Chapter 3

Methodology

The research entitled "the Development of the Model for Evaluating the Readiness of Technical Colleges for joining the ASEAN Community" applies the process of Research and Development for developing the model and the manual to evaluate the Colleges' readiness for joining the ASEAN Community. In addition, the researcher constructs and seeks to measure the efficiency of the program for evaluating Technical Colleges' readiness for joining the ASEAN Community. The details are discussed in areas that include research design, identification of population, sample group, the methods to construct the research tools, data gathering methods, and data analysis. The researcher has classified the research implementation into three steps as the followings.

Step1 is the analysis of the components and indicators on Technical Colleges' readiness for entering ASEAN Community.

Step 2 is the construction of the model and the seeking for measuring the quality of the model for evaluating the readiness of Technical Colleges for entering ASEAN Community.

Step 3 is the trial use of the model for evaluating the readiness of Technical Colleges for entering ASEAN Community.

Details of research methodology

Step 1: Analysis of the component and indicator of readiness

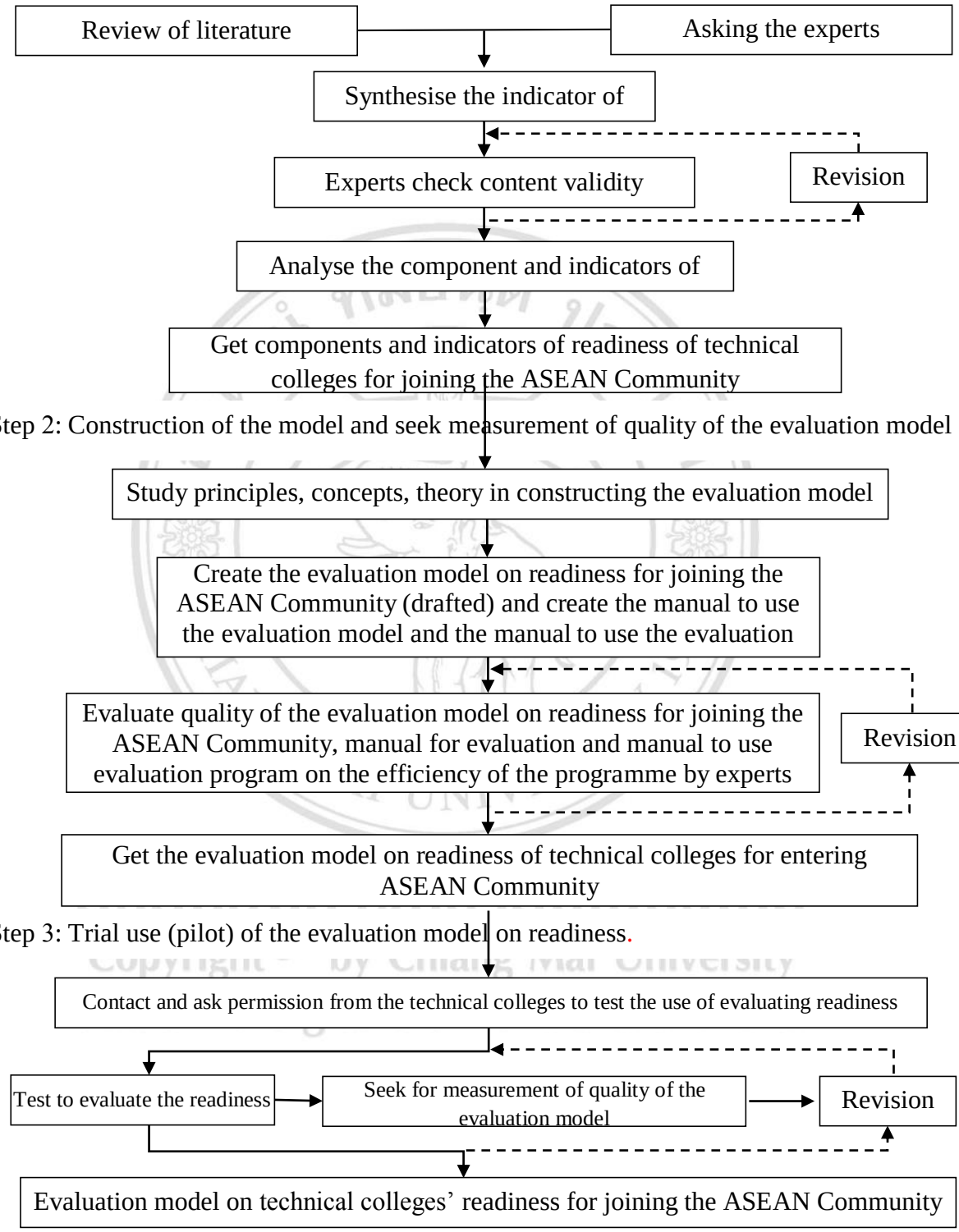

Fig 3.1 Methodology map

Step1 is the step for analyzing the components and indicators of readiness of Technical Colleges for joining the ASEAN Community.

Population and sample groups

Population. The research in this step will use the population who are composed of Administrators of Technical Colleges, Instructors from 110 Technical Colleges from all over the country. There are 12,352 people who are working in these institutions (Office of the Vocational Education Commission, 2013 cited from http://www.vec.go.th/).

The sample groups. This research classifies the sample groups into three main groups as the followings.

1. The sample group who is used for synthesis of the indicators are the samples taken through the Purposive Sampling methods from among the experts who have experience in working with the educational development of Technical College and the experts on measuring and evaluating the education (a total of 11 people) who are composed of the followings.

1.1 Directors of Technical College 2 persons

1.2 Experts from the organization in Office of the Vocational Education Commission 3 persons

1.3 Instructors under Technical Colleges 2 persons

1.4 Instructors in measuring and evaluation 2 persons

