Implementation of Quality Management System of ISO 9001:2008 In Graduate School, Bogor Agricultural University

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Abstract- Implementation of Total Quality Management makes organization to maintain quality standards in all aspects of organization's business. The standard of quality management system (QMS) that has been developed and suitable for education is ISO 9001, achievement of quality device that is expected to respond to the challenges of globalization by increasing the efficiency and effectiveness to satisfy stakeholders. Graduate School of Bogor Agricultural University (SPs-IPB) proved itself as a reliable organization that received the ISO 9001:2008 certificate issued by SUCOFINDO on June1[st], 2011. This research aimed to determine the implementation of Quality Managements System ISO 9001:2008 from the aspect of documentation, management responsibility and alternative implementation strategies for corrective action. The data used in the form of primary and secondary data, both from qualitative and quantitative. Processing of qualitative data using descriptive analysis was based on interviews with party organization consisted of three informen who master the Quality Management System and its implementation in SPs-IPB on the right target and can affect policy. The collected data is processed by the method of analytic hierarchy process AHP. The results of data processing showed that the essential elements of QMS ISO 9001:2008 in SPs-IPB were Responsibility Management (43.9 %), Quality Management System (31.4 %), Product Realization (14.1%), Resource Management (6.8%), and Measurement, Analysis & Improvement (3.8 %);alternative measures such as Focus on the customer (1st priority), Quality Manual (2nd priority) and Purchase Information (3rd priority).

Index Terms- Quality management system,ISO 9001:2008, AHP

I. INTRODUCTION

Law of 1945 Article 31, paragraph 1 mandates that every citizen has a right to get education. Education in Indonesia is implemented and divided into several levels. This level is divided based on age levels and proficiency of learners, each level of education has different life span and education time. By this setting of the level of education, it facilitates the grouping of learners as well as their targets and policy concerning education, etc.

Law No. 12 of 2012 contains the objectives of higher education (Dikti) in Indonesia covers four aspects, which are; firstly, the progress of students' potencies in order to become a human of faith and fear of God Almighty and noble, healthy, knowledgeable, skilled, creative, independent, skilled, competent, and cultured for the sake of the nation; secondly, the output of graduates who mastered the science and / or technology to meet the national interests and to improve the competitiveness of the nation; thirdly, the output of science and technology through researches that notice and apply the value of humanities in order to benefit to the development of the nation, and the development of civilization and welfare of mankind; and fourthly, the realization of service to community based on reasoning and research works that are beneficial in promoting the general welfare and educating the nation.

Government Regulation No.04 of 2014 makes operation of Dikti to guarantee the quality of higher education so that the public interest is not harmed, including in the form of organizing, planning, supervision, monitoring and evaluation as well as development and coordination of the implementation of the program, level and type of Higher Education by the Minister to achieve the goal of Higher Education. Likewise with the demands of university administrators (PT), that in running the universities, they must be able to guarantee the autonomy of PT can be properly implemented that covers the autonomy of PT, the management of PT, the governance of PT and the public accountability. These all are performed to achieve the goal of the higher education.

The regulation of the Minister of Education and Culture No. 50 of 2014 Article 2 states that (1) The System of Quality Assurance of Higher Education aims to ensure the compliance with the Higher Education Standards in systemic and sustainable manner, so that it grows and develops quality culture. (2) The System of Quality Assurance of Higher Education functions to control the implementation of higher education by universities to have the high-quality of higher education.

Quality is a philosophy and methodology that assists institutions to plan change and set the agenda in the challenge of excessive external pressure. Quality is defined as something that satisfy and exceed customer needs and requirements. Improved quality is becoming increasingly important for institutions to obtain better control (Sallis, 2010: 15). Juran (Heizer & Render, 1993: 12) defines quality as a fitness in product use. Furthermore Juran (Atamadi, 2010: 28) states that quality as a result of production, either goods or services, successfully meets customer satisfaction and defect-free. According to Widodo (2011: 6), the quality is a dynamic thought that is difficult to be uniform. On the one hand, the quality can be understood as an absolute concept and on the other hand can be understood as a relative concept: (a) The Absolut Concept: Quality will be a symbol of status for internal and external customers, so that stakeholders

(owners) will feel proud and satisfied, in particular for learners' parents; (b) Relative Concept: Quality as a relative concept, closely follow the customers' desires that produce output conceptually.

