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BUILDING LECTURER PROFESSIONAL COMPETENCE: DEVELOPMENT OF AN ENVIRONMENT QUALITY MANAGEMENT SYSTEM (EQMS) MODEL IN PRIVATE UNIVERSITIES

***Ali Mustopa, Achmad Asrori, Jamal Fakhri, Ahmad Fauzan**

Postgraduate of IAIN Raden Intan Lampung, Bandar Lampung, Indonesia.

*Corresponding Author: ali.mustopa.uinril@gmail.com

Abstract

This research aims to produce a model of a valid, practical, and effective Environment Quality Management System (EQMS) to improve the professional competence of lecturers. The EQMS model was developed using design research from Plomp which consisted of three stages, namely preliminary research, design and development prototype, and assessment phase. The product validity test was reviewed from the aspects of content, construction/graphics, and language in the EQMS management model book, the EQMS model manual for LPM, and lecturers involving 3 education management experts. The product practicality test was reviewed from the convenience, benefits, and attractiveness of the EQMS model manual for LPM and lecturers involving 3 quality assurance team leaders and 13 lecturers. The effectiveness test was carried out by observing the implementation of the EQMS model at UNUHA, STIT MU Gumawang, and STKIP Muhammadiyah OKU Timur. The level of effectiveness is obtained by comparing the achievement of lecturer professional competence in three aspects of assessment, namely education and learning competence (X1), research competence (X2), and community service competence (X3), and looking at the effect of the response variable of the EQMS model user (Y) on (X1, X2, and X3). The results of the effectiveness test of the EQMS model obtained a Significance value (Sig). <0.05 probability. From these results, it can be interpreted that variable Y simultaneously influences variables (X1, X2, and X3).

Keywords : EQMS Model, Learning Competence, Research Competency, Service Competence.

INTRODUCTION

The rapid development of science and technology has had an impact on the shift to the era of society 5.0, where technological and human products coexist to improve the quality of human life in a sustainable manner (Chang et al., 2014; Masami, 2021; Özdemir & Hekim, 2018). The era of society 5.0 which is marked by the development of globalization will certainly have an impact on the development of the world of education (Özdemir & Hekim, 2018). Based on this phenomenology, people's demands for education are increasing. This demand is directed to what is produced by the world of education, namely the achievement of quality human resources.

Improving the quality of quality human resources is the main product of implementing good management in education (Begum et al., 2021; Kanji, 1995). Implementation of good education management based on the formulation of education management policies must be oriented towards

Received: October 30, 2022 / Revised: November 18, 2022 / Accepted: December 03, 2022 / Published: December 30, 2022

About the authors : Ali Mustopa

Email: ali.mustopa.uinril@gmail.com

improving the quality of education, both academic and non-academic, and evaluating and improving education management periodically to make it more productive (Kahreh et al., 2014; Krittanathip et al., 2013; Luthra et al., 2020; Mukherjee, 2019; Tricker, 2019).

The implementation of education management in tertiary institutions is seen as one of the most influential efforts in creating quality human resources in the world of education because the management process in tertiary institutions will produce teachers who are responsible for the quality of education in schools (Sewang, 2015). The quality/quality of education is not something that stands alone but is a unit that is interconnected and linked as a process within a system (Agus & Hassan, 2011; Militaru et al., 2013; Petrick & Furr, 2017; Tricker, 2019). Systems that are implemented in a planned, structured, and regular manner with system components that are interdependent and related to one another to determine success in improving the quality of education (Dahlgaard et al., 2002; Luthra et al., 2020; Pyzdek & Keller, 2013).

Quality tertiary institutions are a necessity, both in terms of mandatory regulations and the demands of society's needs. From a regulatory perspective, this is contained in Law Number 12 of 2012 concerning requiring every higher education institution to be accredited. This regulation aims to guarantee that higher education institutions that have been accredited meet the quality standards set by the Government so that they can protect the public against the practice of tertiary institutions that do not meet quality standards (Sonia, 2021; Supriyanto, 2015).

