e-Consult: The Effectiveness of Thesis Advisory Model Using Management Information Systems in IAIN Bukittinggi

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Abstract. This study aims to obtain accurate data about the effectiveness of thesis advisory model using management information systems or e-Consult in IAIN Bukittinggi. This model has been developed in previous research in a series of research and development and has been validated by several experts with the result of very valid category. The effectiveness testing in this study involved 30 students whose thesis are advised by the researcher himself. It was done to facilitate the data selection. They were divided into the experimental group and the control group, each consisting of 15 students. This study was conducted through pre-experimental design with Static Group Comparison model. The data were analyzed by using non-parametric statistics through Binomial test. From this statistic test, the obtained level of effectiveness of this model is in very effective category.

Keywords: Effectiveness, Online Thesis Advisory, e-Consult

1. Introduction
Student’s academic activities in any universities, in Indonesia or abroad, always involve the process of undertaking scientific works such as papers, reports, final projects, and thesis. These works are also often referred to as academic assignments. Salam (2004) mentions that academic assignments consist of: (1) papers whose discussion focuses on specific problems usually related to a certain subject or a particular discipline, (2) reports whose contents center on the results of a study either a field study or a book study, and (3) terminal paper whose discussion is based on a library study. This type of assignment is usually conducted to complete a particular program such as a diploma, and it can also be used as a substitute for a thesis.[1]

Unlike Salam, Djuhari refers student's scientific work as academic works, which according to him consists of: (1) Thesis (skripsi), students’ final scientific writing to complete their undergraduate program. It is a proof of students’ academic proficiency in research related issues in accordance with their field of study. (2) Thesis, students’ final scientific writing to complete their magister program. It is a proof of students’ ability in research development in one of the scientific disciplines. (3) Dissertation, students’ final scientific writing to complete their doctoral program. It is a proof of students’ ability in research related to innovation in one of the disciplines [2].
Among the aforementioned scientific works, thesis and dissertation are considered more complicated because they are the final scientific works that must be made and completed before the graduation through a series of presentations (seminars) and the advisory process with their advisor.

They also must pass the thesis defense test in front of selected lecturers to be recognized as a scientific work. As a final scientific work of undergraduate education program, thesis often becomes a heavy burden for students. Generally, students can easily complete their face-to-face subjects but not all of them can also easily complete this thesis.

The research conducted by Rusdiana Hamid reveals that the determining factor of the delays in thesis completion is the difficulty in determining the title of the thesis, communicating with the advisors, and determining the content framework of the writing. The research by Ellis and Knaus in Ferrari et al, explains that 25% - 75% of students around the world do academic procrastination in writing their thesis and completing their final project. Procrastination is the behavior to delay doing academic assignments intentionally and repeatedly.

Kuswandi's research reveals that external factors give more influence to students’ procrastination or even incompleteness of their thesis. However, it may also be influenced by internal factors such as students’ insufficient ability in mastering the material, the research methodology, and good and correct written language. In addition, external factors include the adequate provision of thesis writing manuals, organizational climate, characteristics of thesis advisor, and technological support that allows thesis advisory to be conducted online.

The research by Elfredo Dwipa Regia An Arizal and Henny Yustisia, explains that the obstacles in the completion of the courses and the thesis are two interrelated problems, each of which has causal factors both internal and external factors. If left unsolved, it will have an impact on the delayed completion of students’ graduation.

Thesis advisor is the most important element in thesis writing. The advisor has the duty to provide direction, correction, guidance, and input on the thesis written by students in terms of content, typing, language, methodology, data processing, and reporting results.

The thesis advisory process is written and oral interaction between the advisor and students carried out continuously and intensely encompassing writing the proposal, seminar proposal, research process, reporting research results, and final thesis examination commonly called munaqasyah in IAIN Bukittinggi. The aforementioned interaction requires sacrifice from both parties especially the advisors who have to spare their time in the midst of their busy schedule to read, correct the thesis, and give suggestion and direction with regard to students’ thesis draft.

