



Electronic Module (E-Module) Critical Point Halal Status of Poultry in Halal Food Management Course D4 Culinary Art Study Program

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Abstract. This research aims to: 1) produce an electronic module (e-module) critical point halal status of poultry; 2) e-module feasibility test as teaching materials supplement for halal food management courses in D4 Culinary Art Study Program. This research is Plomp's Research and Development which consists of 4 stages: 1) investigation; 2) design; 3) realization; and 4) test/evaluation. The investigation, design, and realization stages are to produce e-module, while test/evaluation stage is to test e-module feasibility. To determine e-module feasibility, validation test was carried out by expert validators (language, media, IT, material), while feasibility trial was carried out on students of D4 Culinary Art Study Program Universitas Negeri Malang who had taken Halal Food Management course. Total population of students who were used as respondents was 61 people, then sample of 35 people was taken which was determined based on Isaac and Michael formula. The instrument uses is Likert scale with score range 1-5. Data analysis using percentages, and calculation of average to determine e-module feasibility. The research results produced: 1) e-module critical point halal status of poultry. 2) Results of feasibility test on respondents obtained an average 4.2 (Feasible). The average of each aspect, namely: 1) language \bar{X} 4.1 (feasible); 2) media \bar{X} 4.3 (very feasible); 3) IT \bar{X} 4.2 (feasible); 4) material \bar{X} 4.2 (feasible). The conclusion of this research is resulting e-module has been validated and suitable to be used as teaching material supplement for Halal Food Management courses in D4 Culinary Art Study Program.

Keywords: Culinary Art, Electronic Module (E-Module), Halal Food, Halal Status.

1 Introduction

The critical point halal status is a stage in the production process that determines the final status of product produced [1]. Every product has its own halal status which includes: raw materials, food additives, preparation stages, tools used, product naming, shape of (Jaswir, 2020). Knowledge about critical point halal status is important to have, this is because of condition of Indonesia where majority population is muslim.. Based on data from The Royal Islamic Strategic Studies Center (RISSC), it is known

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that the number of Muslim populations in Indonesia in 2023 reached 237.55 million people or equivalent to 86.7% of the total population in Indonesia. It data makes Indonesia becomes country with the largest Muslim population in Southeast Asia. [3]. The critical point halal status is important to know for both producers and consumers, this is because in Islam the halal status of food product that is consumed will have an impact on whether or not the worship performed is accepted. [4].

One of the most widely consumed foodstuffs is poultry. Poultry is a winged livestock animal which is eggs and meat of it can be consumed. [5]. Types of poultry that are widely consumed include: chickens, geese, ducks, quails, and turkeys. Chicken is the most popular type of poultry. The chicken in this research means broiler type. The amount of broiler chicken production in East Java continues to increase. In 2021 the amount of broiler chicken production reached 433757.8 tons, this number increased in 2022 to 586703.35 tons. [6]. This means that there is an increase in the consumption of broiler chicken. The high consumption of broiler chicken should be balanced with the availability of halal-certified chicken slaughterhouses. This aims to maintain the halal status of these chickens.

Based on data from the Indonesian Ministry of Religious Affairs, the number of halal-certified slaughterhouses in East Java is 31. This number is certainly very low compared to the high demand for broiler chicken. This condition means that there is a need to increase knowledge related to the critical point of halal status of broiler chicken. Efforts to increase knowledge can be done through socialization both in the general public and the academic environment. [7]. Increasing knowledge in the academic environment is important to do, especially for students of D4 Culinary Art Study Program. This is because of these students have a close relationship with food processing where each food ingredients have a critical point halal status, so that in addition to knowledge related to food processing, students must also have knowledge related to critical points of halal status. [8].