1.5 Committees who evaluate the external educational quality at Vocational Education level 1 person

1.6 Administrator of Technical College 1 person

2. The sample group whois used to find the content validity and indicators such as the experts who have knowledge and ability on vocational education and knowledge and understanding on the measurement and evaluation of education. They are composed of instructors on measuring and evaluation including a former Vice Director of ONESQA (five persons).

3. The sample group who is used for analyzing components such as administrators and instructors under Technical College, Office of the Vocational Education Commission (a total group of 660 persons). The ratio of the sample group per

indicator to be synthesized is 660 per a set of 50 indicators. The researcher is used to identifying the ratio size of the group per indicator according to the criteria for analyzing the components that have been identified to be 20:1. The lowest ratio which is used is 5:1 (Hair, et al., 2006 cited in Nonglak Wiratchai, 2007: 6) and the selection of the samples is done with Quota Sampling methods. The questionnaires are sent out to gather and collect the data from Technical Colleges country-wide; 10 sets of questionnaire are sent to one Technical College (a total of 1,000 sets). The returned questionnaires reach the results of 820 sets or 74.4 per cent. However, the researcher selects only the completed and answered questionnaire sets (660 sets).

Table 3.1 Number and percentage of basic data of respondents who answer questionnaires

Primary Data	Number (660 persons)	Percentage
Status		
Administrators	110	16.70
Instructors	385	58.30
Instructors or staff in charge of quality assurance	165	25.00
Total	660	100
Education Level		
Lower than Bachelor Degree	5	0.80
Bachelor degree	317	48.00
Master Degree	325	49.20
Doctoral Degree	13	2.00
Total	**660**	**100**

Table 3.1 Number and percentage of basic data of respondents who answer questionnaires (Cont'd)

Primary Data	Number (660 persons)	Percentage
Experience of working in Technical College		
1 – 4 years	184	27.90
5 – 10 years	167	25.30
11 – 19years	145	22.00
20 years or more	164	24.80
Total	660	100
Experience of working on Educational Quality Assurance		
No Experience	111	16.80
1 – 4 years	276	41.80
5 – 10 years	239	36.20
More than10 years	34	5.20
Total	660	100

Tools used for research

The tools used for the research in this step are a set of questionnaires to gather data

for the importance or necessity of indicators for preparing the readiness of Technical Colleges for joining the ASEAN Community.