The commitment of the Minister of National Education to improve the quality of education in Indonesia is perceived well by the managements in the education field or society as the users of educational institutions. The Minister of National Education has set a strategic policy with regard to improving the level or the quality of higher education in Indonesia. The policy is intended to get the education field, especially higher education, is able to compete at world level (World Class University-WCU).

Amirudin (2014) in general and complete, quality management can be defined as: Quality management is a systematic effort through the planning, implementation, inspection or control and follow-up on all elements of the organization, both internally and externally covered in the dimensions of materials, methods, machines, funds, human, environment and information to realize the commitment, policy and quality objectives which have been set in order to give satisfaction to the customers both in the present and in the future.

One of the standard of quality management system (QMS) that has improves is ISO 9001. ISO 9001 version of 2000 and version of 2008 give more emphasis on business process patterns that occur within the company's organization. Thus almost all types of businesses can implement this quality management system of ISO 9001 (Hendartho, 2014). One of the Quality Management System which aims to enhance customer satisfaction, enabling sustainable improvement, is ISO 9001: 2008. Certification of ISO 9001: 2008 (QMS) is the standard generic and can be applied throughout the organization. In order to increase the accountability and the international public image, the Ministry of National Education has implemented a policy that every major unit of organization in both central and local work units to achieve ISO 9001: 2008 as an evidence of international recognition of education in Indonesia.

Widodo (2011) explained that the ISO version that is much highlighted by the education world is ISO 9000, which is the newest version that was published in 2008 and include four series (1) ISO 9000: 2005 describing fundamentals of SMM and detailing terms used in SMM; (2) ISO 9001: 2008 specifying the QMS requirements of an organization; (3) ISO 9004: 2000 providing guidance for sustainable improvement in performance and overall efficiency of the organization; (4) ISO 1901: 2002 providing guidance on auditing QMS and environment management. The point of the implementation of quality standards is the quality results of a product is well-maintained, which is a knowledge sharing system that allows everyone to produce the same thing with the same quality, so it will reduce the dependence on one person (Wangtry, 2009).

Samuel and Zulkarnaen (2006) conducted a study entitled on the Influence of the Quality Management System (QMS) of ISO toward the Employee Performance through Quality Culture Company, with PT Otsuka Indonesia Malang as the object of study. QMS ISO is seen from three dimensions, that are Certification Planning of ISO 9001, Company Commitment and Implementation Procedures. The study found that the Planning Certification of ISO 9001, Company Commitment and Implementation Procedures have been very well perceived by employees and gave a positive and significant effect on the company Quality Culture. Further, Quality Culture gave positive and significant effect on employee performance, yet still be perceived not too good by employees, because the Empowerment and Involvement and Quality Improvement Team Work have not been implemented optimally.

Dharma (2007) did a study trying to see if there is influence of the quality management system of ISO 9001: 2000 to employees performance in PT Asuransi Prog Branch of North Sumatra. The results of this study showed that, simultaneously and partially, the quality management system of ISO 9001: 2000 gave very significant and positive effect on the employee performance. This means that every policy carried out by the company has been fit with the quality assurance system of ISO 9001: 2000.

Irani and Hadiputra (2010) in their study on the influence of the implementation of the quality management system of ISO 9001: 2008 in PT Telkom on employee performance. The results of this study showed that, simultaneously, the quality management system of ISO 9001: 2008 gave very significant and positive effect on employee performance in PT Telkom. This means that every policy carried out by the company has been fit with the quality management system of ISO 9001: 2008.

Lestari (2012) in this study seeked to observe how the influence of quality assurance to performance. The results showed that the implementation of the system of internal quality assurance and quality management systems of ISO had implications for improved performance.

