

Factors Affecting Effectiveness of the Operation in the Internal Quality Assurance for Rajamangala University of Technology Thanyaburi

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Article History: Received: 10 January 2021; Revised: 12 February 2021; Accepted: 27 March 2021; Published online: 20 April 2021

Abstract: The purposes of this survey research were 1) to study the level of factors affecting the effectiveness of the operation in the internal quality assurance for Rajamangala University of Technology Thanyaburi (RMUTT), and 2) to propose the development guidelines for the effective operation of the internal quality assurance for RMUTT. The samples were 400 RMUTT personnel. The instruments used in this research were a questionnaire. The data were analyzed by percentage, mean, standard deviation, Pearson's correlation coefficient, and multiple regression. The research results found that factors affecting the effectiveness of the operation in the internal quality assurance for RMUTT was at a high level, and were ordered as follows: organizational leaders, organizational culture, management, personnel, resources, and ICT. The results of the overall effectiveness of the operation in the internal quality assurance for RMUTT was also at a high level, and could be ordered as follows: Action, Plan, Check and Do (the PDCA cycle). The hypothesis testing with multiple regression revealed that the regression coefficient of the overall effectiveness of the operation in the internal quality assurance for RMUTT was 0.892. For the development guidelines for the effective operation of the internal quality assurance for RMUTT, it is suggested that there should be getting related personnel on the same page, everyone takes full responsibility to fulfil criteria and indicators, and understands the assessment process. Moreover, the university personnel should be continuously trained on internal quality assurance.

Keywords: Effectiveness, Internal Quality Assurance, Higher Education

1. Introduction

Education is fundamental to the development in human resources and economy in Thailand and has been formed for Thai people to have access to education. The National Education Act of B.E. 2542 (1999) was proclaimed as the first education law in Thailand that initiated the learning society by reorganizing the educational structures, decentralizing the power in educational administration. Later on, there was the National Education Act of B.E. 2542 (1999) and Amendments (Second National Education Act B.E. 2545 (2002) that designated three types of Education: formal, non-formal, and informal. The educational institutions could provide any one or all of these three types of education. Educational institutions in cooperation with individuals, families, communities, community organizations, local administration organizations, private persons, private organizations, professional bodies, religious institutions, enterprises, and other social institutions could provide any appropriate forms of education. Moreover, this Act aimed at educational quality and standards by enacting Chapter 6 of Educational Standards and Quality Assurance that consisted of internal and external quality assurance. The internal quality assurance is a quality system to monitor and assess the operation of higher education institutions under policies, goals, and levels of educational quality standards designated by the institutions. The internal quality assurance is stipulated in ministerial regulations and has to be annually reported to parent organizations, or agencies concerned. The report will be considered and provided in public in order to improve the educational quality and standards, and prepare for external education quality assurance. In order to produce the qualified graduates, Office of the Higher Education Commission (OHEC) established criteria and guidelines for internal educational quality assurance in higher education taking into consideration of Framework of the Second 15-Year Long Range Plan on Higher Education of Thailand B.E. 2551 - 2565 (2008-2022), the 11th Higher Education Development Plan B.E. 2555 – 2559 (2012-2016), Higher Education Standards B.E. 2548 (2005), and Thai Qualifications Framework for Higher Education B.E.2552 (2009) that suggested the internal education quality assurance should comprise of the four steps of PDCA cycle: planning (Plan), carrying out operations and collecting data (Do), assessing quality (Check/Study), and making suggestions for improvements (Act). The institutions had to be self-assessed at the program, faculty, and institutional levels with quality assurance indicators and standards every academic year [1]. Rajamangala University of Technology Thanyaburi (RMUTT) is one of higher education institutions implementing the educational quality assurance at the program, faculty, and institutional levels. Each department provides general information and results of the operations of the university for self assessment report (SAR) including systematically collecting data to oversee the operations and using the information for external quality assurance.

There are 4 missions of higher education institutions, namely, teaching, research, public services, and art and culture conservation. These missions are the key to develop the country both in the short term and in the long term. Because the missions are affected by internal and external factors, these missions need to be proceeded under the PDCA cycle to maintain the education at the standard level [2]. However, many higher education institutions had problems in the operations in the quality assurance, for example, lack of monitoring, lack of understanding the systems and mechanisms of quality assurance, lack of participation, lack of continuous improvement, and so on. Furthermore, there were some limitations of personnel, areas, budgets, and procedures [3]. Most problems and obstacles in the educational quality assurance were that the institutions did not implement the educational quality assurance in the institutions in an ongoing and sustainable manner, and the instructors and faculty staff did not work under the educational quality assurance; so these led to the impractical operations in quality assurance. [4]. In addition, there were some misunderstandings of the quality assurance, for example, increasing workload, disadvantages, waste of budgets and resources [5]. For these reasons, RMUTT intends to raise ongoing effectiveness in the educational quality by implementing the educational quality assurance in routine work. The researchers were interested to study the factors affecting the effectiveness of the operation in the internal quality assurance for RMUTT so that the research results could be used for future development and for guidelines for staff relating to the quality assurance