The reality on the ground for the implementation and management of quality higher education management is not a simple and easy business to do, but an activity that is dynamic and full of challenges (Sonia, 2021). From the results of a preliminary study by researchers on Private Islamic Religious Colleges (PTKIS) in East OKU District, it is known that in managing higher education quality standards, intervention and innovation are still required in managing its management, this is represented by the accreditation status of 5 PTKIS institutions in East OKU has accreditation C (good). In addition, the HR of the Permanent Lecturers in charge of the 5 PTKIS are still dominated by expert assistant career paths, some are still teaching staff and most are not certified. This certainly correlates with the quality of lecturers' professional competence in managing (Marsanto et al., 2021; Rosinawati et al., 2021; Sonia, 2021). (Marsanto et al., 2021) states that high-quality tertiary quality standards can be achieved through three main pillars, namely: 1) HR that has good integrity, competence, and managerial skills, 2) Systems that not only exist but are running and can increase work productivity and improve HR professionalism and 3) Supporting capacity in the form of infrastructure, learning media and education and training (Training).

Further findings based on interview results obtained some information including 1) the implementation of SPMI and AMI had not been maximally managed by the PTKIS quality assurance team at OKU East, because the auditor team had not been able to share the workload, and main job responsibilities as lecturers such as teaching schedules, research and community service, so that the auditor team has difficulty adhering to the predetermined audit schedule; 2) the implementation of quality assurance management for lecturer competencies does not provide rewards and punishments for the competency achievements of the lecturers being assessed; 3) there are many cases of quality audit findings on the evaluation of lecturers' professional competency achievements that are not followed up, because there are no sanctions if there is no follow-up of the findings of errors; 3) if there is a follow-up of

improvements made by some of the lecturers on problem findings, the follow-up that is carried out does not lead to the real root of the problem, so that the same problem will be repeated; and 4) the implementation of lecturer competency quality audits seems to be carried out only as an effort to complete documents for accreditation applications, not yet leading to quality management considerations.

Based on the description of the findings above, there is a common thread of problems faced by PTKIS in OKU Timur to have good quality, the common thread of the problem is that the management carried out by PTKIS has not led to improving the quality of human resources, systems and carrying capacity. HR professional competence, good system, and support capacity result from good management in planning, strategic selection, implementation, monitoring, control, and follow-up (Keller, 2011; Pyzdek & Keller, 2013; Taskov & Mitreva, 2015). Management was created to increase work productivity through good quality control (Dahlgard et al., 2008; Kristensen et al., 1995; Pyzdek & Keller, 2013). Based on the results of a literature study conducted by researchers on theory and research results, information was obtained that a management strategy that can be used by an institution/organization to improve product or service quality is the Total Quality Management (TQM) management model (Cavdar & Aydin, 2015; Luthra et al., 2020a; Wilkinson et al., 1998; Zehir et al., 2012). The application of the TQM model refers to four stages, namely 1) the Planning Phase 2) the Doing Phase 3) the Checking Phase and 4) the Acting Phase (Adjustment Phase) (Aly & Akpovi, 2001).

The implementation of the TQM model has weaknesses such as the implementation of the TQM model steps for improvement and quality improvement only within departments within the agency (Charantimath, 2016), each department usually has its policy, so it does not cover the entire organization/institution (Thakkar et al., 2006). According to Todorut (2012) in his research, it was stated that the implementation of TQM must be periodic, but in practice, the implementation of quality control is felt to be temporary (Todorut, 2012). Furthermore (Zehir et al., 2012) emphasized that quality improvement in the application of TQM begins incrementally where changes in the quality of services, products, and HR are regular with small improvements (continuous developments), not radical improvements. Under these conditions, sometimes policy designers and management executors must have high integrity and commitment and be supported by good communication and leadership to be able to create a solid teamwork environment.

Based on the weaknesses above, the researcher developed a TQM management model to become an EQMS management model. The implementation of the EQMS model is based on establishing a quality environmental system, especially for lecturers to improve their professional competence during the management implementation process.

METHODS

The method used in this research is development research. The development model used in this study is the development model from Plomp which consists of three phases 1) Preliminary research; 2) Develop prototypes; and 3) Assessment phase (Akker et al., 2006; Barab & Squire, 2004; Plomp et al., 2013), the implementation of the EQMS model development can be seen in Fig 1 below.