Amirudin (2014) that is based on the explanation of the various results of previous studies can be concluded that the implementation of quality management system of ISO 9001: 2008 has a good influence on employee performance, it has become imperative for educational users or providers to make fundamental changes, both the processes and outputs of education and the management system of educational administration. This is in accordance with the findings in this study, although there are some aspects that still need to be fixed and the service to be increased. Regular evaluation is important to show that the quality assurance system that is implemented can improve the quality of educational services to students, faculty, and educational staff in the UIN Syarif Hidayatullah Jakarta.

Therefore, the Graduate School of Bogor Agricultural University has struggled to implement ISO 9001: 2008 so that in the implementation of the administrative services process of education for the achievement of the management system of educational administrative that is excellent, fast and efficient can be in accordance with customers' expectations and supports the process of excellent implementation of education in the Graduate School of Bogor Agricultural University. The scope defined in the implementation of the Quality Management System of ISO 9001: 2008 is in the process of "educational administration services started from the file admissions process until the file submission process", particularly in the service of Certificate Active, Permit Research, Validation Proposal, Legalization Proposal, Thesis or Dissertation Validation, Certificate of graduation, Return Letter to the Institute. The purpose of this adoption of Quality Management System is an effort to organize educational administrative services at the Graduate School of

Bogor Agricultural University that is excellent and in accordance with the customers' expectations, and also match the laws to support education and teaching. Related to the background of quality management in performance in higher education, then it needs to conduct a study to determine the implementation of QMS ISO 9001: 2008 in the Graduate School-IPB.

II.   RESEARCH METHODS

This study used a qualitative approach (expert judgment). Researchers conducted interviews (questionnaire), which is the primary data. In addition, researchers also observed internal documentations of SPs-IPB and literatures about the implementation of ISO 9001: 2008 which is secondary data as shown in Table 1.

Table 1 Data collection techniques

No	Source of data	Data (that is needed)	Technique of collecting	Types of Data
1.	Academics Respondent (Expert)	Things related to the implementation of ISO 9001: 2008 at Graduate School's Academic Administration Section	- Expert questionnaire	Primary Data
2.	-Documents -Literatures	Document of implementation of ISO 9001:2008	Documentary studies	Secondary Data

The results of this study informed how the implementation of ISO 9001: 2008 in SPs-IPB through study of agreements of QMS ISO 9001: 2008. The analytical tool used in the identification of the implementation of ISO 9001: 2008 was Analysis Hierarchy Process (AHP).

According to Saaty (1993) Analytical Hierarchy Process (AHP) is a common tool used in the decision-making in the compound criteria. AHP is a functional hierarchy with the main input of human perception. With AHP, complex and unstructured problems will be grouped and arranged into a form of hierarchy. Since all parts of the hierarchy are interconnected, it will be very easy to see how a change in one perspective will give effects on other perspectives.

Technique of Comparative Performance Index (CPI)

The technique of comparative performance index is a composite index that can be used to determine the rating or ranking of the various alternatives (i) based on several criteria (j). The formula used in the technique of CPI is as follows:

$$A_{ij} = X_{ij(min)} \times 100/X_{ij(min)}$$

$$A_{(i+1j)} = (X_{(I+Ij)})/X_{ij(min)} \times 100$$

$$I_{ij} = A_{ij} \times P_j$$

$$I_i = \sum_{i=1}^{n} (I_{ij})$$

Explanation:

A_{ij} : alternative value to-i at the criteria to-j

$X_{ij(min)}$: alternative value to-i at the minimum initial criteria to-j

$A_{(i+1j)}$: alternative value to-i + 1 at the criteria to-j

$X_{(I+Ij)}$: alternative value to-i + 1 at the minimum initial criteria to-j

P_j : importance quality of criteria to-j

I_{ij} : alternative index I

I_i : criteria composite index at the alternative to-I

i : 1, 2, 3, ..., n

j : 1, 2, 3, ..., m

In this study, the CPI was used to assess the interest quality between sub-agreement in ISO 9001: 2008.