2. Research Objectives

The purposes of this survey research were 1) to study the level of factors affecting the effectiveness of the operation in the internal quality assurance for Rajamangala University of Technology Thanyaburi (RMUTT), and 2) to propose the development guidelines for the effective operation of the internal quality assurance for RMUTT.

3. Research Methods

A. Research Design

This survey research was conducted on 400 RMUTT personnel comprising the university administrators, instructors, and faculty staff. The sample size was calculated by using Taro Yamane formula [6] with 95% confidence level, and the samples were randomized by multi-stage sampling as follows: Stage 1 - The samples segmented by the faculties were selected by quota sampling, then the ratio of samples in each faculty was calculated as shown in Table 1.

Table 1 Population and Sampling

No.	Name	N of Population	n of Questionnaires
1	Faculty of Science and Technology (ST)	167	40
2	Faculty of Business Administration (BA)	152	40
3	Faculty of Fine and Applied Arts (FA)	110	30
4	Faculty of Liberal Arts (LA)	144	40
5	Faculty of Technical Education (TE)	189	50
6	Faculty of Engineering (EN)	322	80
7	Faculty of Architecture (AR)	76	20
8	Faculty of Home Economics Technology (HT)	94	25
9	Faculty of Agricultural Technology (AT)	124	30
10	Faculty of Mass Communication Technology (MT)	76	20
11	Faculty of Nurse	35	10
12	Thai Traditional Medicine College (TC)	55	15
Total		1,544	400

Stage 2 - The samples of each faculties were randomized by convenience sampling. The research instrument was a 5 rating scale questionnaire with IOC = 1.00 and $\alpha = 0.977$ with open-ended questionnaire. The data were analyzed by descriptive statistics, namely, percentage, mean, standard deviation, Pearson's product moment correlation coefficient, and multiple regression; and the qualitative data from opened-ended questionnaire were analyzed by content analysis based on related theory and experience.

B. Research Process

Research process of this research was divided into 6 steps consisted of define research problem, review the literature, formulate hypotheses, research design & methodology, data collection & analysis and Interpret and report. The research steps could be shown in Fig 1.

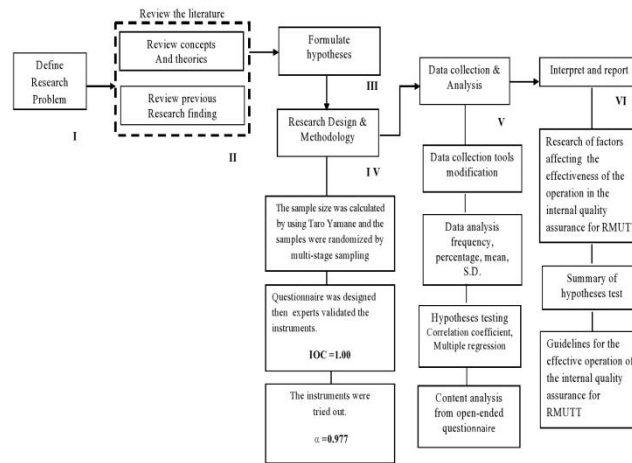


Fig.1 Research process

4. Results

The research results showed that factors affecting the overall effectiveness of the operation in the internal quality assurance for RMUTT was at a high level ($\mu = 4.00, \sigma = 0.522$). Considering each aspect, the organizational leaders was at the highest rank ($\mu = 4.05, \sigma = 0.623$) followed by organizational culture ($\mu = 4.04, \sigma = 0.617$) while the ICT was at the lowest rank ($\mu = 3.96, \sigma = 0.667$) as shown in Table 2.

Table 2 Factors affecting the overall effectiveness of the operation in the internal quality assurance for RMUTT

Factors	μ	σ	Levels	Ranking
organizational leaders	4.05	.623	High	1
management	4.01	.573	High	3
personnel	3.98	.598	High	4
resources	3.96	.598	High	5
organizational culture	4.04	.617	High	2
ICT	3.96	.667	High	6
Total	4.00	.522	High	

Moreover, the overall effectiveness of the operation in the internal quality assurance for RMUTT was at a high level ($\mu = 4.06, \sigma = 0.574$). Focusing each component of the operation, it found that the Action stage was at the highest rank ($\mu = 4.11, \sigma = 0.627$) followed by the Plan stage ($\mu = 4.07, \sigma = 0.612$), and the Check stage ($\mu = 4.06, \sigma = 0.650$) while the Do stage was at the lowest rank ($\mu = 4.00, \sigma = 0.569$) as shown in Table 3.