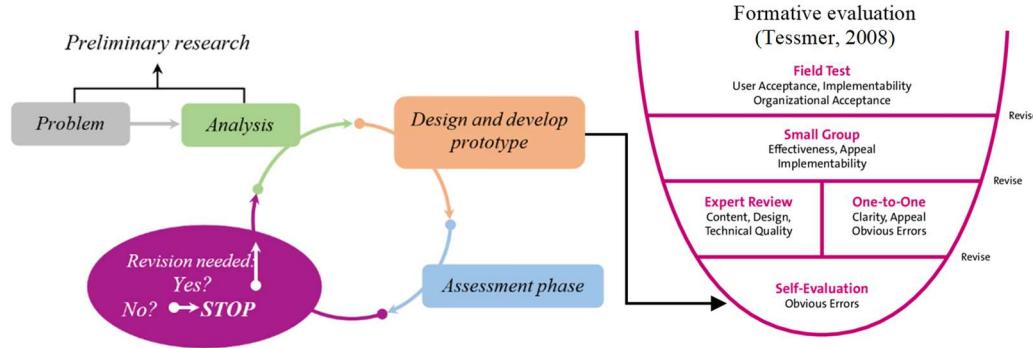


Figure 1. Development Research Cycle

Based on Fig 1, it can be explained that the preliminary research stage carried out an analysis of literature studies, needs, and context analysis, and developed a conceptual framework for the EQMS model product. In the design and development prototype stage, the researcher designed the initial prototype of the EQMS model and conducted an evaluation formative of the designed product, the formative evaluations carried out in this study were self-evaluation, expert validity, and field tests. The last stage is the Assessment phase which is a (semi) summative evaluation stage to conclude whether the intervention meets the specified criteria.

RESULTS

Results of preliminary research phase

Preliminary data at the preliminary research stage is the result of analysis of literature studies. Analysis of the literature is carried out to obtain a scientific basis for novelty in the implementation of the EQMS model which has not yet been found in the implementation of the TQM model and the EMS model. Theories marked and referred to as the main theory (Grand design) are the results of research (Crosby & Bryson, 2005; Kahreh et al., 2014; Lotto, 2017; Pawliczek, 2020; Shuman & Twombly, 2010) used as the scientific basis for implementation EQMS models. The results of the analysis of the EQMS model literature can be seen in Fig 2 below.

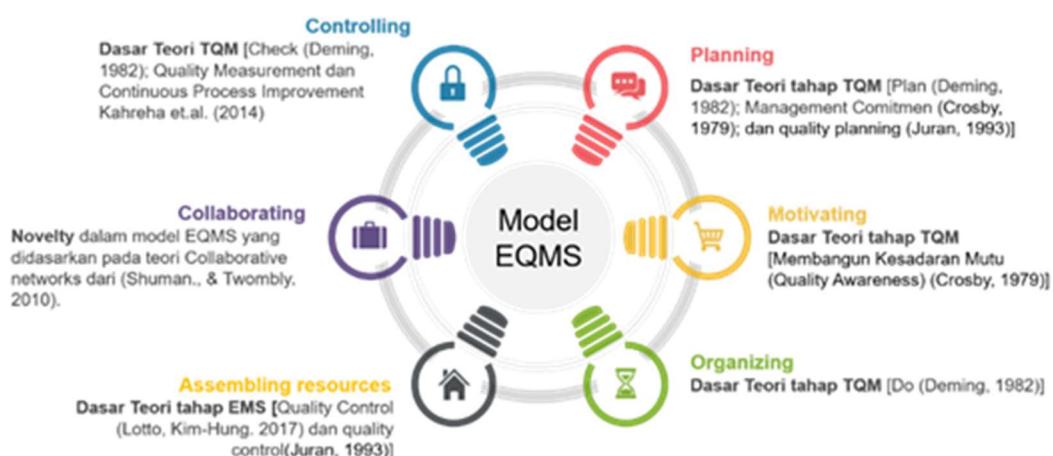


Figure 2. Grand design of the EQMS model

Based on the theory obtained in Figure 2, the steps for implementing the EQMS model are then developed according to the results of the needs analysis. The initial design for the implementation of the EQMS model phase can be presented in Table 1 below.

