The Influence Of Application Of Academic Information Systems On Student Academic Service Quality In The Industrial Revolution 4.0 Era

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Abstract:

The purpose of research to know academic information system, determine the effect of the application of academic information systems on quality of academic services, and find great academic information system variables influence the quality of academic services at the State Islamic University Imam Bonjol Padang. Method of this research use combination of quantitative method and qualitative method. Further processing of the results of the questionnaire assessed by interview. The questioner was examined by reliability test, validity test, regression test, a test of determination, and test hypotheses. Processing techniques and data analysis performed using SPSS 26. Survey results revealed that the academic information systems at the State Islamic University Imam Bonjol Padang is a web-based system that can be accessed through the counter and online faculty. This system facilitates student access to academic information, and as a means of gathering information through the rapid academic. The result of data processing and analysis of questionnaires indicates thats the variable academic information system variables significantly influence the quality of academic services at the State Islamic University Imam Bonjol Padang. From the results of data processing and analysis of questionnaires showed that academic information system variables have significant effect the quality of academic services at the State Islamic University Imam Bonjol Padang. It can be seen from the T test, with comparing the t-table and t-result with a= 5%. The result is significant effect of academic information systems with a significant impact on the quality of academic services, with a t-count (3.833) is

greater than t-table (1.669). This means that if the academic information system is better, academic service quality will increase.

Keyword: Academic Information Systems, Academic Services Quality, Industrial Revolution 4.0.

Introduction

In the 21st century, universities are faced with two major forces that greatly affect the higher education process, namely the industrial revolution 4.0 and the covid 19 outbreak (Prasety, Banu & Trisyanti, 2020). The industrial revolution 4.0 is marked by the development of the Internet of Things which is followed by new technologies in data science, artificial intelligence, robotics, cloud, 3D printing, and nanotechnology (Abdul Rani et al., 2020). The industrial revolution 4.0 has fundamentally changed the way humans think, live and relate to one another. This era will disrupt various human activities in various fields, not only in the field of technology, but also in other fields such as economics, social, and politics as well as education (Piacentini et al., 2021). The influence of the industrial revolution 4.0 on the world of education is marked by the use of various digital technology tools in the learning process and also in providing services to users, namely students based on digitalization (Chung & Chung, 2021).

One of the huge impacts of information technology on the field of archives is the emergence of a type of archive called Electronic archives (Al-Haddad et al., 2019). Archives that were previously limited to paper-mediated types of archives are now developing into archives whose media is presented in electronic media. Information technology makes it possible to create automation and digitalization in the field of archives which makes it easier to manage records as information (Willis et al., 2020). Archive digitization can help managers to be able to manage effectively and efficiently. Utilization of information technology is not only in government organizations or the private sector, but also in the public sector (Christopher & Rosselli, 2021). One of the public sector agencies that utilize information system technology is a higher education institution. For higher education institutions, information system technology has become a necessity to support the educational process (Wimble & Leroy, 2018). Utilization of information technology is urgently needed to increase efficiency and productivity for education management in tertiary institutions (Toskin & McCarthy, 2021).

Imam Bonjol Padang State Islamic University as one of the state universities has utilized information technology in the academic field under the name SIAKAD. This can be seen by the development of a web-based academic information system. A web-based information system

built with the aim of organizing academic data in an integrated manner. The purpose of this system is that access to information for users, whether students, lecturers, employees or interested parties, can be served quickly, precisely and accurately. Based on the explanation above, Imam Bonjol Padang State Islamic University has utilized information technology, especially in the academic field through the development of SIAKAD so it is necessary to know the effect of this information system on service quality. Ideally, SIAKAD can create efficiency and effectiveness in academic management and service performance. The purpose of this study was to find out how the academic information system is used at Imam Bonjol Padang State Islamic University, to find out the effect of implementing academic information systems on academic services at Imam Bonjol Padang State Islamic University and to find out how much influence academic information system variables have on university academic service variables. Islamic State of Imam Bonjol Padang.