Hierarchical structure model used in this study: The first level is the goal, that is the implementation of QMS ISO 9001: 2008 in SPs-IPB. The second level is the element that consists of five factors, that are SMM, management responsibility, resource management, product realization, also analysis, measurement and improvement. These fifth factors are the agreements in QMS ISO 9001: 2008. The analysis of the value of the sub-agreements of QMS ISO 9001: 2008 was analyzed using the results of AHP and Technique of Comparative Performance Index.
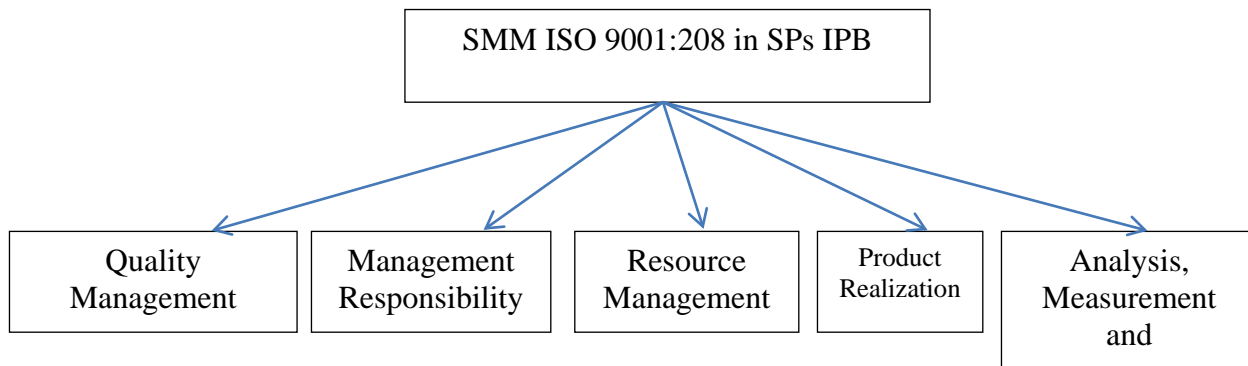
Figure 1. Hierarchical Structure

III.   RESULTS AND DISCUSSION

The results of AHP processing showed that agreement of QMS ISO 9001: 2008 in SPs-IPB was the Management Responsibility (43.9%), Quality Management Systems (31.4%), Product Realization (14.1%), Resources Management (6.8%) and Measurement, Analysis and Improvement (3.8%), with the inconsistency of 0.09 as shown in Table 2

Table 2 Structure of agreement priority of SMM ISO 9001:2008 in SPs IPB

Element	Quality	Priority
Management Responsibility	43.9%	1
Quality Management Systems	31.4%	2
Product Realization	14.1%	3
Resources Management	6.8%	4
Measurement, Analysis and Improvement	3.8%	5

Source: Analysis results of AHP

From these five agreements, the main agreement to be considered and prioritized to the successful implementation of QMS ISO 9001: 2008 in SPs IPB is by selecting the highest quality value as the main priority. The agreement of Management Responsibility became the main agreement that get the priority of success. According to experts, the agreement of management responsibilities become a priority because it becomes the determinant of ISO achievement goal, as the charge for the implementation of SMM and the success of SMM depends on management responsibilities.

This agreement becomes important because in the management responsibility, the top management must provide evidence of management commitment to the forming and implementation of QMS and also the sustainable correction effectiveness. Correction effectiveness is sustainable by communicating to the SPs the importance of meeting the requirements of QMS ISO 9001: 2008, determining the quality policy, ensuring that quality objectives, conducting management reviews and ensuring the availability of resources.

The agreement of Quality Management System from the results of the technique of the variables comparative performance index that had a high priority and played a role in influencing the results of QMS ISO 9001: 2008, implemented by the Graduate School of IPB was sub agreement of the documentation requirements focused on the quality manual. The quality manual here includes a) the scope of the quality management system, including detailing the exception of the terms or procedures of the educational administrative services started from the file admissions process until the file submission process. b) Includes also the procedure documentation of existing processes within the quality management system, and c) describes carefully the interactions that occur in the process of quality management.

