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IMPLEMENTATION OF ACADEMIC INFORMATION SYSTEM USING QUALITATIVE METHOD WITH QUANTITATIVE STRATEGIC PLANNING MATRIX APPROACH

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ABSTRACT

Previous studies reveal that poorly managed Academic Information Systems can carry the risk of having a negative impact on institutions or organizations. Hence, it is important to evaluate the performance of an academic information system to measure the effectiveness and productivity of the system's success in achieving its goals. The study in this research involves a private college in Bandung city that has successfully implemented its Academic Information System for more than five years. We managed to collect 4286 SPACE (Smart Platform for Academic Environment) users and divided them into internal and external informants. The internal informants include the AACSB (Association to Advance Collegiate Schools of Business) team, QA Director, Head of Program, IT Manager, Lecturer, Secretary of Program, HCD Manager, and Users. External informant involves experts including WDA (Vice Dean for Academic), Policy Makers, Information Security Practitioners, and Academics. For the analysis tool, we use QSPM (Quantitative Strategic Planning Matrix) a well know system frequently used in the decision stage. To determine which strategy is the most effective, QSPM uses input from the IFE (Internal Factor Evaluation) and EFE (External Factor Evaluation) matrices at the input stage and the IE (Internal External) and SWOT (Strength, Weakness, Opportunities, and Strengths) matrices at the matching stage. Our findings indicate that Higher Education Institutions should take four steps to address issues with the application of system quality, information, services, and information security. First, find or hire the best IT candidate. Next, regularly review each system's features. third, make system features simpler. and finally, double-check data before system integration.

Keywords: *Effective Strategy, Academic Information System, Qualitative Method, Quantitative Strategic Planning Matrix*

1. INTRODUCTION

For organizations, one of the most important needs today is an information system (IS) because information systems can help organizations improve the efficiency and effectiveness of their business processes. The same applies to universities, which are institutions engaged in education. The use of information systems greatly determines the current organizational life cycle in the era of science and technology (Subiyakto, 2017).

Poorly managed information systems can carry the risk of having a negative impact on an institution or organization. It is important to evaluate the performance of each system that has been

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implemented to understand the quality of the system's success in achieving the goals that have been originally set (Prasti, 2018). The success rate of an information system can be measured by the satisfaction of end-users. This statement is in line with the explanation (Indriani, 2016) that one indicator of the success of an information system can be seen in the quality of user satisfaction.

In the research conducted by (Setiawan & Yulianto, 2017), integration of business functions is obtained through the Information System/Information Technology Master Plan (IS/ITSP) model. The IS/ITSP model was formed based on the mapping of Critical Success Factors using the IT Balanced Score Card (IT BSC) which combines 3 (three) strategies. The combination of the 3 (three) strategies, namely the Business Information System Strategy, the Information Technology & System Management Strategy, and the Information Technology Strategy obtained through internal and external mapping of the business environment and Information System & Technology environment.

In 2015, the College end-users implemented an academic information system to make it easier for students and employees to obtain information. Academic Information System is one of the student data processing programs at universities that are used to process data and process academic activities that involve all levels of the university, namely student programs, lecturers, administrative management, financial data, and others (Setiawan, 2022). Its activities include the student management process, teaching and learning transactions between lecturers and students, as well as the implementation of academic management processes or day-to-day operations of academic management. The academic information system with the portal concept has become a necessity and demand for the development of technology and information, especially for the provision of information among academics. Its function is to integrate academic information in various academic units (research programs or universities). The diversity and form of information allow the existence of a website portal to integrate information and facilitate public access. From Table 1 below, we get an overview of the effectiveness of the information system used by universities,

Table 1: Information System Users. Source: College (2020)

User	2015		2016		2017		2018		October 2019	
Type	Total	Access	Total	Access	Total	Access	Total	Access	Total	Access
Faculty Full Time	81	71	83	79	90	79	93	83	97	75
Faculty Part Time	192	106	196	120	209	119	247	103	243	120
Staff	82	29	85	38	85	35	92	35	93	31
Student (Bachelor)	831	592	983	687	1124	664	1.2022	632	1.5449	454
Student (Post Graduate)	1.644	728	1.7177	1.0445	2.2333	914	2.2944	857	2.3044	889
Total Users	2.8300	54%	3.0644	64%	3.7411	48%	3.9288	44%	4.2688	37%