In general condition, direct thesis advisory (face to face) is expected to be able to provide maximum guidance to students without neglecting the humanistic relationship between the two parties. However, some conditions such as the advisor’s out of town duty or additional assignments both inside and outside the campus inhibits the process direct thesis advisory, which will then result in the delay of students’ thesis completion and graduation. The availability of the thesis writing manual is very important to encourage students. If the book contains various solutions for problems which have made students confused, it will give them motivation to finish their thesis immediately. From the preliminary research, the researcher obtained the data that confirm some weakness of thesis advisory model in IAIN Bukittinggi such as the absence of a model that regulates the thesis advisory system, the limitation of the contents of thesis writing manual, and the needs for lecturers and students to develop the thesis guidance model. Therefore, the research development is conducted to provide solutions for the various problems found in the initial stage of the research process. The products produced are model book (product 1), thesis writing manual (product 2), e-Consult application (product 3), and user guide as product 4.
2. Literature Review
2.1 Thesis
The most popular term in Indonesia to describe a student's final project is a thesis. A thesis is a scientific work written by a S1 student who discusses a particular topic or field based on the results of a literature review written by experts, the results of field research, or the results of development (experiments). Thesis is a comprehensive work that involves various aspects of knowledge and skills, the ability to think critically to get a phenomenon, the ability of research methodology, and other abilities. Existing phenomena will be resolved in a scientific manner and with both quantitative and qualitative approaches.[7] In contrast to Indonesia, overseas theses are better known as academic papers[8], [9], [10]. Academic papers are interpreted as academic texts as a final project that must be completed by every student studying in tertiary institutions. Seen from the definition above, the similarity of the nature of the thesis, although in the mention of each country has its own characteristics.

2.2 Purpose of Thesis Writing
The Guidelines for Writing A Thesis book issued by the University of Oulu explains that the purpose of writing a thesis according to them is to demonstrate proficiency in academic research and communication, further explained that the thesis shows the mastery of students in certain fields of study and the ability of independence to create new scientific knowledge [11]. While Whitaker said that writing academic assignments should be an opportunity for students to explore something that interests students according to their study program [12]. Based on the above understanding, it appears that in essence the purpose of thesis writing is to train and accustom students to communicate the results of the research they have done, so that it is known by many people, especially the academic community who will utilize the results of the research for subsequent academic activities.

2.3 Purpose of Thesis Guidance
Thesis guidance that runs for some time, has the following objectives:
(a) Provide suggestions and corrections to student guidance in an effective, communicative, recorded, directed, clear, solutive manner, both verbally and in writing.
(b) Reducing errors in making thesis regarding things; writing techniques, use of language, use of theory, methodology and research reporting.
(c) Motivate students to finish their thesis on time, and make a thesis that is made of high quality.
(d) Get more optimal guidance service opportunities,
(e) Get guidance services wherever and whenever.

2.4 Advisor Function
The main functions of thesis guidance are as follows: First, Distribution function, the purpose of this function is the guidance function in helping students get the appropriate thesis title for them. Second, the adjustment function, namely the guidance function in helping students adjust to the problem to be studied and the methodology used in the study. Third, the function of adaptation, namely the function of guidance as a resource for each problem faced by students in thesis writing. Fourth, the teaching function is the guidance function in helping students complete their research.[13]

2.5 Advisor Task
Advisor I is responsible for guiding students about the substance of mathematics, namely material, discussion, implementation of research and writing techniques. While advisor II is responsible for research methods, technical evidence and presentation of research data. The advisor task, both supervisor I and supervisor II will work together in coaching and complementing one another so that the advisor's function here is as a supervisor, facilitator, counselor, and providing guidance in the process of preparing proposals starting to raise the topic of the problem. until the preparation of the final report. The thesis advisor's obligations are:
(a) Provide sufficient time and space for consultation with students.
(b) Give consideration or advice and sign the proposal and thesis consultation forms at least 5 (five) proposal consultations and 3 thesis reports.
3. Research Method

This study is a field research with quantitative and used pre-experimental design research method because it is not a real experiment [15]. More specifically, Static Group Comparison design model was employed. The design of the pre experimental research used in this study is illustrated in the following chart [16]:

| X1 | O |
|----|---|
| X2 | O |

Description:
X1 = Group without the treatment
X2 = Group with the treatment
O = Test

This design was employed because students were not grouped into clear classes, so the researcher took the initiative to take all students under his advisory and then divided them into 2 groups. The two groups became the control and experiment groups. The experimental group was treated by using e-Consultation apps for one semester while the control group was not given any treatment. Finally, a post test were given to both groups.

3.1 Population and Sample

The population in this study are all students under the researcher’s advisory in the even semester of 2018/2019 academic year with the total number of 30 students, to whom the researcher serves as main advisor and co-advisor. The samples are students under the researcher’s advisory with the number of 30 students divided into 2 group, 15 students each. There is no intervention in group selection because the whole sample has the same rights and there is also no obstacle for a certain student to be in a certain group. The two groups were classified into an experimental group and a control group with a random determination using lucky draw.