Efforts to increase knowledge related to the critical point halal status of broiler chicken for students of the D4 Culinary Art Study Program, can be done by making this material as teaching material supplement in one of the courses taken. Based on the curriculum of the D4 Tata Boga Study Program, the course related to the critical point of halal status is "Halal Food Management". The halal food management course discusses the definition of halal food management, halal certification policies and procedures, the definition of a halal assurance system, halal assurance system criteria, and the development and implementation of a halal assurance system. The learning outcomes of this course, those are: 1) explain the meaning of halal product management; 2) explain halal policies and halal certification procedures; 3) explain the halal assurance system (SJH); 4) explain and identify SJH criteria; and 5) develop SJH, compile SJH documents, implement and evaluate SJH. [9].

Currently, the Halal Food Management lecture of the D4 Culinary Art Study Program uses several learning resources including: 1) Indonesian Constitution Number 33 of 2014 concerning Halal Product Guarantee; 2) Indonesian Law Number 7 of 1996 concerning Food; 3) Republic of Indonesia Law Number 18 of 2012 concerning Food; 4) HAS 23000 series book; 5) SNI 99001-2016; 6) Journal of Halal Research; as well as LPPOM MUI books calm Halal Assurance System and Halal Certification.. As an effort to effectively achieve the learning objectives of the Halal Food Management course, the use of teaching material supplements in the form of halal status critical point

material is one of the right steps to take. The steps taken are by developing materials and using effective and innovative teaching materials. One of the relevant materials to be developed is “Halal Policy and Halal Certification Procedures”.

Effectiveness in delivering material needs to be supported by using of appropriate teaching materials [10]. Teaching materials are an important element in the learning process so that teaching and learning activities will be more effective if there is an implementation from teaching materials. [11]. One of the teaching materials that has high effectiveness is electronic modules. [12]. According to Encyclopedia Britannica Ultimate, electronic modules or commonly referred to as e-modules are digital modules which is containing descriptions in the form of text and visualizations in the form such as images, and are equipped with practice questions in the learning process. [13]. Electronic modules have advantages including: 1) interactive making it easier to provide instructions for use; 2) effective because the electronic module allows various other supporting elements to be added such as video, audio, animation, and direct tests to evaluate learning outcomes according to the material in the electronic module.

2 Method

The research was using Plomp's Research and Development (R&D) method. Plomp's R&D stages in detail are presented in Figure 1 below:

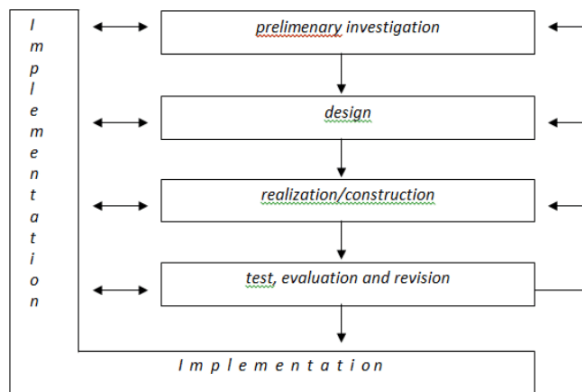


Fig. 1. Plomp's Research and Development Plomp Steps (Source: Plomp,1997)

There are 5 stages in this method, those are: 1) preliminary investigation; 2) design; 3) Realization; 4) test, evaluation, revision; 5) implementation. This research uses stages 1 to 4, namely by conducting feasibility tests of electronic modules involving expert validators and predetermined samples. Descriptively, the stages carried out in this research are:

2.1 Preliminary Investigation Phase

The investigation phase is the initial stage carried out, Plomp states "*In this investigation important elements are the gathering and analysis of information, the definition of the problem and planning of the possible continuation of the project*". In this phase, an investigation was carried out related to the urgency of the critical point halal status of poultry and determination of problem solving strategies based on the results of the investigation. In this phase, data were found that showed urgency of knowing critical point halal status of poultry, one of which was caused by the low number of halal-certified slaughterhouses. The results of the next investigation are in the form of a suitable research object which is a student of the D4 Culinary Art Study Program, the determination of the object is carried out referring to the CMPK course taken.