Based on Table 1 it can be seen that along with the increase in the number of users in universities, it is not accompanied by an increase in the effectiveness of existing users based on the total number of accesses from year to year. Total users from 2015-2019 are always increasing, but the total number of users who access is decreasing, starting from 2015 which was only 54% or as many as 1,526 users of the total users should be, in 2016 only 64% or 1,969 users, in 2017 started experiencing the most decreased from the previous year, which was 48% or 1,811 of the total users should, in 2018 it decreased to 44% or 1,710, and in 2019 its effectiveness tends to decrease to 37% or 1,569. In the table, it can be interpreted as the lowest compared to previous years. Overall, the effectiveness of using higher education

information systems is only 49% (Setiawan, et al, 2022).

Based on the problems that have been presented above, the formulation of the research problem proposed in this study is how is the effective strategy of implementing academic information systems to improve the quality of systems, information, services, and information security?

To answer the formulation of the problem proposed, the proposition raised in this study is that the College requires an effective strategy in implementing information systems to improve the quality of systems, information, services, and information security. With the answers to these problem formulations by the research propositions raised, it is hoped that they will be able to provide practical contributions in the form of suggestions for input to the management of academic institutions, or other industrial sectors in implementing information systems based on a culture of quality and information security, especially those related to efforts to improve the effectiveness of information systems.

On the other hand, the QSPM (Quantitative Strategic Planning Matrix) has been utilized extensively in studies that concentrate on business strategies to support corporate growth and maintain business performance [18]. Though less frequently used as an evaluation matrix for academic institutions, particularly for an academic information system. Therefore, this study attempts to use QSPM to analyze and draw important discoveries that aid academic institutions in maintaining the quality of their operations.

2. METHODS

The research method used by the author is a qualitative method to suit the purpose of knowing, reviewing, and analyzing the implementation of academic information systems to improve the quality of systems, information, services, and information security, system quality, information, services, and information security produced. by the Academic information system, the obstacles faced in the implementation of the information system to improve the quality of systems, information, services, and information security, and the strategy for the effectiveness of the implementation of the academic information system to improve the quality of systems, information, services, and information security in Higher Education Tall.

This research will use the College of a university as the research subject. The objects of this research include System Quality, Information Quality, Service Quality, and Information Security. In the sampling technique, a total of 4,286 SPACE users will be made into the population. While the sample in this study will be divided into 2, including Internal Informants (AACSB Team, QA Director, Head of Study Program, IT Manager, Lecturer, Study Program Secretary, HCD Manager, and Users) and Expert Experts as External Informants (WDA, Policy Makers, Information Security Practitioners, and Academics). The sampling technique that will be used is purposive sampling. According to (Sugiono, 2011), purposive sampling is a sampling technique of data sources with certain objectives and considerations. The reason for using the purposive sampling technique is that not all samples have criteria that match the phenomenon under study. Therefore, the authors chose the Purposive Sampling technique which stipulates certain considerations or criteria that must be met by the samples used in this study.

The stages of research in this study are as shown in Figure 1 below,

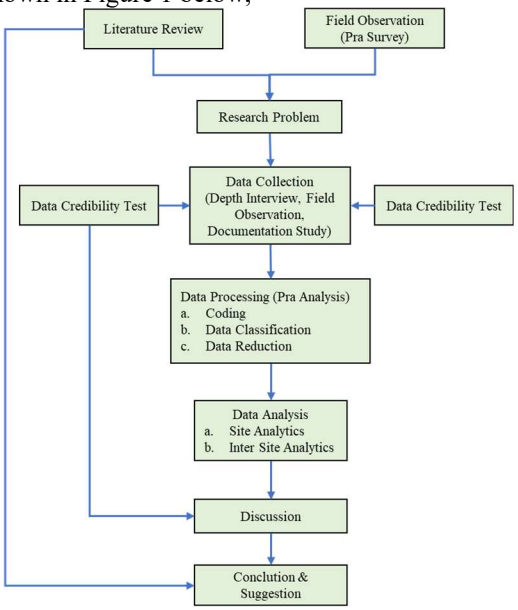

Figure 1: Research Methodology

The type of research used is descriptive research. Researchers look for facts about how the effectiveness of information systems based on quality culture and security awareness. Information

systems in universities with the right interpretation, and will study problems that occur in the field, including activities, views, attitudes, and processes that take place in information systems based on the culture of quality and security awareness of information systems carried out by universities as shown in Figure 2 below.