Steps for constructing the tools

1. After studying the secondary data (around research, concepts, and theories of relevant literature and available theses at the graduate school level) related to the readiness of Technical Colleges for joining the ASEAN Community, the researcher identifies issues in constructing an open-ended questionnaire (a total of 5 items of open-ended questions) that will ask questions to the experts on the readiness of Technical College in some aspects. The aspects are as the followings: (1) the opinion towards the readiness of Technical Colleges for joining the ASEAN Community, (2) things that Technical Colleges must have to prepare readiness for joining the ASEAN Community, (3) the evaluation results of the educational quality assurance of Technical Colleges in term of both internal and external quality assurance to certify if Technical Colleges are

ready for entering ASEAN Community or not, (4) problems/obstacles for Technical Colleges in entering ASEAN Community, and (5) suggestions to Technical Colleges that must prepare high readiness for joining the ASEAN Community.

2. Synthesis of the indicators of readiness among Technical Colleges in entering ASEAN Community is accomplished from the secondary data study and of related literature and considered along with the data on the questionnaire to the experts. This process produces the indicators for preparing the readiness of Technical Colleges in entering ASEAN Community (a set of 50 indicators).

3. The researcher brings the synthesized set of 50 indicators to check the correctness, appropriateness and feasibility of these indicators on the readiness of Technical Colleges for joining the ASEAN Community with five experts.

4. The researcher sets the opinion of experts into analysis for the IOC (Item Objective Congruence Index or IOC) among the gathered opinions of the experts through consideration over the items that have the IOC values of 0.6 or more. This analysis found that seven out of the 50 indicators failed to pass the criteria. The remaining 43 indicators had reached the values from 0.6 to 1.0.

5. The 43 indicators are set to construct the questionnaire set with 5-rating scale

to ask questions on the importance or necessity of each indicator in preparing Technical Colleges' readiness for joining the ASEAN Community (results shown in Appendix).

6. The research applies the questionnaire set to a pilot test (Try Out) with administrators, teachers, and relevant personnel in Phayao Technical College (30 people) then analyses the Reliability values through calculation of the Cronbach's Alpha Coefficient. The items with the value of 0.850 at reliability level were further improved to follow the suggestions to turn them into the final items in questionnaires.

Research methodology

Research methods in the implementation of the research apply the followings steps.

1. Construction of the indicators from a synthesis of secondary data and the experts' opinion are begun, and then both results are analyses to synthesis together to create indicators for evaluating the readiness of Technical Colleges in entering ASEAN Community. After getting the indicators, the researcher brings the indicators to be presented to the experts to see if those indicators are correct according to theories and

appropriate to the context of Technical Colleges. After the indicators are shown to have feasibility in evaluating the readiness of Technical Colleges in entering ASEAN Community, they were brought back for revision and then for creationof a set of questionnaire with 5 rating-scale to measure the importance or necessity of the indicators for preparing Technical Colleges' readiness for joining the ASEAN Community.

2. The researcher brings the sets of questionnaires to collect data from administrators and instructors of Technical College from Thailand (110 Technical Colleges with each getting10 sets of questionnaires). The number of returned and filled sets of questionnaires is 820 sets or 74.4 per cent of all sent.

3. After getting back the filled up sets of questionnaires, the research checks the correctness and completeness of the returned questionnaires. About 660 sets of questionnaires have complete answers and then the data are recorded into the computer-based Statistical Program.

4. Analysis of the components to prepare for Technical Colleges' readiness for joining the ASEAN Community is accomplished through the Technique of Analysis of Survey Components (or Factor Analysis), whose results are shown in Chapter 4.

Data analysis

1. Analysis of the content validity is settled through calculating the Item Objective Congruence Index (or IOC) among the items showing the experts' opinion.

2. Analysis of the reliability of the questionnaire on readiness of Technical Colleges for joining the ASEAN Community is possible through the analysis of Internal Consistency of Reliability using the methods of Cronbach's Alpha Coefficient.

3. Analysis of the demographic data of the sample groups and the levels of opinion

towards the indicators on Technical Colleges' readiness for joining the ASEAN Community are finished through a descriptive statistics which is composed of seeking of values of frequency and percentage.

