The CIPP Model-Based Evaluation on Information Technology Competence Certification Program at Universitas Brawijaya

Muhammad Imron Hamdani[1], Imam Hanafi[2]

[1]Master of Higher Education Management Program, University of Brawijaya, Malang, Indonesia
[2,]Departmen Faculty of Administrative Sciences, University of Brawijaya, Malang, Indonesia

Abstract

In higher education, the development of Information Technology (IT) requires all academics to be able to adapt to the change of information. In Universitas Brawijaya, certification is carried out as a means to increase student competence in entering the workforce, this is stated in Rector Regulation number 36 of 2015. The CIPP evaluation model is a comprehensive evaluation format that has stages of context, input, process, and product. This study aims to determine and assess the implementation of competency certification programs as well as supporting and inhibiting factors measured by the CIPP evaluation method. This study using a qualitative approach with descriptive methods. Data collection techniques with observation, documentation, literature study, and in-depth interviews. The results showed that in the context aspect there was a relevance between the Ministry of Higher Education and Universitas Brawijaya. The input aspect of the components in this aspect is good but the students need more stimulus to be more proactive towards the program. The process is good to be seen from the responses of the participants but needs more supervision in the aspects of the exam of the product are good from the results of the value achieved also a benefit that is felt by the participants.

Keywords: Information Technology, Certification**,** Evaluation, CIPP

INTRODUCTION

Information Technology (IT) has become an important requirement in almost all walks of life. Many types of profit and non-profit services are integrated with IT to simplify and speed up services. Services that have not been integrated with IT are slowly being abandoned because they are not yet able to meet the needs of the present who want something that can be available efficiently, quickly, and precisely. The advantage of the application of information technology is Speed, Consistency, Accuracy, Reliability[1].

Technology can improve quality and reach if used wisely for education and training and has a very important meaning for economic prosperity[2]. The progress of information technology must also be balanced by high human resources as well, because information technology will be right on target if it is managed by competent people.

Correspondence address:
Muhammad Imron Hamdani
Email : imron7@ub.ac.id
Address : Universitas Brawijaya, Malang, Indonesia

One effort that can be done to face intense competition is to prepare a workforce that has high competence. To get a competent workforce can be done through formal, non-formal education, and competency certification. In the formal education pathway through education D3, S1, S2, and S3. One of the ways in non-formal education is through training/courses. The path of competency certification is through competency testing/expertise in certain fields to measure a person's ability based on certain national and international standards.

Universitas Brawijaya is one of the biggest state university in East Java who demanded to use IT as a means to facilitate the implementation of the Tri Dharma Pendidikan. Universitas Brawijaya's certification is carried out as a means to increase student competence in entering the workforce.

The IT competency certification is an implementation of the Rector's regulation number 36 2015 concerning the Information Technology (IT) competency certification program and the English language. Information Technology competency certification is a measurable and professional standardization of abilities in the use of certain computer applications.

IT competency certification as a form of education program organized by Universitas Brawijaya has never been evaluated to find out

various problems regarding whether it has achieved its goals and expectations or there are still some things that need to be addressed to meet the expectations of all stakeholders and students. The objectives of this study are:

1. Knowing and evaluating the implementation of the competency certification program is measured by the CIPP evaluation method
2. Knowing and assessing what factors are supporting and hindering the implementation of the IT competency certification program is measured by the CIPP evaluation method
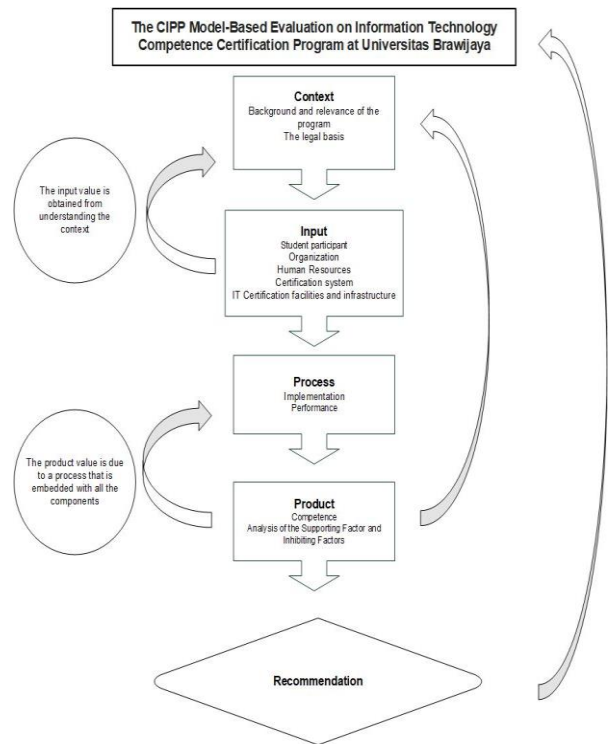
From the description above, the researcher wants to know the extent of the success of the IT competency certification program in Universitas Brawijaya by taking the title "The CIPP Model-Based Evaluation on Information Technology Competence Certification Program at Brawijaya University ".