2.2 Design Phase

The design phase is carried out to design solutions based on results of the investigation. In this phase, a concept or framework will be produced in order to solve the problems that have been found. Plomp states that the characteristic of this phase is to generate all elements in order to find a solution which is then used as a framework or design. In this phase, the product is determined based on the results of the investigation. Data related to the urgency of knowledge of critical points of halal status and the object of research were found, so that in this phase it was determined that a product would be made in accordance with the results of the investigation.

2.3 Realization/ Construction Phase

Based on the design that has been made, it will then be implemented in the form of a product in accordance with the design that has been made. "*In fact, the design is a written out or worked out plan which forms the departure point for the phase in which the solution is being realized or made, this often entails the construction of production activities such as curriculum development or the production of audio-visual materials*" (Plomp, 1997). The realization phase is the stage to follow up on the design that has been made. In this phase, the electronic module production process is carried out in accordance with the design that has been made in the design phase. This phase will produce an electronic module on the critical point of poultry halal status which will be used as teaching material supplement in Halal Food Management course in the D4 Culinary Art Study Program.

2.4 Phase Test/ Evaluation

Plomp and van den Wolde (1992) state, that "*Without evaluation it can not be determined wheter a problem has been solved satisfactorily, in other words, wether the desired situation, as described in the definite formulation of the problem, has been reached*". The sentence means that if there is no evaluation, it will not be known whether a problem has been solved as expected based on the problem formulation or

not. This activity is carried out in order to obtain a product that is practical and effective and can be used in achieving research objectives. In this phase, the validation test was carried out by expert validators consisting of: 1) language; 2) media; 3) IT; and 4) material. In addition to the validation test, the feasibility will be known from the test conducted on the research sample. The feasibility test involved D4 Culinary Art Study Program students who had taken the Halal Food Management course. The population of this study amounted to 66 people, the population specifications are shown in Table 1 below:

Table 1. Total Population

Year of Class	Total
2020	30 students
2021	36 students
Total Population	66 students

Based on this amount, the next determination of the number of samples is carried out using the Isaac and Michael formula with the following formula:

$$s = \frac{\lambda^2 N \cdot P \cdot Q}{d^2 (N - 1) + \lambda^2 \cdot P \cdot Q}$$

Description

s : Sample size

λ^2 : Chi squared whose price depends on the freedom of degree and the error rate

N : Population size

P=Q : Probability correct=wrong possibility

d : Freedom of degree

The sample calculation using the Isaac and Michael formula is as follows:

λ^2 : freedom of degree and = 10%, Chi square
= 2,706

N : 66

P=Q : 0,5

d : 0,01

$$s = \frac{2,706 \cdot 66 \cdot 0,5 \cdot 0,5}{0,01(61 - 1) + 2,706 \cdot 0,5 \cdot 0,5} = \frac{44,649}{1,2765} = 34,9$$

The number of samples based on the calculation results using the formula is 34.9 rounded up to 35. So the number of samples needed in this study with an error rate set at 10% is 35 sample.

This research uses data analysis techniques form of percentages, and averages. Percentages are used to tabulate scores so that the percentage of each assessment criteria is known, then the average is used to determine the feasibility value based on the test conducted. The formula used in the percentage analysis is:

$$P = \frac{f}{N} \times 100\%$$

Description

P : Percentage

f : Frequency of items with certain validity

N : Number of question items

(Sugiyono, 2008)

Then, the formula for knowing the average is as follows:

$$\bar{X} = \frac{\sum x}{N}$$

Description

\bar{X} : Average of score sought

$\sum x$: Total score

N : Amount of data

The instrument used in this study uses a Likert scale that refers to the classification range by Arikunto, 2012 which is shown in Table 2 below:

Table 2. Scoring Guideline

Score Range	Classification
$4,2 < \bar{X} \leq 5,0$	Very Feasible
$3,4 < \bar{X} \leq 4,2$	Feasible
$2,6 < \bar{X} \leq 3,4$	Quite Feasible
$1,8 < \bar{X} \leq 2,6$	Less Feasible
$1,0 < \bar{X} \leq 1,8$	Not Feasible

Based on this reference, if the result show classification “Feasible” to “Very Feasible” then the e-module can be used as teaching material. If the result shows a classification “Quite Feasible” to “Less Feasible”, then the e-module needs to be revised. If the result show “Not Feasible”, then the e-module is not suitable to be used as teaching material supplement in Halal Food Management course.