Table 3 The overall effectiveness of the operation in the internal quality assurance for RMUTT

effectiveness of the operation in the internal quality assurance	μ	σ	Levels	Ranking
Plan stage	4.07	.612	High	2
Do stage	4.00	.569	High	4
Check stage	4.06	.650	High	3
Action stage	4.11	.627	High	1
Total	4.06	.574	High	

The hypothesis testing on factors affecting the effectiveness of the operation in the internal quality assurance for RMUTT with correlation efficient and multiple regression could be summarized as follows: all six factors (organizational leaders, organizational culture, management, personnel, resources, and ICT) were highly related to the effectiveness of the operation in the internal quality assurance for RMUTT ($r = 0.811$). The organizational leaders, resources, and ICT were moderately correlated with the effectiveness of the operation in the internal quality assurance for RMUTT ($r = 0.632, r = 0.656, r = 0.685$ respectively), but the management, personnel, and organizational culture were highly correlated with the effectiveness of the operation in the internal quality assurance for RMUTT ($r = 0.744, r = 0.728, r = 0.704$ respectively). The results from testing the hypothesis indicated the statistical significant level of .05 with the positive relationship as shown in Table 4.

Table 4 The correlation and predictability of factors affecting the effectiveness of the operation in the internal quality assurance for RMUTT

Variables	X1	X2	X3	X4	X5	X6	Y1	Y2
X1 organizational leaders	1							
X2 management	.761**	1						
X3 personnel	.645**	.770**	1					
X4 resources	.517**	.668**	.764**	1				
X5 organizational culture	.587**	.678**	.767**	.632**	1			
X6 ICT	.565**	.622**	.708**	.719**	.686**	1		
Y1 factors affecting the effectiveness	.810**	.886**	.915**	.825**	.849**	.828**	1	
Y2 effectiveness	.632**	.744**	.728**	.656**	.704**	.683**	.811**	1

**p < .05

The correlation and predictability of factors affecting the effectiveness of the operation in the internal quality assurance for RMUTT (organizational leaders, organizational culture, management, personnel, resources, and ICT) were used to predict the effectiveness of the operation in the internal quality assurance for RMUTT at the statistical significant level of .05 ($F = 131.381, p < .05$). The six predictors were able to account for 66.70% ($R = .817, R^2 = .667$) of the variance. In addition, the regression coefficient of those factors was .811; management ($\beta = 3.14$), organizational culture ($\beta = 1.96$), and ICT ($\beta = 1.96$) as shown in Table 5.

Table 5 The results of analyzing the factors affecting the effectiveness of the operation in the internal quality assurance for RMUTT with multiple regression with the enter method

Factors	The effectiveness of the operation in the internal quality assurance				
	B	S.E.	β	t	P
(Constant)	.495	.132		3.762	.000
organizational leaders	.060	.043	.065	1.412	.159
management	.315	.056	.314	5.630	.000*
personnel	.097	.058	.101	1.684	.093
resources	.067	.048	.070	1.408	.160
organizational culture	.182	.045	.196	4.029	.000*
ICT	.169	.041	.196	4.139	.000*
Total	.892	.032	.811	27.630	.000*

R = 0.817 R² = 0.667, Std. Error of the Estimate = 0.333 F = 131.381, P = 0.000

There were 30 respondents answering the open-ended questions, and the answers analyzed by content analysis found that the high recommendations were getting related personnel on the same page (93%), taking everyone full responsibility to fulfill criteria and indicators (83%) and getting everyone to understand the assessment process (83%). Moreover, the university personnel should be continuously trained on internal quality assurance (73%) as shown in Table 6.

Table 6 Recommendations

Recommendations	Amount (n = 30 people)	Percent
getting related personnel on the same page	28	93.00
getting everyone to understand the assessment process	25	83.00
taking everyone full responsibility to fulfill criteria and indicators	25	83.00
the university personnel should be continuously trained on internal quality assurance	22	73.00

5. Discussions

The results of this survey research could be discussed as follows:

1. The factors (organizational leaders, organizational culture, management, personnel, resources, and ICT) affected the effectiveness of the operation in the internal quality assurance for RMUTT at a high level. The factor of organizational leaders was at the highest rank because the university administrators placed importance on quality assurance, and made commitment on quality assurance. The quality assurance policies were clearly determined to be consistent with the university visions and policies, so this led the faculty personnel working effectively. This is related to [7], [8] that the indicators could show the effectiveness of the organization, visions, leadership, work procedures, administration. It is also consistent with [9], [10], [5] that the factor affecting the effectiveness of the quality assurance was administrators characteristics.