MATERIAL AND METHOD

In this study using a qualitative approach with a descriptive method that is the method of research conducted with the main purpose is to describe or a description of a situation objectively using a structured interview method. The type of evaluation used in this study is formative evaluation because the competency certification program continues to run currently in carrying out the chancellor's regulations.

CIPP evaluation model[3] is a program is considered as a system, so that in analyzing the program based on its components namely Context, Input, Process, and Product, 1) Evaluation of the context of the IT competency certification program is an environmental condition and the relevance of the program to the rules that support the implementation of the program this. 2) Evaluation of IT competency certification program input is a condition supporting the implementation of the program which includes Participating Students, Organizations, Implementing HR, Certification Systems and Facilities and Infrastructure. 3) Process evaluation is a study of the effectiveness of implementing an IT competency certification program. 4) Product evaluation is impact and results from implementing an IT competency certification program. Product evaluation in the form of the results of joining this program, both in the form of increased understanding and in the form of certificates as a sign of having participated in the program well.

Figure 1 CIPP Model adapted [3]

The evaluation is focused on evaluating the implementation of the IT competency certification program managed by UPT TIK UB in collaboration with LSP TRUST to answer the questions in the formulation of the problem.

Data Collection

Collecting data in this study are 1) observation, observing the processes that occur during the research process through this method are expected to obtain more complete research results. 2) Interview, this technique is used to get a complete description and valid results about program implementation. Interviews were conducted with related parties involved in this program both internal and external. 3) Documentation, i.e. documents and written information about implementing IT competency certification 4) Literature study, this technique is also called literature study, which is how to browse the literature that contains theories from scientific works either published or not yet published in the form of hard copies or softcopy available in books (e-books), papers, online journals.

Data analysis in qualitative research has two objectives, namely: (1) analyzing the process of a social phenomenon and obtaining a complete picture of the process (2) analyzing the meaning

behind the information, data, and process of a social phenomenon. For this reason, data analysis is used in this study is the model of Miles and Huberman.

The concept of validity in qualitative research is credibility. Success in qualitative research is the successful exploration of problems or describing settings, processes, social groups, or multiple patterns of interaction. High credibility is also achieved if the participants involved in the research recognize the information. Confirmation and clarification of data is obtained in two ways, namely: 1) Member check, revisit participants or respondents in the data analysis process. 2) Peer checking discussion with experts to re-analyze the data obtained

RESULT AND DISCUSSION

1. Context Aspects

Context aspects include problems related to program environmental conditions or objective conditions to be implemented as well as the relevance of the program to the parties (stakeholders) involved in implementing the program. In this context aspect will be seen the extent of the relevance of the objectives of the IT competency certification program with the three components involved, namely the Universitas Brawijaya rector as policymaker, program implementing unit, and students as the target of the program.

Background and relevance of the program

Before IT competency certification was held, a certification had been held called the Internet and Computing Core Certification or commonly abbreviated as IC3. IC3 is an international standard certification used to measure knowledge and ability to use computers and the internet. Universitas Brawijaya has made IC3 one of the requirements to graduate. Students are required to pass at least 2 of the 3 modules tested. However, in implementing this program many burdens students because IT capabilities are indeed uneven between Science and Technology and Social Humanities.

An IT competency certification program was formed to replace the IC3 program so that university programs are more targeted. The benefits of student competency certification programs include the promotion of professions in the industry and labor market as well as ensuring the recognition of workers' competencies. As for companies, the existence of certification helps employee remuneration, facilitates recruitment,

and promotion of employees. In addition, the certification program is useful in ensuring the efficiency and effectiveness of the development of education and training programs. Competency certification is the provision of certificates through competency tests that are in accordance with the Indonesian National Work Competency Standards (SKKNI).