4. Analysis of the Exploratory Factor Analysis (or EFA) is accomplished through

extracting components of factors through the Principal Component Analysis and the Orthogonal using the methods of Varimax and the computerized statistical programs.

Step 2 is the step to create a model and to seek measurement of propriety of the model for evaluating the readiness of Technical Colleges for joining the ASEAN Community

Target group

The research in this step has the target groups which are administrators of Technical

Colleges, Instructors of Technical Colleges, and the experts (seven people) on measuring and evaluating education to evaluate the quality of the model for evaluating the readiness of Technical Colleges for joining the ASEAN Community gathered through a Purposive Sampling.

The tools used in research

Along the implementation of the research in this step, the researcher utilizes the following tools.

1. The tool set Number 1 is the model for evaluating the readiness of Technical Colleges for joining the ASEAN Community.

2. The tool set Number 2 is the evaluation form on the quality of the model for evaluating the readiness of Technical Colleges for joining the ASEAN Community.

3. The tool set Number 3 is the evaluation form on the quality and manual of evaluating the readiness of Technical Colleges for joining the ASEAN Community.

4. The tool set Number 4 is the evaluation form on the readiness of Technical Colleges for joining the ASEAN Community.

5. The tool set Number 5 is the evaluation form on the quality or the manual to use

the programme for evaluating the readiness of Technical Colleges for joining the ASEAN Community.

The steps for constructing the tools

1. Studies over the secondary data and literature on development of the model to evaluate including studies on the concepts of the evaluation in various models or forms

are done to consider the components and indicators that are gathered from the implementation in Step 1.

2. Creation of the model for evaluation through syntheses of concepts and theories

of Nevo (1983) is set along a study in combination with the study of research and factors analysis results in Step 1. The step summaries the main components or factors of evaluating the readiness of Technical College for joining the ASEAN Community and to set five components of evaluation, which are

(1) Target of evaluation.

(2) Areas of evaluation.

(3) Implementation of evaluation (composed of the evaluator, the tools to evaluate, the evaluation method and duration/time of evaluation.

(4) Judgment of evaluation results, evaluation criteria.

(5) Report of the results and application to use the guideline for implementation use.

The System Approach Model of Educational R&D which is designed by Walter Dick, Lou Carey and James Carey (2007:590 - 592) is using 10 steps to be used along with the guideline to reconstruct the evaluation model.

1. Construction of the evaluation form to evaluate the model on evaluating the readiness of Technical Colleges for joining the ASEAN Community is accomplished here. It is composed of the good level of propriety of the model that can be used beneficially and responsive to the need of users, updated, and feasible and proper to the real situation. The system is accepted and acknowledged by the users as economical, worthy of using, and practical. It is appropriate to the context and the Technical Colleges' condition and it is accurate. Then the system is brought to the experts to consider the quality of the model through the analysis of Item Objective Congruence Index (IOC) among the experts' opinions.The acceptable values of IOC among the opinion of experts are set between 0.6 and 1.0.

2. In evaluating the readiness of Technical Colleges for joining the ASEAN Community,

the evaluation system must be convenient and easy to use. The researcher constructs the manual of evaluation through the study of secondary data related to the construction of manual, the methods to use the evaluation model, the suggestions for using the manual for evaluating Technical Colleges' readiness for joining the ASEAN Community, and the implementation steps to evaluate according to the model of evaluation. This information is shown in Appendix.

3. Creation of the evaluation form on the quality of the evaluation manual is set through study of secondary data related to the evaluation of the quality of the model. Then the researcher constructs the questionnaire items for the experts on the manual for using the model for evaluating the readiness and suggestions to revise, corrects the items through the analysis to find the IOC (Item Objective Congruence Index) among the experts' opinion. The accepted IOC values must stand between 0.6 and 1.0.