Literature Review

Information Systems

An information system is a set of interrelated components whose primary function is to collect, process, store and distribute information to support decision-making and control within an organization (Wadhwa & Palvia, 2018). An information system can be defined as a human-made system consisting of components within the organization to achieve a goal, namely providing information (Swanson, 2020). An information system is developed through observing a work process, to assess an information system, of course, many criteria are considered (A. Nguyen et al., 2021). The criteria for assessing an information system are as follows: Usability: available facilities and applications according to needs and produce information quickly and relevant to the decision-making process (Janiesch et al., 2022). Efficiency: the cost, effort and time spent on applying the information system is proportional to the results set (N. T. Nguyen et al., 2019). Reliability: able to handle large portions of work operations with high frequency and continuously (Baskerville et al., 2023). Capacity: able to store data with large capacity and fast retrieval capability. Simple: the menu and navigation provided can be executed easily and interactively with the user (Zdravković & Panetto, 2022). Flexible: Information systems can be applied and operated in several types of operating systems and have the potential to always be developed (Owusu Kwateng et al., 2021).

Service Quality

Quality is a dynamic condition associated with products, services, people, processes and the environment that meet or exceed expectations (Atmaja & Utami, 2018). Service is a series of activities in the process of fulfilling needs through the activities of other people, therefore service is a process that takes place regularly and continuously

(Salbiyah et al., 2019). In assessing the service quality of Parasuraman, Zeithmal and Berry there are five main dimensions related to service quality to form user focus (I.G.P. Asto Buditjahjanto, 2020). The five dimensions of service quality are as follows: Appearance. The physical appearance of the service, personnel and communication media will give color to the service (Zulkhairi, 2020). The level of completeness of the equipment/technology used can affect the view of the customer or the readiness of the company to provide services (Hama et al., 2020). b. reliability. The ability to ful fill promises, on time, consistently and speed of service is important in service (Abdurahman & Sopiandi, 2019). responsiveness. Concern and willingness to help customers and provide good service are part of service. The level of concern and responsiveness is seen from the extent to which the company is willing to help customers (Saputra et al., 2021).

Willingness to accept criticism, suggestions and comments in the form of questions or complaints, the existence of available communication facilities and making it easier for customers to find information about the services provided by the company, for example: the internet, and information boards (Purwati & Wibowo, 2021). d. Guarantee Knowledge and attitude (polite, friendly, responsive, friendly) of employees and their ability to instill trust and confidence. e. Concern. The level of care and concern the company has for its individual customers. Empathy for customers (Melani, 2019), for example: being responsive to customer problems related to the services provided by the company, taking the time to listen to complaints, treating customers who complain about service well (Kemenuh, 2020).

Industrial Revolution 4.0

The term industrial revolution 4.0 originates from a project initiated by the German government to produce computerized manufacturing (Rotatori et al., 2021). Germany is the first country to design a roadmap (grand design) regarding the implementation of the digital economy. Furthermore, a world economist from Germany named Klaus Schwab was the first to introduce the term industrial revolution 4.0 to the surface which was written in the form of a book entitled "The Fourth Industrial Revolution" (Hyun Park et al., 2017). He is the founder and executive chairman of the World Economic Forum (WEF), explains that the industrial revolution 4.0 has fundamentally changed human life and work. The industrial revolution 4.0 has a wider size or scale, scope and complexity (Zysk, 2021).

In other terms, it is called the digital revolution and the era of disruption. The definition of disruption means being uprooted, chaotic and erratic. Meanwhile, according to economist and business expert disruption means innovation or discovery of new things (Chung & Chung, 2021). From this understanding, it can be understood that diruption

means a fundamental change. In the era of the industrial revolution 4.0, several things became limitless through unlimited computing and data technology, this happened because it was influenced by the development of the internet and massive digital technology as the backbone of the movement and connectivity of humans and machines (Pa-alisbo, 2017). This era will also disrupt various human activities, including the field of science and technology (science and technology) in higher education (Ross & Maynard, 2021).