Table 3. Interest priority in agreement of the quality management system

Agreement	ISO 9001:2008	Score	Quality Value	Value	Rank
Quality Management System		**0,314**			
4.1	General Requirements	6,67	111	34,89	Option
4.2	Documentation Requirements	7,33	122	38,38	**Alternative**
4.2.1	General	6,67	111	34,89	Option
4.2.2	Quality Manual	7,67	128	40,12	**Priority**
4.2.3	Control of Documents	6,67	111	34,89	Option
4.2.4	Control of Records	6,00	100	31,40	Option

The agreement of Management Responsibility from the results of the technique of variable performance index that had a high priority and played a role in influencing the results of QMS ISO 9001: 2008, implemented by the Graduate School of IPB was a variable of focus on the customer. Focus on the customer means the central leader / leader of the organization must ensure

that the conditions of service of educational administration started from the file admissions process until the file submission process was set and fulfilled with the aim to increase the satisfaction of stakeholders. In addition to the focus variable on customers, variable that became a priority interest in this agreement that can also be used as an alternative that can influence the results of QMS ISO 9001: 2008 was the variable of responsibility, authority and communication. The responsibility and authority defined in this variable is that the top leadership of the Graduate School of IPB must ensure that the responsibilities and authorities in QMS ISO 9001: 2008 have been defined and communicated as they should be

Table 4. Interest priority in agreement of management responsibility

Agreement	ISO 9001:2008	Score	Quality Value	Value	Rank
Management Responsibility		**0,439**			
5.1	Management Commitment	7,00	105	46,07	Option
5.2	Focus On Customer	8,67	130	57,04	**Priority**
5.3	Quality Policy	7,33	110	48,27	Option
5.4	Planning	6,67	100	43,88	Option
5.4.1	Quality Objective	7,33	110	48,27	Option
5.4.2	Planning of Quality Management System	7,00	105	46,07	Option
5.5	Responsibility, Authority, and Communication	8,00	120	52,65	**Alternative**
5.5.1	Responsibility and Authority	8,00	120	52,65	**Alternative**
5.5.2	Management Representative	7,67	115	50,46	Option
5.5.3	Internal Communications	7,67	115	50,46	Option
5.6	Management Review	7,33	110	48,27	Option
5.6.1	General	7,33	110	48,27	Option
5.6.2	Input for the Management Review	7,00	105	46,07	Option
5.6.3	Output of the Management Review	7,00	105	46,07	Option

The agreement of Resources Management from the results of the technique of variable performance index that had a high priority and played a role in influencing the results of QMS ISO 9001: 2008, implemented by the Graduate School of IPB was a variable of human resources. Personnels who work affecting the conformity to product requirements must be competent on the related basis of education, training, skills and experience. SPs IPB, in this matter, should defines the competence needed by personnels who perform work affecting the conformity to product requirement, if necessary providing training or taking other actions to achieve the competence needed. SPs IPB should assess the effectiveness of the actions taken care by personnels and ensure the appropriateness and importance of their activities and how they contribute to the achievement of quality objectives. SPs IPB should also maintain the records that are needed and have been implemented on education, training, skills and experience of what is appropriate.

Table 5. Interest priority in agreement of resource management

Agreement	ISO 9001:2008	Score	Quality Value	Value	Rank
Resource Management		**0,068**			
6.1	Provision of Resources	7,00	105	7,14	Option
6.2	Human Resources	7,67	115	7,82	**Alternative**
6.2.1	General	7,33	110	7,48	Option
6.2.2	Competence, Training and Awareness	8,33	125	8,50	**Priority**
6.3	Infrastructure	6,67	100	6,80	Option
6.4	Work Environment	6,67	100	6,80	Option

The agreement of Product Realization from the results of the technique of variable performance index that had a high priority and played a role in influencing the results of QMS ISO 9001: 2008, implemented by the Graduate School of IPB was the variable of purchase that focused on the purchase information. In the world of education, it is translated as documents concerning qualification requirements of stakeholders, the requirements of the procedures, processes and equipment needed.