3 Result

This section explains the results of the research that has been conducted. The explanation refers to Plomp's R&D research and development model. The following are the results of the research that has been carried out which are divided into 2 main discussions:

3.1 Creation of Electronic Module (E-Module) Critical Point Halal Status of Poultry

The result of the development research is an electronic module (E-Module) on critical points of poultry halal status. The steps taken in producing the electronic module are followed:

Preliminary Investigation Phase. Based on the results of the investigation, it is known that the number of halal-certified slaughterhouses is still low. East Java has a demand for broiler chicken of up to 586,703.35 tons. Meanwhile, the number of halal-certified slaughterhouses is only 31. This number is certainly not balanced, so it is necessary to increase awareness regarding the critical point of poultry halalness so that awareness to carry out halal certification also increases.

In addition, through this stage the research subjects to be used are also known. The research subject is an academic environment that has a relationship with the material of the critical point halal status. Determination of the research subject is based on the curriculum of the study program to be selected. Based on the curriculum, it is known that D4 Culinary Art Study Program is a research subject that suitable with qualifications need. Through this stage, it is also known that the Course Learning Outcomes (CMPK) of the Halal Food Management Study Program D4 Culinary Art course can be developed into an electronic module (E-Module) Critical Point Halal Status of Poultry.

Based on curriculum of D4 Culinary Art Study Program, the Halal Food Management course has CPMK, those are: 1) explain the meaning of halal product management, 2) explain halal policies and halal certification procedures, 3) explain the halal assurance system (SJH), 4) explain and identify SJH criteria, and 5) develop SJH, compile SJH documents, implement and evaluate SJH. Based on these CPMK, this development research will develop halal policies and halal certification procedures.

Desain Phase. The second stage of this research is the design stage. The activities carried out at this stage aim to prepare for product manufacturing which includes material preparation, design software, and selection of flip book maker. The material included in this electronic module is in the form of knowledge of critical points of halal status of poultry, which in this case is broiler chicken. The discussion of critical points of halal status refers to the criteria for the Halal Assurance System (HAS23000). There are 3 criteria discussed in this electronic module, namely: materials, production facilities, and products.

After collecting materials and supporting elements of the material, the design software that will be used is determined. The design software chosen is Canva, with considerations, which are: 1) ease of access, 2) completeness of supporting elements, 3) ease of use, 4) variety of templates that can be used, 5) designs can be downloaded in various formats, 6) there is an automatic save feature that minimizes design loss due to technical constraints. The design phase produced a draft in the form of a material script, as well as supporting elements for the electronic module of critical points of poultry halal status.

Realization/Construction Phase. The third phase of this research is realization phase. In this phase, the process of realizing or making teaching materials according to the concepts that have been made in design phase is carried out. This stage begins with creating an electronic module using Canva software. The initial process carried out is to create a template used in electronic module. The template is used on cover and content. So that, the appearance of electronic module becomes attractive.

The materials compiled at this stage are descriptions, images, and link. Then, the material, videos and images that have been determined at design stage are included in

Canva worksheet in accordance with arrangement of the material that has been made. This phase produces an electronic module (e-module) Critical Point Halal Status of Poultry. Bellow is a display of electronic module that can be accessed through the Heyzine website.

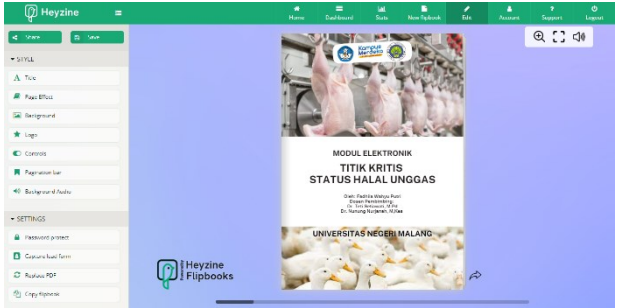


Fig. 2. E-Module Appearance

The specifications of the e-module, which are: 1) the electronic module (e-module) only can be accessed online, 2) the material in e-module is presented in descriptions, images, and videos, 3) the material presented in the electronic module refers to halal food articles and MUI halal journal website, 4) the electronic module consists of 33 pages, 5) the electronic module can be used via a smartphone or laptop connected to the internet via by using this link <https://heyzine.com/flip-book/18a5f5dd84.html>.

