*. Maryland, USA: INFORMS.