Table 1. Steps for implementing the EQMS model

Stage	Description
<i>Planning</i>	The process of setting goals and implementing guidelines, by selecting the best of the available alternatives
<i>Motivating</i>	Directing or encouraging lecturers in achieving EQMS management objectives is carried out, namely increasing lecturer professional competence.
<i>Organizing</i>	The process of determining, grouping, and organizing the various activities needed to achieve the goal, places the lecturer
<i>Assembling resources</i>	Arrangement of personnel in the organization for human resource development (training, workshops) as an effort so that each lecturer gives maximum efficiency to tertiary institutions.
<i>Collaborating</i>	This collaborative stage is to allow lecturers to combine their strengths with other team colleagues, so that collectively they are able to compensate for the weaknesses that exist among team members.
<i>Controlling</i>	Measurement and improvement of the implementation of the work of subordinates, so that the plans that have been made to achieve the goals can be implemented

The results of the development of the conceptual framework for the EQMS model, which still has to be tested for its feasibility, practicality, and effectiveness in increasing the professional competence of lecturers in this study, are manifested in the form of research products in the form of EQMS model books, EQMS model implementation books for LPM, and EQMS model implementation books for lecturers (See Fig 3).



Figure 3. Product prototype of the EQMS model

Result design and develop phase

The results of the formative evaluation in the design and develop prototype phase of the products designed in this study were divided into three parts, namely the results of self-evaluation, expert

validity, and field tests. Self-evaluation data on product prototypes of the EQMS model focusing on evaluating obvious errors can be presented in Table 2 below.

Table 2. Self-evaluation results on the 1st prototype of the EQMS model

Products/Components	Type obvious error		
	Words/Spelling/Punctuation	Layout	Font Size/Color
EQMS model book	<ul style="list-style-type: none"> - Many word typos found - SPOK error 	<ul style="list-style-type: none"> - Inconsistency of sub-headings - Irregular numbering of figures and tables 	<ul style="list-style-type: none"> - The font color on the cover lacks contrast - Font size inconsistency
EQMS model implementation book for LPM	<ul style="list-style-type: none"> - SPOK and punctuation errors - Capital letters in names - Italics in foreign terms 	<ul style="list-style-type: none"> - Disproportionate table size 	-
EQMS model implementation book for lecturers	<ul style="list-style-type: none"> - Placement of commas - SPOK error - Italics in foreign terms 	<ul style="list-style-type: none"> - Disproportionate table size 	<ul style="list-style-type: none"> - Font size inconsistency

Based on Table 2, provides information that the most common errors found in prototype 1 of the EQMS model are the arrangement of sentences that are not by SPOK (subject, predicate, object, description), punctuation, and numbering consistency in figures and tables. These findings later became a reference in the revision of the prototype to 1 of the EQMS model before conducting an assessment on expert validity. The result of the second formative evaluation at the design and development prototype phase is product feasibility testing involving 6 experts (expert validity).