Table 6. Interest priority in agreement of product realization

Agreement	ISO 9001:2008	Score	Quality Value	Value	Rank
Product Realization		**0,141**			
7.1	Planning of Product Realization	6,67	100	14,09	Option
7.2	Processes Associated with Customer	7,33	110	15,50	Option
7.2.1	Determination of Terms Relating to Product	7,67	115	16,21	**Alternative**
7.2.3	Customer Communication	6,67	100	14,09	Option
7.4	Purchase	7,67	115	16,21	**Alternative**
7.4.1	Purchase Process	7,67	115	16,21	**Alternative**
7.4.2	Purchasing Information	8,00	120	16,91	**Priority**
7.4.3	Verification of purchased product	7,00	105	14,80	Option
7.5	Production and Service Provision	7,33	110	15,50	Option
7.5.1	Control of Production and Service Provision	7,67	115	16,21	**Alternative**
7.5.2	Validation of Production Processes and Services Delivery	7,67	115	16,21	**Alternative**
7.5.3	Identification and Testing Capability	6,67	100	14,09	Option
7.5.4	Customer Property	6,67	100	14,09	Option
7.5.5	Preservation of Product	7,67	115	16,21	**Alternative**

The agreement of Measurement, Analysis and Improvement from the results of the technique of variable performance index that had a high priority and played a role in influencing the results of QMS ISO 9001: 2008, implemented by the Graduate School of IPB was the variable of improvement and preventive action. SPs IPB should determine action to eliminate the causes of potential nonconformities to prevent their occurrence. Preventive action should be appropriate to the influence of the potential problems.

Table 7. Interest priority in agreement of measurement, analysis and improvement

Agreement	ISO 9001:2008	Score	Quality Value	Value	Rank
Measurement, Analysis and Improvement		**0,038**			
8.1	General	6,33	106	4,01	Option
8.2	Monitoring and Measurement	6,67	111	4,22	Option
8.2.1	Customer Satisfaction	6,67	111	4,22	Option
8.2.2	Internal Audit	6,67	111	4,22	Option
8.2.3	Monitoring and Process Measurement	6,00	100	3,80	Option
8.2.4	Monitoring and Product Measurement	6,33	106	4,01	Option
8.3	Product Control that do not fit	6,33	106	4,01	Option
8.4	Data Analysis	6,67	111	4,22	Option
8.5	Improvement	7,33	122	4,64	**Priority**
8.5.1	Sustainable Improvement	6,67	111	4,22	Option
8.5.2	Corrective Action	7,00	117	4,43	**Alternative**
8.5.3	Preventive Action	7,33	122	4,64	**Priority**

IV. CONCLUSION AND RECOMMENDATION

Conclusion

The result of AHP processing and the technique of Comparative Performance index (CPI) from the agreements in the QMS ISO 9001: 2008 illustrates that high priority in each agreement has been implemented as it should be, in accordance with the terms and procedures. For the agreement of management responsibility in this regard the existing leader of the units in the Graduate School should be properly and truly committed to implement the QMS ISO 9001: 2008 for the realization of the process, implementation procedure and sustainable improvement of the educational administration which start from the file admissions process until the file submission process defined and fulfilled in accordance to the target procedure to increase the satisfaction of stakeholders.

Suggestion

The high quality value to the agreement of management responsibility of QMS ISO 9001: 2008 shows that the management responsibility is very important to the success of the implementation of QMS ISO 9001: 2008 in the Graduate School of IPB. Therefore, the role of management, in this respect, the leaders of SPs should prove their commitment to the forming and implementation of QMS by performing efficient communication, performing the quality policy that has been assigned, setting the quality objectives, performing management reviews and ensuring the availability of resources needed. Leaders of the Graduate School have an obligation to carry out internal audits every 3 months and the leaders of management who have been certified ISO 9001: 2008 must carry out the survalaince audit every 6 months, because of the existing data, QMS ISO 9001: 2008 in the Graduate School of IPB had ever performed survalaince audit. According to the rules of QMS ISO 9001: 2008, if the institution that has been certified of ISO does not carry out suvailance audit procedure for 2 times, then its ISO certificate is no longer valid.

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