3.2 Feasibility Test of Electronic Module Critical Point Halal Status of Poultry

The test, evaluation and revision phase was carried out to see the feasibility of the electronic module. The first step taken in this phase is the validation test by expert validators which includes: language validator, material validator, media validator, IT validator. Validation tests by validators are carried out to determine the feasibility of electronic modules in each aspect. The type of analysis used is in the form of percentages and averages. The results of the e-module percentage analysis are presented in Table 3 below

Table 3. E-Modul Validation Test Result (%)

No	Validation	Category (%)				
		VF	LF	QF	LF	NF
1	Language	10	80	10	0	0
2	Media	90	10	0	0	0
3	IT	62.5	37.5	0	0	0
4	Material	0	100	0	0	0

After the percentage analysis is carried out and presented in tabular form, then the analysis will be continued by using average calculation. The calculation aims to determine the feasibility of e-module based on validation results. The average calculation is obtained from the summation of all scores and divided by the amount of questions. The results of the analysis using the average calculation are presented in Table 4 below.

Table 4. E-Modul Validation Test Average

No	Validation	Average	Category
1	Language	4	Feasible
2	Media	4.9	Very Feasible
3	IT	4.6	Very Feasible
4	Material	4	Feasible

Based on Table 4, it can be concluded that the electronic module has passed the validation test, so it can be continued for feasibility testing. The feasibility test was carried out by collecting data using a questionnaire. Based on this data, the average of the data will be calculated. Here is the calculation of the average feasibility test conducted:

$$\bar{X} = \frac{\Sigma 128}{30}$$

$$\bar{X} = \Sigma 4.2$$

Based on these results, it is known that the average score obtained in the feasibility test involving respondents is 4.2. Then the conclusion refers to scoring guideline table shows that feasibility test of electronic module gets "Feasible" category with an average of 4.2. So that, the electronic module of critical point halal status of poultry is feasible to be used as a teaching material supplement in the Halal Food Management course.

4 Discussion

This research was conducted in order to produce an electronic module and test the feasibility of the module as a supplement to teaching materials for halal food management courses. This research is quantitative research where data is presented in the form of numbers. The following is a detailed discussion related to the development research that has been carried out:

4.1 Creation Process of Electronic Module on Critical Point Halal Status of Poultry

The discussion will be presented in accordance with the research method used. Below is a discussion of research results:

Preliminary Investigation Phase. The development of learning materials is carried out with reference to the results of the observations that have been made. The high

level of demand for broiler chicken is not matched by the availability of halal-certified slaughterhouses. Halal certification in the industry has an important role, the existence of halal certification shows that the owner has carried out production procedures in accordance with halal standards by MUI. Halal certification also serves to guarantee the halalness of the product. Industries that do not yet have halal certification may carry out practices that are not in accordance with established standards.

In order to increase awareness regarding the critical point of halal status, socialization is carried out to the academic environment. The socialization was carried out to students of the D4 Culinary Art Study Program at State University of Malang. This was done because of the relationship between students and the world of food. Socialization activities for students are carried out by developing material on the critical point of poultry halal status as a supplement to teaching materials in certain subjects.

Material development is an activity or activity carried out systematically in order to improve learning materials used in the learning process. In this study, material development was carried out by determining the Course Learning Outcomes (CPMK) to be developed. The selected CPMK is "explaining halal policies and halal certification procedures". This CPMK has a relationship with the objectives of developing learning materials related to critical points of poultry halal status. The discussion that will be presented in the development of this material is in the form of halal policies that have been established by MUI. In addition, it is important for consumers to know about halal certification procedures.