2. The overall effectiveness of the operation (the PDCA cycle) in the internal quality assurance for RMUTT was at a high level, and when it found that the Action stage (A) was the highest rank. This is because in the Action stage the working flaws or mistakes during the operation in the internal quality assurance were realized to use as a guideline for systematically improving the next year plan including making a self assessment report and the announcing the results to the university administrators and the related personnel. This is consistent with [11] that

the importance and the usefulness of inspection should be raised for university personnel and the results should be used for work process improvement leading to effectiveness at work.

3. The factors (organizational leaders, organizational culture, management, personnel, resources, and ICT) correlated the effectiveness of the operation in the internal quality assurance for RMUTT at a high level ($r=.011$). The results of analyzing each factor indicated that the management had the strongest relationship to the effectiveness of the operation in the internal quality assurance for RMUTT at a high level ($r=.744$) with the positive relationship at the statistical significant level of .05. This may be because the roles and responsibilities of the personnel were clearly assigned. [12] noted the clear imposition of structures, roles, and responsibilities brought about the success of the operation in the internal quality assurance including placing the importance of the administrators and getting insights of each indicator. It is consistent with [13] that the management positively related to the internal quality assurance.

4. The relationship and the predictive power of factors, namely, organizational leaders, organizational culture, management, personnel, resources, and ICT, were used for predicting the effectiveness of the operation in the internal quality assurance at the statistical significant level of .05 and the predictive power was 66.70 % ($R = .817$, $R^2 = .667$). From the multiple regression analysis, it found that the factors affecting the effectiveness of the operation in the internal quality assurance for RMUTT had a regression coefficient of .811. Considering each factor, regression coefficients of the management, organizational culture, and ICT affecting the effectiveness of the operation in the internal quality assurance were .314, .196, and .196 respectively being consistent with the researches of [4],[10], and [13].

6. Recommendations

A. Recommendations for Practices

1. The university administrators might support using the innovation to develop the quality assurance and reinforce the personnel to propel the system and working mechanism by organizing the information with ICT.

2. In terms of the management, it was recommended to improve atmosphere and location supporting the operation in the internal quality assurance, so there should be fully equipped rooms supporting the operation in the internal quality assurance.

3. According to the results from the questionnaire, more personnel should be recruited and assigned for the operation in the quality assurance, or the roles and responsibilities should be allocated to enhance the participation and contribution.

4. The proper location should be provided for the operation and activities involving the quality assurance, for example, the meeting rooms, workspaces, document storage room, and so on.

5. About the organizational culture, the personnel should realize the collaboration and teamwork. The success of quality assurance depends on everyone in terms of collaboration, information sharing, expressing opinions, and PDCA. When everyone participates in every step of the operation, he or she will feel a mutual responsibility and show teamwork, then move the organization forward.

6. Regarding ICT, the information on ICT should be updated, precise, and easy to use. Everyone should participate in entering data into the system, processing the data, making use of the system, and maintaining and inspecting the system.

7. The effectiveness of the operation in the internal quality assurance should start with setting the effective plans, for example, efficient budget allocation. Auditing and assessment guidelines should be knowledgeable. Work progress should be systematically tracked by collecting information in order and well organized documents. The assessment results should be recorded in the information system for the future database.

8. The RMUTT personnel should be enhanced in knowledge and understanding of the operation in the internal quality assurance on the same page by continuous training and updating the information.

B. Recommendations for Further Research

The qualitative methods should be applied to study the operation in the internal quality assurance in order to analyze the related problem in depth and use the results to improve the effectiveness of the operation.

7. Conclusion

The internal quality assurance is a part of the operation in educational administration that should be continuously carried out. The educational institutions should develop the quality assurance system consistent with the development of the institutions with PDCA cycle: initiating strategic plans with the explicit indicators, operating and collecting data by plans, comparing the assessment results to plans, and systematically improving the assessment results. In order to achieve the goals, there should be the effective system and mechanisms reinforcing the operation.

According to research results, the factors affecting the operation in educational internal quality assurance were the management, the organizational culture, and ICT; so the working environment with facilities should be provided. The quality assurance system should be developed and can be accessed by every level of the organization, namely, personnel, departments, faculties, and university. The personnel should realize the importance of the internal quality assurance as well as fully participate and cooperate in the internal quality assurance.

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