4. Creation of the evaluation form on the readiness of Technical Colleges for joining the ASEAN Community is accomplished through the study of evaluation model and the questions to relevant people for the use of the evaluation model and components in evaluating the readiness. For example, the secondary data that is used for evaluating the data sources for the evaluation have the evaluation form in multiple choices form. There are 65 items which cover three components in evaluation the readiness of Technical Colleges for entering ASEAN Community through calculation of Item Objective Congruence Index (IOC) among the opinion of experts. The index values of IOC should be between 0.8 and 1.0. After checking the reliability through the analysis of Decision Consistency Reliability (Pichit Ritcharoon 2009: 159-160), the researcher brings the evaluation form for a Try out to be evaluated by five experts to check the reliability through the analysis of consistency and judgment of the values of Kappa Coefficient. The coefficient value forReliability is set at the least at 0.545.

5. The implementation of evaluation is donethrough the evaluation of readiness of Technical Colleges for joining the ASEAN Community, which has 65 items with two choices. In the evaluation through evaluation by the evaluation committees, suggestions are shown to develop the programme that can be used for evaluating and processing automatically with convenience. The researcher studied the principles and concepts to develop the application system from documents. The researcher sets diagram draft on the steps of working of the system and developsthe system by using the PHP language.

In the development of the programme that can record evaluation results and process the evaluation automatically, the researcher includes printing out of reports of evaluation results.

6. Construction of the manual for using the programme for evaluation is composed

of the methods to access, to record evaluation results, and to read outputs of reports according to the components and indicators for evaluating the readiness of Technical College for joining the ASEAN Community through the calculation of Item Objective Congruence Index (IOC) among experts' opinion. The values of congruence index among the expert opinions are chosen between 0.8 and 1.0.

7. After creating the manual for using the programme for evaluation, the researcher

brings the programme for the evaluation program to eight experts to evaluate.Then eight experts evaluate the appropriateness of the evaluation programs in the vibrating scale which are propriety, clarity, speed in processing, and accuracy or correctness in processing.

Research implementation

The steps for creating the model and seeking the quality measurement of the model for evaluation of the readiness of Technical Colleges for joining the ASEAN Community can be implemented as the followings.

1. Study the secondary data on related literature is done with the aim to study the model for evaluation on issues related to the preparation of Technical Colleges for joining the ASEAN Community. This includes studying the details of components and constructed indicators to use as guideline for evaluating the readiness or Technical Colleges for joining the ASEAN Community.

2. Creation of the model for evaluating the readiness of Technical Colleges for joining the ASEAN Community is composed of five components which are

(1) Evaluation target.

(2) Areas of evaluation.

(3) Implementation of evaluation composed of evaluator's tools for evaluation, the evaluation methods, time, and duration of evaluation.

(4) Judgment of evaluation results which is composed of evaluation criteria and evaluation programme, and

(5) Report of evaluation results and application.

3. Checking the appropriateness of the model for evaluating the readiness of Technical Colleges in entering ASEAN Community is accomplished through a group discussion of seven experts. These are administrators, instructors of large-sized Technical Colleges, and experts on measurement and evaluation of education who have the doctoral degrees or higher to check the appropriateness on the use, benefits, feasibility for application, appropriateness and correctness.

4. Construction of the evaluation manual to use as guideline for implementing the evaluation on the Technical Colleges' readiness for joining the ASEAN Communityis done here.

5. Study on the principles and concepts on developing the Web Application System from secondary data and drafting of diagrams on the steps of functioning of the system are done. Afterwards, the developed system is finished by using the PHP language in the implementation of the evaluation programme and testing the evaluation and checking the processing of the evaluation results of the programme. Further improvement is continued until the programme has reached quality to able to process the evaluation results correctly.

6. The researcher makes the manual to use the evaluation programme. It is composed of the steps to accessing the programme, recording the data for evaluation, reporting the evaluation results, and then evaluating the appropriateness of the manual to use the evaluation programme.

Data analysis

1. Analysis of the appropriateness of the model is accomplished through analyzing the means or average values of the opinions and standard deviations.

2. Analysis of the evaluation results on the readiness of Technical Colleges for joining the ASEAN Community is settled through the usage of evaluation program called R-ASEAN using the percentage values from the multiplication of weights of components and judgment based on the criteria as the followings.