Universitas Brawijaya in the framework of implementing the Tri Dharma of tertiary institutions in the field of education in the form of the application of science and technology (science and technology) is appropriate in an effort to create quality human beings through the educational process effectively. Higher education not only be able to produce graduates, but also be able to develop what in the tri darma of higher education, namely researching with high-quality research results and developing technologies that are beneficial to society.

The legal basis for implementing IT Certification

The legal basis is the foundation of a program, the first legal basis is from regulation number 12 of 2012 concerning higher education article 44 concerning competency certificates stated:

1. Competency certificate is an acknowledgment of competence for graduates' achievements in accordance with their expertise in their scientific branches and/or achievements outside their study program.
2. The competency certificate is issued by the University in collaboration with professional organizations, training institutions, or accredited certification bodies to graduates who pass the competency test.
3. The competency certificate as referred to in paragraph (2) can be used as a condition for obtaining certain jobs.
4. Individuals, organizations or organizers of higher education who are without rights are prohibited from providing competency certificates.

From the rules above the chancellor and the faculty leadership forum decided to make a competency certification program. This is stated in Rector Regulation number 36 of 2015 concerning the Information Technology (IT) competency certification program and the English language stated that Information Technology competency certification is a measurable and professional standardization of abilities in the use of certain computer applications. The purpose, objectives and

functions of holding this Competency Certification Program are to:

1. Improving the competence of university graduates, especially in the field of Information Technology and English;
2. Increasing the competitiveness of University graduates in the world of work;
3. Provide competency certificates that can later be used by the students concerned in the workforce;
4. Provide competency certificates that can later be used by students as a complementary Certificate of Companion Diploma (SKPI).

From the results of the legal basis above the IT competency certification program is very much in accordance with the wishes of the central, regional and university governments.

2. Input Aspects

Input evaluation includes analysis related to how the use of available resources, management, and strategies must be considered to achieve a program. Input aspects have an important role in the implementation of a program, according to the specified components, namely: Student Participants, Organizations, Human Resources, Certification Systems, Facilities and infrastructure. Therefore the evaluation of inputs in this study will focus on these components.

Student participant

The target of the IT competency certification program is Universitas Brawijaya students, so this program is designed to improve students' abilities. All educational backgrounds and college concentrations of students are given training in the hope that they will have additional value in IT both in lectures and later in the workforce. There is no specific distinction on the backgrounds of students who are certified, so students are considered the same after they enter Universitas Brawijaya. This is more because what is certified is Microsoft Office which is generally needed in all fields of Education and employment.

Organization

In this competency certification, there are two implementers who work together to run the program. This is because the UPT TIK as an implementer in Universitas Brawijaya do not yet have the right to issue competency certificates, because in providing competency certificates an organization or institution must have a permit from the National Professional Certification Board (BNSP) which is a state institution that gives permits to organizations that are entitled to provide certification and certificates.

The focus of UPT TIK is on the development and implementation of IT in university, certification has not been a focus because of the many tasks and needs of information and communication technology that are charged to UPT TIK.

TRUST as a Microsoft vendor partner is partnered in running this program because it has a BNP-LSP license and has long experience in Microsoft office certification.

Human Resources

The selected resources are people who understand the basics of computers in managing this program. The UPT TIK was appointed by the chancellor as implementing the IT competency certification program because it is a unit in the rectorate in charge of IT at Universitas Brawjaya. Human resources at UPT TIK are no doubt about their ability in the field of information technology.

Staff at UPT TIK are recruited based on education and skills, this can be seen from the number of staff, the majority of whom are graduates of computer and electrical engineering. From their educational background it can be seen that they are quite capable of carrying out organizational tasks. Besides that, there are some staff whose backgrounds are not related to computers but have skills in the field of Computers.

Staff from LSP TRUST are not only certified individuals but also individuals who have real-world experience in projects and hold previous information technology positions. Staff who provide training and questions are people who have Microsoft Certified Trainers (MCTs) certifications.

Certification system

In competency certification at Universitas Brawijaya there is a mechanism that becomes a unity in the system that must be passed by students to be certified. Provisions regarding the requirements and procedures for granting competency certification is regulated through a certification system with methods that are appropriate to the campus environment. Components in the certification, LSP TRUST in collaboration with UPT TIK create a certification mechanism while still referring to BNSP rules and guidelines.