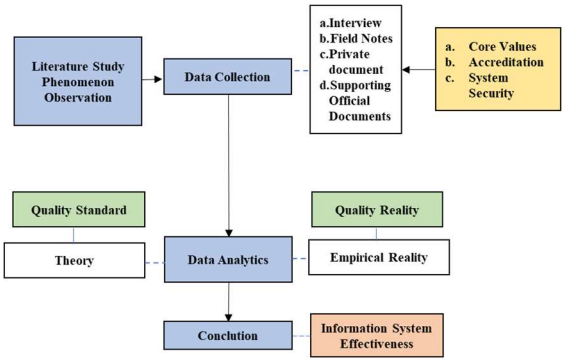

Figure 2: Research Stages.

The collection of types and sources of research data is carried out in the following way:

Documentation Study. Collection by collecting and analyzing written, graphic, and electronic documents in the form of files on a computer, letters, diaries, photos, recorded images, speeches, special notes, scripts, and other notes.

Focus Group Discussion. A discussion attended by several related parties so that discussions, brainstorming, defining the problems that occur, and solutions that will be taken are expected so that it is hoped that there will be an increase in performance that will make information systems effective to improve the quality of the information in higher education.

Interview. A conversation between two or more people takes place between the interviewer and the interviewee to get information and the interviewer provides questions for the interviewee to answer.

In this study, the data analysis technique used was qualitative data analysis following the concepts in the research (Huberman & Miles, M.B, 2002). Qualitative data analysis is carried out interactively and takes place continuously at each stage of the research so that it is complete, and the data is saturated with the stages of data reduction, data display, and conclusion.

The QSPM (Quantitative Strategic Planning Matrix) is an analytical tool used in the decision stage. QSPM uses input from the IFE and EFE matrices at the input stage, and the IE and SWOT matrices at the matching stage to decide which strategy is the best. The resulting strategy is expected to be a consideration for the company's management in determining strategic policies for business development. After successfully developing several alternative strategies, the company must be able to evaluate and then choose the best strategy that is most suitable for the company's internal and external conditions by using QSPM. The three basic strategy assessment activities are reviewing the external and internal factors that form the basis for this strategy, measuring performance, and taking corrective action. (David, 2011).

3. Results

This section describes the analysis of the results of research conducted in universities. This research was conducted from September 2019 to April 2021.

The information system used within the scope of Higher Education is the Academic Information System. An Academic Information System is a smart container that is used for all roles in Higher Education within the academic scope. The Academic Information System has many functions and features, as shown in Figure 3 below.

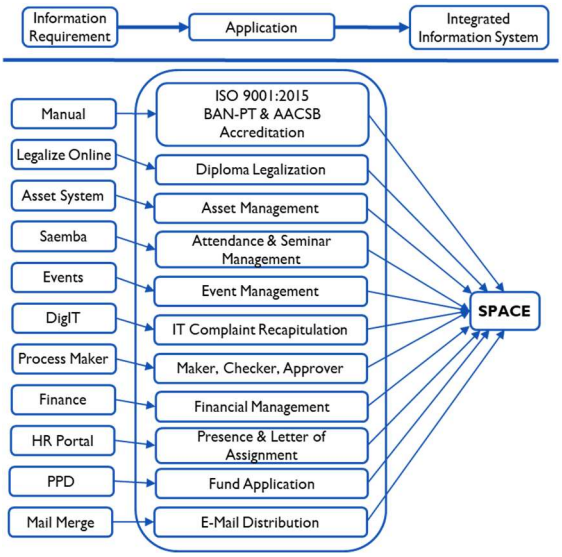

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Figure 3: College Academic Information System (SIA).

Most of the matters related to the academic and student affairs processes have been included in the academic information system, while some applications have not been integrated with the Academic Information System, namely Legalize Online, Asset Management, management of activities outside of lectures, recapitulation of IT needs, Process Maker, Financial management, funding requests, and email distribution. For these processes, the stages of the integration process (API – Application Programming Interface) are required.