Score Range	Readiness for joining the ASEAN Community
0 – 30	College must develop itself urgently for joining the ASEAN Community
31 – 70	College must develop itself on certain aspects for joining the ASEAN Community
Higher than 70	College is ready for joining the ASEAN Community

Step 3 the trial use step of the evaluation model for readiness of Technical Colleges for joining the ASEAN Community

Target groups

The trial use of the evaluation model on the readiness of Technical Colleges for joining the ASEAN Community is finished through the trial use of the evaluation model in a Technical College using the purposive sampling methods among the Technical Colleges that are ready and willing to participate in the trial use of the evaluation model.

The tools used in the research

In the implementation of research in this step, the researcher utilizes the following tools.

1. Tool set Number 1 is the evaluation form on the readiness of Technical Colleges for joining the ASEAN Community.

2. Tool set Number 2 is the evaluation form on the quality of the model for evaluating the readiness of Technical Colleges for joining the ASEAN Community.

3. Tool set Number 3 is the evaluation form on the quality of the manual to use the programme for evaluating the readiness of Technical Colleges in entering ASEAN Community.

Steps for constructing the tools

1. Creation of the evaluation form on appropriateness of the evaluation model for the readiness of Technical Colleges for joining the ASEAN is allowed through the arrangement of group discussion of seven experts. It is composed of administrators, instructors from the large-sized technical colleges, and experts on measurement and

evaluation education who hold doctoral degrees to check appropriateness on the use and feasibility for further application appropriateness, correctness, and accuracy that show the quality of evaluation form in the earlier steps.

2. Construction of the programme for the evaluation program is possible through the studying of principles and concepts on development of the Web Application System from secondary data and making draft of diagrams on the steps of functioning of the system and developing the system by using PHP language. In the development and creation of the programme, the trial is begun to test the processing of the evaluation results of the programme. Then improvement of the programme is continued until it gets quality enough to process evaluation results correctly as shown in the Appendix.

3. After creation of the manual for using the evaluation programme, the researcher

brings the evaluation programme to eight experts to test the use of evaluation and then evaluate the appropriateness of the evaluation programme. This becomes the values in five-rating scales composing of appropriateness, clarity, speed of processing results, and correctness in processing.

Methods of research

The step for testing the evaluation on the readiness of Technical Colleges for joining the ASEAN Community can be implemented as the followings

1. Preparation of a letter to ask permission for the trial use of the evaluation model on the readiness of Technical Colleges for joining the ASEAN Community is sent to the Colleges that volunteer or are willing to use the test of the evaluation model (beforehand within three weeks).

2. Cooperation or contact Technical Colleges to prepare to venues, the evaluation teams, and committees including preparation of documents for evaluation (two weeks earlier than the evaluation).

3. The researcher prepares the manual to use the evaluation model and the manual for using the evaluation programme, and then the researcher sends it to evaluation

committee to study the model and the methods of evaluation including the use of evaluation programme (two weeks in advance).

4. Before the testing of evaluation the researcher prepares computers, tablets to catch up for the data given by the committees and to gather the documents to be used for evaluation based on the components for evaluation which has three components.

5. Implementation for the trial use of evaluation model is done. The researcher, however, is only the observer of the implementation of the evaluation. The evaluation committees evaluate the implementation according to or based on the manual evaluation that has been prepared by the researcher.

6. After the completion of the evaluation, the researcher asked the Evaluation Committee to evaluate the quality of the model in order to certify that the model is appropriate for usage in evaluation in evaluating readiness of Technical College for joining the ASEAN Community. This evaluation includes the evaluation of the quality of the evaluation programme to see how high it has quality and efficiency.

Data analysis

The analysis on the evaluation results on the readiness of Technical Colleges for joining the ASEAN Community is possible through the usage of R-ASEAN Evaluation Programme using the values of percentage through the multiple of components' weight and then judgments based on the following scores.

Score range	Readiness for joining the ASEAN Community
0 – 30	College must develop itself urgently for joining the ASEAN Community
31 – 70	College must develop itself on certain aspects for joining the ASEAN Community
Higher than 70	College is ready for joining the ASEAN Community