IT Certification facilities and infrastructure

Universitas Brawijaya has many computer laboratories both in faculties and rectorates. The UPT TIK Laboratory was chosen because of its use for relatively general IT activities is not specific as

in the faculties used to add to specific lecture skills. Besides that the computer specifications are more than enough for the certification exam and the condition of the room is already equipped with adequate devices such as air conditioners and sound system. The specifications at UPT TIK are: Laboratory I and laboratory II: Lenovo IdeaCentre 520 All-in-One PC, 23.8 "Screen with specifications: (Processor: AMD Ryzen 3 2200GE 3.2GHz Quad-Core Quad Core , Operating System: Windows 10 Home 64-Bit, Memory: 8GB DDR4 SDRAM, Storage: 1TB 7200RPM HDD. ups APC 600VA.

3. Process Aspects
a. Implementation

The implementation of IT competency certification is the implementation of the system created in the certification. The system created is the most important component in the IT competency certification program at Universitas Brawijaya. The certification system will be analyzed per component as follows:

Registration

Competency certification registration is the process of registering the registrant's identity in this case is an Universitas Brawijaya / outside student into a storage media in the UPT TIK certification system which will be synchronized and processed by LSP TRUST to be a certification participant.

Active students of Universitas Brawijaya who want to join the IT competency certification program can register through the Student Information System (SIAM), the registration menu is under the application menu

Students outside UB can take IT competency certification by paying the registration fee first, after paying, applicants can come directly to the UPT TIK Helpdesk to submit a copy of the payment slip as proof of registration and determine the test schedule.

Data verification

Verification is a process of checking the validity of certification registrant data, the main points are verified and entered as criteria for students who can take certification including the NIM is entered correctly, the status of students is still active, has taken at least 2 (two) semesters, students have never participated in certification, Students have participated once but have not yet graduated, students have paid the certification fee because they repeat the maximum quota that is twice

Schedule

The schedule in the certification is the division of exam time based on a detailed arrangement of the session order. The IT competency certification test material is around Microsoft Office 2013. Self-study material can be downloaded at the certification site. exam schedule will appear at SIAM the weekend after students register, besides the schedule will be announced on the certification website as additional information for students

Exam

Competency certification exam is a way to determine the ability of examinees through cyberspace by using facilities that can connect test-takers with cyberspace using computers and supporting devices to use certain rules to prevent exam participants from cheating like a written exam and carried out within a certain time.

IT competency certification exams are conducted by CBT or Computer Based Test. CBT or Computer Based Test is a test with an implementation system using a computer as a medium for conducting tests. The presentation and selection of CBT questions are done in a computerized manner so that each participant who does the test gets a different set of questions.

With the CBT exam, supervision and implementation of the test becomes easy, but if obstacles such as a electrical failure or network error will be a little inconvenient to handle the test atmosphere for supervisors. When students have started the exam, the condition of the room is silent and only the sound of computer clicks is heard. Examinees focus on working on the certification exam questions until the exam is complete.

Exam results

The results of the exam are the finalization of the examination process which after the students take the exam will automatically display the results, so students can immediately know and measure each ability. IT competency certification test scores will automatically come out at the end of the test. Status passed if 50% of the answers were correct (45 questions) with the division of scores:

silver / good, score 50 to 69
gold / excellent, score 70 to 100
Do not pass if the score is below 50. For those who did not pass the first test, there is still a chance to test one more time with a reschedule list.

The results of the exam certification participant can be known immediately after the exam is finished due to the appearance of the score and the status of graduation or not directly appear. Certification for the even semester of 2019 began on January 3 and 156 waves until wave 177 on July 26. The results of the competency certification exam during the even semester 2019 can be seen in the table below:

Figure 2 certification exam results

Month	Pass the exam		Total Pass the exam	Did not pass	Total participants	Did not pass (%)
	Good (50-69)	Excellent (70-100)				
Januari	72	86	158	10	168	1.6
Februari	71	132	203	16	219	1.3
Maret	72	149	221	16	237	1.4
April	92	124	216	12	228	1.9
Mei	58	99	157	8	165	2
Juni	37	62	99	9	108	1.2
Juli	115	198	313	20	333	1.6

From the above table it can be seen that during 2019 certification it was recorded that almost 90% of students graduated per month and with an average percentage of non-graduates only 1%. Based on this it can be seen that many students have mastered the exam material

Implementation of the provision of certificates and certificates

Awarding competency certificates is one manifestation of the recognition of competencies for students. It aims to develop human resource competencies in producing products or services.