3.2 Data Collection Instruments

Data collection instruments in this study are a questionnaire whose validity was tested by using the product moment formula from Pearson and Guilfort formula. The validity testing resulted in 4 items categorized as a invalid instrument items i.e. item 6 with Robtained = -0.013, item 14 with Robtained = 0.071, item 15 with Robtained = 0.001, and item 16 with Robtained = -0.165 while Rtable on N20 is 0.361. Since Robtained on all four items is lower than Rtable, these items were excluded. The instrument reliability was tested by using Alpha Cronbath formula. This test confirmed that the Questionnaire was reliable and could be used if it has an alpha reliability value ≥ 0.70. The instrument reliability test obtained the score0.850, which is higher than 0.70. Hence, it can be interpreted that the instrument developed is reliable to be used in further stages.

3.3 Assumption Testing

The assumption testing used in this study normality test with the Kolmogorov-Smirnov Saphiro-Wilk test and the Homogeneity test with the Levane test assisted by SPSS 20. The two tests above determined whether this study used parametric or non-parametric statistics.
3.4 Hypothesis Testing
Hypothesis testing aims to prove whether the hypothesis is accepted or rejected. The method used in the hypothesis testing will depend on the results of the assumption tests conducted previously. If data are normally distributed and are homogeneous, parametric statistical tests will be used with the t test. However, if they are abnormally distributed and are heterogeneous, the hypothesis test will use a non-parametric statistical approach using the Binomial test with a benchmark value of 85, using the following test criteria table:

| Table 1. Testing Criterium[17] |
|------------------------------|
| No | Scale | Level         |
|----|-------|---------------|
| 1  | 0 – 20| Uneffektive   |
| 2  | 21 – 40| Effectiveless|
| 3  | 41 – 60| Cukup Efektif|
| 4  | 61 – 80| Effective     |
| 5  | 81 – 100| Very Effective|

4. Results
The results of the effectiveness testing in the experimental group and the control group obtained the score 89.07 in the former group and 91.47 in the latter with the standard deviation 8.43 in the experimental group and 4.99 in the control group. The variance is 71.07 in the experimental group and 24.83 in the control group.

| Table 2. Result of Effective Test |
|-----------------------------------|
| Groups      | Mean | Std Dev | Variance | N |
|-------------|------|---------|----------|---|
| Experiment  | 89.07| 8.43    | 71.07    | 15|
| Control     | 91.47| 4.99    | 24.83    | 15|
| Respondent  |      |         |          | 30|

The data obtained above will be processed to see whether the average score of thesis advisory model using e-Consult is greater than the value of 85 (the estimated average score). Before testing the hypothesis, the assumption testing consisting normality and homogeneity was done due to the difficulty of finding a fixed variance at the time of sampling process because the samples in this study do not come from predictable groups. The results of the normality test by using the Kolmogorov-Smirnov test can be seen as follows:

| Table 3. Result of Normality Test |
|----------------------------------|
| Kolmogorov-Smirnov Test Statistik| df | sig  |
| Shapiro-Wilk Test Statistik      | df | sig  |
| Normality                       | .436| .000|
|                                 | .605| .000|

The table above shows that the sig value in the Kolmogorov-Smirnov and Shapiro-Wilk test is 0.00, which is smaller than alpha 0.05. Thus, it can be concluded that the above data groups have abnormal distribution. Due to the above data abnormality, the homogeneity test is not needed because the requirements for using parametric statistics are not fulfilled. Therefore, the researcher used a non-parametric statistical approach by conducting a Binomial test in testing the hypothesis. Along with the use of non-parametric statistical approach, the data were processed by using SPSS through the Binomial Test. The results can be seen in the following table:

| Table 4. Result of Hypothesis Test Result of Binomial Test |
|-----------------------------------------------------------|
| Category | N | Preposition Observation | Preposition Test | Sig |
|----------|---|-------------------------|-----------------|-----|
| Experiment |     |                          |                 |     |
| Group 1  | <= 85| 2                      | .13             | .50 | .007|
| Group 2  | > 85 | 13                     | .87             |     |     |
| Group 3  |      | 15                     | 1.00            |     |     |
The Binomial Test above shows that the sig value is 0.007, which is smaller than alpha 0.05. Thus it can be concluded Ha is accepted and Ho is rejected. Therefore, the interpretation that can be taken from this hypothesis test with an average value of 85 is that e-Consult application is very effective.

5. Conclusion
This undertaken study proves that the thesis advisory model developed (model book (product 1), thesis writing manual (product 2), e-Consult application (product 3), and user guide as product 3) obtain the score in a very effective category, so it is feasible to use this model in IAIN Bukittinggi as an alternative model that can complement the use of the already applied thesis advisory model. From the results, the thesis advisory model using management information systems or e-Consult can also be used at other tertiary institutions with characteristics of problems similar to those of IAIN Bukittinggi.

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