Research Methodology

The method used in this research is a combined research method between qualitative and quantitative methods. This method is carried out so that the results of data analysis on the quantitative method can be described more clearly and more deeply with the qualitative method (Creswell, 2023). Variables are concepts that can be measured and have value. The independent variable in the research is the information system. The dependent variable in this study is service quality. The information system variable has 6 indicators: usability indicator, efficiency indicator, reliability indicator, capacity indicator, simple indicator, and flexible indicator. The service quality variable has 5 indicators: physical evidence indicators, reliability indicators, responsiveness indicators, assurance indicators and caring indicators.

The population in this study were all students of the Imam Bonjol State Islamic University Padang. The sample is part of the population to be studied and is expected to describe the population. Samples were taken using random sampling technique, with a total sample of 242 students. Data from questionnaires and interviews were then processed using editing, coding, tabulating techniques, the SPSS 26 program, unit processing, categorization and data interpretation. Data analysis techniques based on qualitative and quantitative research. Quantitative data analysis techniques are carried out through descriptive statistics. The data analysis technique of the qualitative research model was carried out using the data analysis technique with the Miles and Huberman interactive analysis model consisting of 3 things, namely data reduction, data presentation, and drawing conclusions.

Result and Discussion

The results of data processing obtained based on respondents' answers about academic information system variables and academic service quality variables according to each indicator can be summarized as follows:

$$\text{class intervals} = \frac{\text{greatest value - smallest value}}{\text{number of classes}}$$

Academic information system variables
Greatest value = 3,89
Smallest = 1,83
Number of classer = 4

So that the interval value on the academic information system variable is:

Interval = $\frac{3,89-1,83}{4} = 0,52$

The results of the interval values above, a score table can be made for academic information system variables, such as in the table below.

Table 1. Academic Information System Variable Score

Code	Score	Information
1	1,83-2,35	not good
2	2,36-2,87	not good
3	2,89-3,39	Good
4	3,40-3,89	Very good

Source: Primary data processed from questionnaires (2023)

Based on the data processed from the results of the questionnaire, a summary table of respondents' answers to the academic information system can be made.

Table 2. Conclusion of Academic Information System Variables

Score	Code	Information	Freq	Percentage
1,83-2,35	1	Not good	6	8,33%
2,36-2,87	2	Not good	31	43,06%
2,89-3,39	3	Good	23	31,94%
3,40-3,89	4	Very good	12	16,67%
Total			72	100%

Source: Primary data processed from questionnaires (2023)

From the table above it can be concluded that most respondents chose the answer that the information system academic at the Imam Bonjol State Islamic University not good.

Academic information system variables
Greatest value = 3,67
Smallest = 1,00
Number of classer = 4
So that the interval value on the academic information system variable is
Interval = $\frac{3,67-1,00}{} = 0,67$

4

From the results of the interval values above, score tables can be made for academic information system variables, as shown in the following table.

Table 3. Academic Service Quality Variable Score

Code	Score	Information
1	1,00-1,67	not good
2	1,68-2,24	not good
3	2,25-2,91	Good
4	2,92-3,67	Very good

Source: Primary data processed from questionnaires (2023)

Based on data processed from the results of the questionnaire, a table of conclusions can be made of respondents' answers on the quality of academic services.

Table 4. Conclusion of Academic Service Quality Variables

Score	**Code**	**Information**	**Freq**	**Percentage**
1,00-1,67	1	Not good	13	18,06%
1,68-2,24	2	Not good	20	27,28%
2,25-2,91	3	Good	32	44,48%
2,92-3,67	4	Very good	7	9,72%
Total			72	100%

Source: Primary data processed from questionnaires, (2023)

From the table above it can be concluded that most respondents chose the answer that the quality of service academic at the Imam Bonjol State Islamic University Good. The results of processing the questionnaire data above concluded that most respondents rated the academic information system as not good, but when compared to the previous system, this academic information system was better. Even so, the information system has a positive influence on the quality of academic services because students assess that the quality of academic services at the faculty is good. As for the before and after comparison implemented by the SIAKAD of the state Islamic University of Imam Bonjol Padang as follows:

Table 5. Comparison before and after implementation SISKA State Islamic University of Imam Bonjol Padang