Any profession that will be cultivated later by students, either entrepreneurs or workers, should have a certificate of competence because in an industrial system or an organization requires a competent workforce. In addition, this competency-based certification also aims to prepare workers in global competition in the industrial world.

For final year UB students who pass the test or not, can submit a certificate of having

followed the IT certification as a requirement for registration of graduation or graduation if the certificate has not been issued

b. Performance

Implementing performance is assessed based on indicators of success that are set for the sake of to still provide the best service for students.

IT competency certification is an effort to improve the quality of students both when they are in college and after graduation. The implementation of IT competency certification is expected to have an impact on improving the quality of educated resources and the quality of education on an ongoing basis. Since the start of certification there have been many changes to the certification system in order to improve services for participating students.
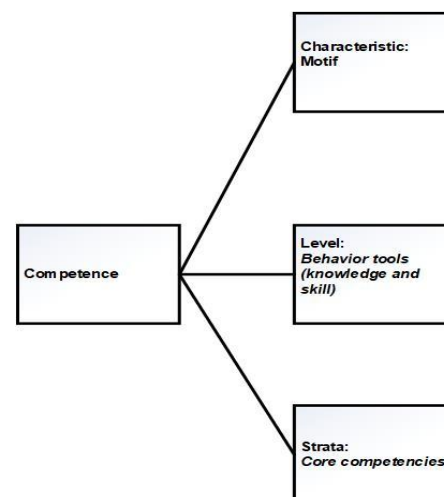
In an effort to maintain recognition, an internal evaluation of the organizer is always held in order to maintain what has been entrusted to the organizer of the certification.

4. Product Aspects

a. Competence

Competence in this study is defined as the ability (capability) or expertise (expertise) which is more than just a skill, but is the result of experience that involves understanding/knowledge, actions, and mental processes in a certain period of time and repeatedly so as to produce the ability/ expertise in certain fields. Competency certification is a long-term program that is expected to provide more value for students and alumni of Universitas Brawijaya. From the definition and explanation of competence according to Spencer[5], some components that are most relevant to research are taken. This can be seen below:

Figure 3 competence scope in this articel [4]

Motif

Motive is something that is consistently thought or desired by the person who caused the action. In this study the competence motive is related to intrinsic motives, namely one's need for competence and self-determination in relation to the environment. Called intrinsic because the goal is internal feelings about competence and self-determination.

Microsoft Office skills after following the IT competency certification indirectly indeed helped raise the value of more students as provisions in the world of work. Whatever the field that will be occupied later, the provision of competence is expected to make students more confident.

Behavior tools

Behavioral Indicators (key behavior) Are behaviors that should be displayed representing certain competencies and competency levels, showing certain performance that must be held in a competency to ensure the task is carried out successfully.

Knowledge

Knowledge Is information used by people in a particular field, for example to distinguish between students who are certified or not in a field. Demands for the development of occupations or functional occupations in the future will require sharpness of thought that is specialized according to their respective fields of competency professionally. So that in order to know the ability measurement at each level, competency test is needed. The knowledge gained by students in certification is a capital in dealing in the work.

Skills

In accordance with the definition of skill, the expected skill of this program is the ability to use reason, thoughts, ideas and creativity in working on, changing or to make work assignments using Microsoft Office more meaningfully so as to produce a value from the results of the work.

Mastery competence is a person's ability to master the practical skills gained from structured training in the run specific time according to the expertise program. Skill competency mastery data is obtained from student value data that is used to classify students in the good/excellent or excellent category of mastery competency in Microsoft office.

Core Competition

Core competencies in this study are a source of differentiation for students who make them have more value than others. The abilities are categorized as core abilities if they can distinguish a student from his competitors strategically.

Intensive training is a method of preparing someone/group to master a particular field. It is hoped that with this training the participants will truly have the ability to be targeted according to the certificate given.

b. Success of the program

The success of the program can be seen from the benefits felt by students and the achievement of the program objectives. Information about the achievement of program objectives is the result of interviews with relevant experts, UPT TIK staff, and participating students. The purpose of this activity is to provide more value in the form of skills in Microsoft Office, the implication of which will show competence and provide competitiveness. The results of the activities are in the form of certification that has been carried out.