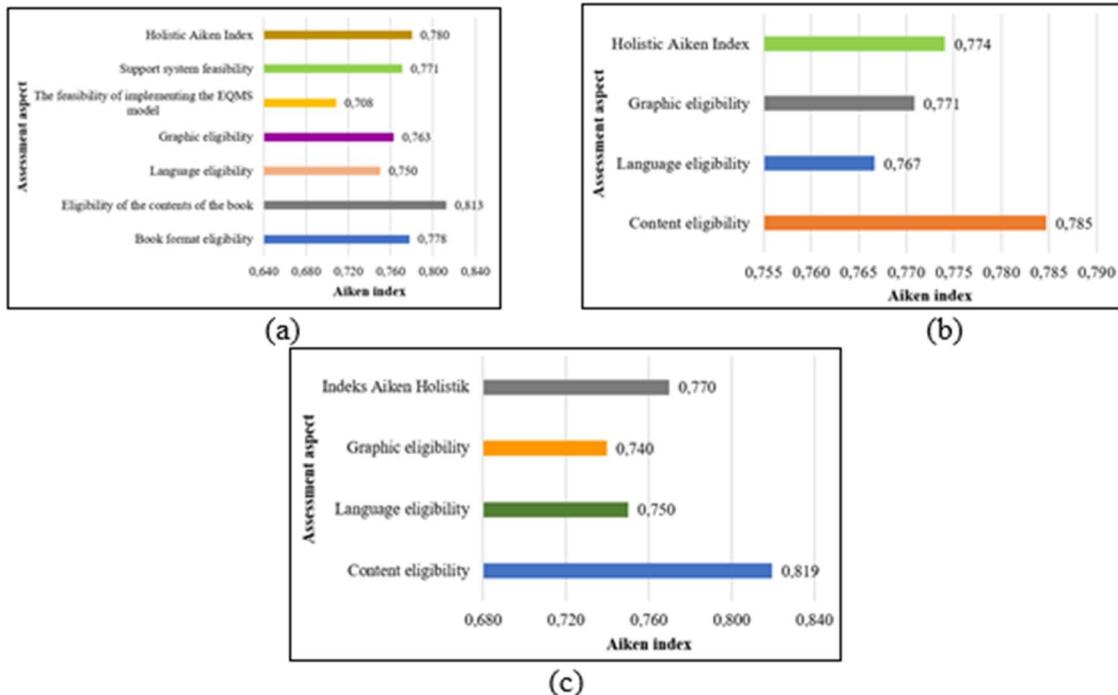


Figure 4. The results of the validity test on the second prototype of the EQMS model

Fig 4 can be explained that the results of the feasibility test on prototype 3 in graph (a) represent the feasibility results of the EQMS model book, graph (b) represents the feasibility results of the EQMS model implementation book for LPM, and graph (c) represents the feasibility results of the EQMS model implementation book for lecturers successively obtained holistic Aiken index results of 0.780; 0.774; and 0.770 overall the three products are interpreted as valid/decent as a management model that can be used to improve lecturer professional competence. In general, this feasibility is seen from the aspect of assessing the contents of the book, the language used in writing the book's content and the graphic display are also attractive. The revised EQMS model prototype at the expert validity stage was then tested on the feasibility of the EQMS model. The practicality test is carried out at the field test stage.

The product tested at the field test stage was an EQMS model implementation book for LPM and lecturers involving 3 LPM chairmen and 13 lecturers from UNUHA, STIT MU Gumawang, and STKIP Muhammadiyah OKU Timur. The results of the product practicality test at the field test stage can be seen in Fig 5 below.

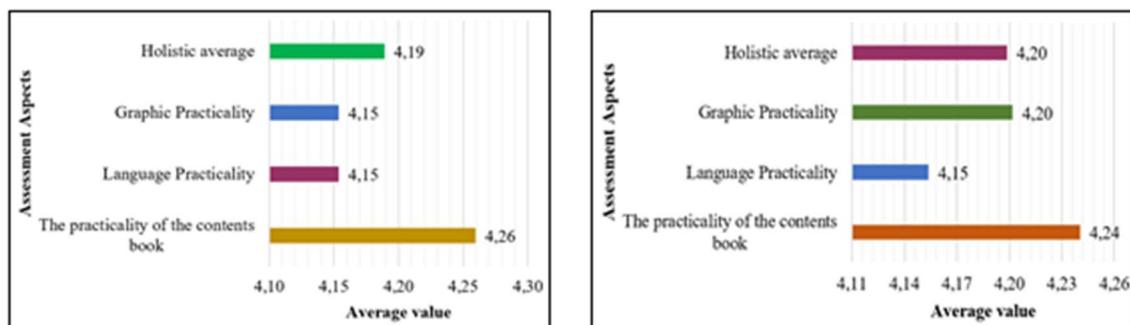


Figure 5. Practicality test results on the 3rd prototype of the EQMS model

Based on Fi 5, the practicality test results obtained for the EQMS model implementation book for LPM and lecturers, in general, have a holistic average score of 4.19 and 4.20 with a holistic achievement percentage of 83.78% and 83.97%, these results can be interpreted that EQMS model prototype has practical criteria.

Results of the assessment phase

The results at the assessment stage in this study aimed to test the effectiveness of the EQMS model. The effectiveness test of the EQMS model involved 3 LPM chairmen and 37 lecturers from UNUHA, STIT MU Gumawang, and STKIP Muhammadiyah OKU Timur. The independent variables in this study are the responses of users of the EQMS model (Y) and the dependent variables are education and learning competencies (X1), research competencies (X2), and community service competencies (X3). The SPSS output results analyzed in multiple regression analysis are ANOVA outputs as shown in Table 3 below.