The halal certification procedure discusses some details of how a product can get halal certification [14]. One of the stages carried out in the halal certification process is to find out the critical point of the product, so that it can be identified whether the critical point in question is risky or not [15]. Based on this, knowledge related to halal policies and halal certification procedures can have an impact on the knowledge of critical points of consumer halal status.

Design Phase. Design is an activity carried out in making a product. The design consists of the type of product, visualization, and content in the product. The development of poultry halal status critical point material focuses on discussing 3 halal assurance systems based on HAS23000. HAS23000 is a halal certification requirement compiled by LPPOM MUI in order to provide halal certificates. The halal assurance systems in question are: 1) materials, 2) production facilities, and 3) products. The selection of the discussion is based on the critical points of poultry [16].

The development of poultry halal status critical point material is made in the form of an electronic module (E-Module). This aims to make it easier for users to access the developed material. The preparation of electronic modules requires supporting elements including images, videos, and the selection of appropriate templates. The preparation of electronic modules must be made as interesting as possible, so that users can be more comfortable in learning the material presented [17].

Realization/ Construction Phase. The development of poultry halal status critical point materials based on electronic modules has produced electronic modules that are

ready to be tested for validity and feasibility. The electronic module of the critical point of the halal status of poultry is developed by referring to the rules in the material development process. This type of material development of critical points of poultry halal status is procedure learning material. This type of procedure learning material is a system or procedure used in carrying out a particular activity or chronology. The procedure discussed in this development research is the procedure for the critical point of poultry halal status. It discusses in detail how fresh poultry products can be said to be halal and the potential for poultry to have haram status. The principles of material development are also implemented in the development of materials for the critical point of poultry halal status. These principles are: 1) relevance, 2) consistency, and 3) adequacy [18].

4.2 Electronic Module (E-Module) Critical Point Halal Status of Poultry Feasibility Test

This feasibility test was carried out through several stages. First, validation was carried out by expert validators which included: language validation, material validation, media validation, IT validation. Language validation is needed to see the readiness of electronic modules in terms of language. The language used has an important role, because the language will affect the understanding of the reader [19]. Moreover, material validation is important. This is because the material presented must be in accordance with the intended learning needs. Next is media validation. Validation has a role in order to assess the attractiveness of the resulting product. Furthermore, IT validation has an important role in digital products. This is because IT validation will assess the readiness and functionality of the electronic module.

The feasibility test was carried out involving 35 students of the D4 Culinary Art Study Program at State University of Malang. The number of 35 students is a sample from 66 population. Determining the number of samples using the Isaac & Michael formula in order to be effective in research time. There are several conditions that must be met in using this formula, namely: the population studied must be sampled, the population size is known. Determining the number of samples using the Isaac & Michael formula is used in qualitative and quantitative research. Based on these criteria, this development research has met the requirements to be able to determine the sample using the Isaac & Michael formula.

The feasibility test was carried out using an instrument consisting of 30 items. The score range used is 1-5 with the category not feasible-very feasible. Data collection on the feasibility test of teaching materials was carried out once. The data that has been obtained is then processed using excel to determine the average of the data. The data that has been processed and the average obtained is then drawn conclusions by referring to the predetermined scoring guidelines. The average obtained is 4.2 with the category "Feasible". This means that the development of poultry halal status critical point material based on electronic modules is feasible to be implemented.

5 Conclusion

This research carried out produced an electronic module (e-module) critical point halal status. Then the module electronic has been tested for feasibility and resulted averages of every aspect, those are: 1) language \bar{X} 4.1 (feasible); 2) media \bar{X} 4.3 (very feasible); 3) IT \bar{X} 4.2 (feasible); 4) material \bar{X} 4.2 (feasible). The total average obtained was 4.2 it means module electronic has “Feasible” criteria. The conclusion of this research is resulting e-module has been validated and suitable to be used as teaching material supplement for Halal Food Management courses in D4 Culinary Art Study Program.

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