IT competency certification is one of the important aspects in the process of managing education because no matter how good academic learning tools are, if not supported by quality supporting components, it will reduce its main value. Therefore, the quality of a university is reflected in the quality of its learning processes, both academic and non-academic as a system for improving human resources, which is reflected in the Tri Dharma of Higher Education, namely education and teaching.

Analysis of the Implementation

Changes in trends in higher education that must prepare resources that master skills in IT in addition to academic expertise that is taught in lectures, making universities should try to provide additional competence for their students either while still studying on campus or when they will graduate later. Moreover, by shifting and rejoining the ministry of higher education to become a ministry of cultural education, there have also been many changes in policies in higher education. The new minister introduced the concept of an independent campus which freed students and campuses to be more flexible in the curriculum.

UB competency certification is an effort of university to provide additional competence for their students when they enter the workforce. Students only need to use the SIAM application to register for certification after which they will get an exam schedule and can access the material online. The material is adapted to the

needs and current conditions in the hope that students can quickly understand the material.

Analysis of the Supporting Factor

The analysis process used in this study is the result of the evaluation by the CIPP method described above. The evaluation results show several supporting factors for this activity.

- Human Resources competencies, who are in charge of overseeing exams are people who understand the world of IT so that technical problems when exams can be handled quickly. The number of supervisors is also quite ideal with the number of participants during the exam, so students feel comfortable when the exam. Management of publications, registration systems, and awarding certificates are trained personnel in the IT world.
- The material can be understood enough by students, the identification of student characteristics adjusted to the literature in the field of Microsoft Office is good enough.
- The educational background of the certification system manager is people who have a background in information technology. Both the UPT TIK as the executor and LSP TRUST as the certification body In certification, students can ask this directly via UB_IT's Twitter or come directly to the UPT TIK helpdesk in the 2nd floor of rectorate building.
- The laboratory provided is quite complete with the latest hardware specifications. The room is also equipped with ac that is cool enough so that students who are exams feel comfortable. The facilities and infrastructure for training and certification are sufficient, this is evident from the results of interviews with informants who almost majority expressed satisfaction with the facilities and infrastructure.
- Another support is an opportunity for IT competency implementing staff to develop themselves, this is by providing training both in-person and online about Microsoft Office and other Microsoft software as a support. This is expected to increase the ability of implementers in understanding Microsoft in general and the office in particular.

Analysis of Inhibiting Factors

The analysis process is used to assess the inhibiting factors of certification activities by the CIPP method described above. The evaluation

results show several inhibiting factors for this activity.

- The location of the exam is not equipped with an elevator, this makes some students complain about this because they have to go up the four-stairs to get to the location especially for students who have excess body weight will pant when they arrive at the location.
- There is material in the module that has mistyped sentences, this makes students who read confused and they have to figure out the purpose of the module.
- In a few sessions, especially the beginning of the semester there were few participants, this made the atmosphere of the exam room quite quiet.
- It turns out that to reschedule the UPT TIK office to be less time-efficient for students because there are several study programs/faculties that are located far from the campus of UB 1 on the veterans road.
- Tests that only contain multiple-choice questions are too boring for students.
- Announcement of the schedule for students who register only through SIAM is too long and cannot be confirmed as it is rescheduling to the UPT TIK helpdesk.

CONCLUSION

This study aims to determine and assess the implementation of UB IT competency certification. Certification is a program that is very relevant to the program of the Ministry of Education that recommends universities to add additional competency capabilities for their students in order to prepare resources in global competition. In Universitas Brawijaya the certification program is one of the programs created to increase students' ability in global competition besides English. Based on the description of the results of the research discussed in the previous chapter, it can be concluded that IT competency certification is going pretty well with shows that student satisfaction is quite high, seen from the results of in-depth interviews, literature studies, observations, and documentation. The certification system model can also be understood and followed by students. From the certification results, it can be seen that the level of graduation is quite high which means that many students have sufficient skills after participating in certification.

The factors that support the implementation of the program are Human Resources competencies, communication, adequate facilities and infrastructures, and good collaboration with stakeholders.

The factors that hampered the program were the location of the exams that were rather difficult to reach, namely in the old 4th-floor recruits, there was no comprehensive analysis of student needs and the exam questions were still monotonous in the form of multiple-choice even though certifications were now many using interactive methods.

ACKNOWLEDGEMENT

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