Table 3. ANOVA output of multiple regression analysis of data

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	620.203	3	206.734	74.008	.000 ^b
Residual	92.182	33	2.793		
Total	712.385	36			

Based on the SPSS output in Table 3, it provides information that the value of Sig. is equal to 0.000. Because of the value of Sig. $0.000 < 0.05$, then according to the basis of decision-making in the F test it can be concluded that the alternative hypothesis is accepted, or in other words it can be concluded that the values of education and learning competencies (X1), research competencies (X2) and community service competencies (X3) simultaneously affect the user response value of the EQMS model (Y). Furthermore, multiple regression analysis was carried out to see the effect of the independent variables on the dependent variable. The SPSS output results analyzed in multiple regression analysis are the output Coefficients as shown in Table 4.

Table 4. Output coefficients of multiple regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Interpretation
	B	Std. Error	Beta				
(Constant)	-11.223	6.320		-1.776	.085		
Education and learning comparability (X1)	.157	.161	.122	.979	.025		H ₁ accepted

Research Comparison (X2)	.544	.148	.477	3.678	.001	H ₂ accepted
PkM Comparison (X3)	.442	.179	.377	2.471	.019	H ₃ accepted

Based on Table 4, the Significance value (Sig) is obtained. <probability 0.05 for the Sig value at the education and learning competency (X1), Research competency (X2), and PkM competency (X3). From the results of this analysis, it can be interpreted that there is an influence of the user response variable of the EQMS model (Y) simultaneously (together) on the variables of education and learning competencies (X1), research competencies (X2) and community service competencies (X3).

Discussion

Literature study in preliminary research produces three important arguments which serve as the theoretical design of the implementation of the EQMS model. The first argument is the importance of forming a quality environment through training and collaboration activities at the Assembling Resources and Collaborating stages in implementing management to improve the quality of lecturer professional competence. This argument is relevant to the opinion (Argote, 2013; Crosby & Bryson, 2005; Jørgensen et al., 2006; Rosinawati et al., 2021; Shuman & Twombly, 2010; Supriyanto, 2015) which states that improving the quality of human resources can be through training activities. With the process of Assembling Resources and Collaborating on the implementation of the EQMS model, it is hoped that it will have an impact on the quality of lecturers' professional competence which is better. The results of the needs analysis found that 68% of the lecturers chose how the training was carried out in groups in the EQMS model social system design. In addition, lecturers also hope that the learning environment is active and helps each other (collaboration). The same choice was also conveyed by the quality assurance team which stated that the EQMS model could be implemented with a small team of 4-5 members who collaborated and constructed knowledge independently within the team. The findings of the needs analysis results in this study are relevant to research (Pawliczek, 2020; Shuman & Twombly, 2010) which states that a management model based on quality improvement is carried out collaboratively and is oriented towards achieving lecturer professional competence in constructing knowledge. Besides that, based on the facts that researchers found in the field, the tendency of lecturers to carry out work programs on their respective campuses is more enthusiastic if the implementation is carried out in groups. This habit is a strong reason for researchers to include the collaboration process in the design stage of the EQMS model.

The findings of the analysis of user need for the principle component of the EQMS model reaction, in general, can be interpreted in several points, namely: (1) the quality assurance team can position itself as a mentor, co-worker, and motivator in learning; (2) lecturers are committed to increasing professional competence in the ongoing management process; (3) the quality assurance team should provide responses/feedback in learning; (4) the quality assurance team as a facilitator should provide a detailed explanation of the achievements to be targeted by the use of technology. This reaction principle is by the view (Lotto, 2017; Petersen, 1999; Todorut, 2012) that the leader's role as a facilitator is to provide motivation and facilitate so that the professional competence of lecturers can develop further.

The findings at the design and development prototype stage are related to the results of validity tests, practitioner assessments, and practicality tests of the EQMS model support system. The validity test

on the EQMS model book generally has valid criteria. The highest achievement in testing the validity of the EQMS model book was in the aspect of assessing the components of the material/content component of the EQMS model book. These results indicate that the material/book content components described in the model book are very good. The researcher has explained in detail and detail about how the material must be understood, the stages in implementing the EQMS model, and the roles of lecturers and students in implementing the EQMS model. The next finding relates to the reliability of the validator's assessment of the EQMS model book prototype, findings on the reliability test of lecturer books, in general, have good criteria, this is evidenced by the results of calculating the ICC coefficient on lecturer books obtained a value of 0.734.