No	**Before**	**After**
1	The study plan card input is done manually, students must come to campus	Input the Semester Plan Card online so students don't have to come to campus because it can be done anywhere

2	Every time a student fills in the Semester Plan Card, they must meet the guardian lecturer for approval of the courses taken	Students do not have to meet guardian lecturers, because they can do it online
3	Unable to find class schedule	Know the class schedule
4	Students must come to campus to see the value	Just go online to see the value
5	There is no teaching and learning evaluation and service evaluation	There are teaching and learning evaluations and service evaluations
6	There is no menu to accommodate criticism and suggestions	There is a menu to accommodate criticism and suggestions
7	Employees in printing attendance are rather long and difficult because have to calculate manually	It's easier for employees to print student attendance through the student attendance recap menu

Source: Primary data processed from questionnaires, (2023)

Simple Regression Analysis

Regression analysis was used to predict independent variable to the dependent variable. Model the regression equation in this study is Y=a+bX. The results of the calculation of the equation model regression in this study can be seen in the table.

Models	**Unstandard ized Coefficients**		**Standar dized Coefficients**	**t**	**Sig**
	B	Std. Error	Beta		
1 (Constant)	1.347	.306		4.403	.000
Sistem Informasi Akademik	.433	.133	.416	3.833	.000

a: Dependent Variable: academic service quality

The table above shows constanta (a) is 1.347, while (b) is 0.433. With Thus the regression equation can be written, Y=1,347+0,433X. from this equation you can know the influence of information system variables academic (X) with service quality variable academic (Y). If the value of the information system rises one unit then the value of service quality will be increase 0,433 unit. It means increasing information system then the quality of service will be increases, and vice versa.

Correlation Significance Test

The correlation coefficient significance test aims to measures the degree of linear relationship between two variables. The correlation coefficient shows the direction of the relationship positive or negative between the dependent variable and independent variable. The value of the

correlation coefficient is ± 1. If the value of the correlation coefficient between two variables are zero, then both variables it has no relation. Conversely, if the value of the correlation coefficient between the two variables is +1, means that the two variables have perfect relationship. Correlation coefficient value which is getting bigger or closer +1 so relationship degree is higher. The results of the calculation of the coefficient significance test correlations taken from the above table, show that the coefficient is equal to 0,416 can interpreted that there is a significant effect between the variables of the application of information systems academic with the quality of academic services at State Islamic University of Imam Bonjol Padang.

Analysis of the Coefficient of Determination

Determination analysis is used to find out the magnitude of the influence of the independent variable (information system academic) on the dependent variable (quality of service academic). From the calculation of the coefficient of determination shows the size adjusted r^2 is 0,162. it means 16,2% that service quality can be explained by academic information system variables, while the rest 83,8% influenced by factors others that were not examined in this study.

Conclusion

Based on the description of research results and discussion regarding the effect of implementing information systems academic on the quality of academic services in Imam Bonjol Padang State Islamic University can be concluded that: **First,** the SIAKAD of the Imam Bonjol Padang State Islamic University is an academic information system developed by the Imam Bonjol Padang State Islamic University against the previous academic information system which based on Ms. Visual Foxpro on a local network (Local Area Network) becomes a web-based academic information system. It means SIAKAD the Imam Bonjol Padang State Islamic University besides being accessible via counters, can now be accessed online. Requirements to be able to access online para the user must install the SIAKAD program at the Negeri Islamic University of Imam Bonjol Padang and the MySQL connector which is available on official website. **Second,** the effect of the implementation of SIAKAD UIN IB Padang on academic services including SIAKAD can be used to input study plan cards, find out information on student study results, find out. **Third**, the results of processing questionnaire data about the quality of academic services at UIN IB Padang concluded that most respondents rated the academic information system as not good, but when compared to the previous system, this academic information system is better. Even so, the information system has a positive influence on the quality of academic services because students assess the quality of academic services on campus. From the results of processing and analysis of data

the questionnaire obtained the result that the system variable academic information has a significant effect on quality of academic services in the UIN IB Padang. The results are there significant influence between information systems academic on the quality of academic services.

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