Some notes and suggestions provided by the validator to correct deficiencies in the EQMS model book are corrected related to the content of the material, namely related to the clarity of indicators that are measured in the implementation of the EQMS model. The researcher made improvements to the model book according to suggestions from the validator and referred to the six standard components of the management model consisting of stages, social systems, reaction principles, and support systems in model implementation.

The second discussion at the development stage relates to the validity of the prototype manual for the implementation of the EQMS model for the quality assurance team leader. The validity test of the prototype guidebook for the implementation of the EQMS model for the quality assurance team leader generally has valid criteria with a holistic Aiken index of 0.710. The results of the assessment of the feasibility aspect of the material/content guidebook for the implementation of the EQMS model for the quality assurance team leader had the highest Aiken index with a value of 0.785 and very valid criteria. This indicates that the material construction in the prototype manual for the implementation of the EQMS model for the team leader of the systematic quality assurance team is sequential. The next finding relates to the reliability of the validator's assessment of the prototype of the lecturer's book, the findings on the reliability test of the guidebook for the implementation of the EQMS model for the quality assurance team leader generally have good criteria, this is evidenced by the results of calculating the ICC coefficient on the lecturer's book obtained a value of 0.734.

Based on the description above, it can be explained that the findings from the results of the validity and reliability tests show that the prototype manual for the implementation of the EQMS model for the quality assurance team leader generally has valid and reliable criteria. About the basis of Kepmendiknas Number: 36/D/O/2001 article 5 regarding the development of teaching and training materials, testing the validity and reliability of the manual for the implementation of the EQMS model for the quality assurance team leader from the aspect of assessing the content/content of the material, language and graphics of the manual the implementation of the EQMS model for the quality assurance team leader can be used as a guide in implementing quality improvement management for lecturer professional competence.

The third discussion at the development stage relates to the discovery of the results of the prototype validity test guidebook for implementing the EQMS model for lecturers. The findings on the results of the prototype validity test The handbook for implementing the EQMS model for lecturers, in general, has valid criteria with a holistic Aiken index of 0.770. The results of the feasibility assessment of the material/contents of the guidebook for implementing the EQMS model for lecturers in the

EQMS model book have the highest Aiken index with a value of 0.819, a valid criterion. These findings indicate that the material construction in the prototype manual for the implementation of the EQMS model for lecturers has a complete range of material with the objectives of implementing the EQMS model to improve lecturer professional competence. The next finding relates to the reliability of the validator's assessment of the prototype guidebook for implementing the EQMS model for lecturers. The findings on the reliability/consistency test for the guidebook for implementing the EQMS model for lecturers generally have good criteria. 0.734.

The final practicality test was carried out at the field test stage. The practicality test results at this stage show that the EQMS model applied is considered very practical. Based on Figure 4.29 more than 50% or half of the 37 lecturers who took part in the implementation of the EQMS model can have good lecturer professional competence. This condition indicates that during field testing all components of the EQMS model (stages, support systems, social systems, and reaction principles) can be carried out properly.

The results of the assessment phase in this study represent the results of the effectiveness test of the EQMS model. The first data that becomes a benchmark in the effectiveness of the model is the achievement of professional competence of student lecturers as an instructional impact of the EQMS model. Achievement of professional competence of student lecturers in classes with the EQMS model ranges from 77 to 78 which is included in the very good criteria. This result was also strengthened by the results of the research hypothesis test which stated that the achievements of educational and learning competencies, research competencies, and community service competencies after using the EQMS model were better than the professional competence of lecturers before the EQMS model was applied.

The findings above are relevant to several research results which implicitly confirm that the formation of a quality work environment can be formed through Assembling Resources, Collaborating (Andriani et al., 2019; O'Neill et al., 2016; Zehir et al., 2012). Based on the explanation above, the researchers found that apart from being useful in increasing the professional competence of lecturers the EQMS model was also very helpful for lecturers in building professional competence. This is in line with research (Lotto, 2017; Taskov & Mitreva, 2015; Thakkar et al., 2006) which recommends the establishment of a quality environment through quality assurance (quality assurance) in the implementation of management with the EQMS model seen as a real step in increasing competency professional lecturers effectively.

CONCLUSION

Based on all of the discussion above, it appears that the development of a management model (EQMS) has been tested as valid, practical, and effective for use in improving lecturer professional competence, so that each lecturer can develop higher education quality through three lecturer professional competencies (educational and learning competence, research competence and competence of community service) by the demands of existing developments.

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