As an effort to minimize risk and to measure the performance of information systems in universities. The university uses an approach that refers to ISO 27000. International standards for management systems provide a model to follow in setting up and operating a management system. This model combines the features with which experts in the field have reached a consensus as international art. ISO/IEC JTC 1/SC 27 has a committee of experts dedicated to the development of international management system standards for information security, otherwise known as the Information Security Management System (ISMS) standards.

The effectiveness strategy that must be focused on the Higher Education information system called Academic Information System is measured by system quality, information quality, service quality, information security, and quality culture. The quality of the system applies several interests to improve the quality of the system with the convenience, flexibility, integrity, and response time of the system because this provides quality in the system to be better for use by all users.

Information quality also applies several things to complete the quality of the information in the system, namely accurate, relevant, timely, and complete. This provides good quality information to all users. The quality of services provided to users must also be considered supported by product quality, relationship quality, delivery quality, and design quality that can satisfy users because they are following the wishes and needs of users on the system. Information security is a very important factor for every system because it relates to data that must be kept confidential. This strategy can be effective if its confidentiality, integrity, and availability can be well maintained and stored in a cloud that has been proven to be secure (Setiawan & Yulianto, 2020).

There are 3 stages in determining alternative strategies, including the following:

IFE (Internal Factor Evaluation) Matrix and EFE (External Factor Evaluation) Matrix. The input stage is made into the IFE and EFE matrices in the company, then the weights and ratings are obtained from the results of focus group discussions with informants in the company where the research was conducted. The following Table 2 is the calculation result for the IFE matrix based on strengths and weaknesses:

Table 2: IFE Matrix.

IFE				
Strength		**Weight**	**Rank**	**Weight x Rank**
1	Ease of information system to operate	0,30	4	1,2
2	The available tools are adequate for operational needs	0,20	3	0,6
Weakness				
1	Slow data processing	0,17	2	0,34
2	Errors occur frequently	0,17	1	0,17
3	Inaccurate data	0,16	1	0,16
TOTAL		**1,00**		**2,27**

The weights show the relative importance of the variables to the company's success, while the ratings are an indicator of the effectiveness of the company's current strategy. Based on Table 3. above, it is known that the internal condition is 2.27 which is average or moderate based on the assessment of the strength of the Higher Education information system, namely the ease of information systems to operate with a weight of 0.30 (30%) and the greatest weakness the weight is a slow data processing and frequent errors have the same weight value of 0.17 (17%).

If in the ranking we can see that the ease of operation of the information system has the highest rating of 4 in strength, which means that the most important information system is easy to operate. In its weakness, the one with the highest rating is slow data processing, which is 2, this shows that there are frequent delays in using the system.

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The following Table 3 is the calculation result for the EFE matrix based on opportunity and threat:

Table 3: EFE Matrix.

EFE				
Opportunity		**Weight**	**Rank**	**Weight x Rank**
1	Cooperation with outside IT parties so that the information system can be more reliable.	0,35	4	1,4
2	The existence of an IT assistance program that can assist the implementation of the information system.	0,25	3	0,75
Threat				
1	Competition for academic information system services so that the information system must always be up to date.	0,20	2	0,4
2	Force majeure can cause a network break so that the implementation of the information system cannot be carried out.	0,20	1	0,20
TOTAL		**1,00**		**2,15**

In Table 3 above, it is known that the external condition is 2.15, namely in the average or moderate based on the assessment of the opportunity for higher education information systems, namely collaboration with outside IT parties so that the information system can be more reliable with a weight of 0.35 (35%) and threats that have the same weight are competition for academic information system services so that information systems must always be updated and force majeure which can cause net-work breaks so that information system implementation cannot be carried out has the same weighted figure of 0.20 (20%).

If in the ranking we can see that cooperation with external IT parties so that information systems can be more reliable has the highest rating, namely 4 in opportunity, which means that it must have external IT team collaboration to accelerate its implementation. The threat that has the highest rating is competition for academic information system services so the information system must always be updated.

IE Matrix (Internal External). The IE matrix is an illustration that shows the results of calculating scores from the IFE and EFE matrices. In this calculation, the IFE matrix score is 2.27 and the EFE matrix score is 2.15. The results are placed in the IE matrix cells as shown in Figure 4 below.

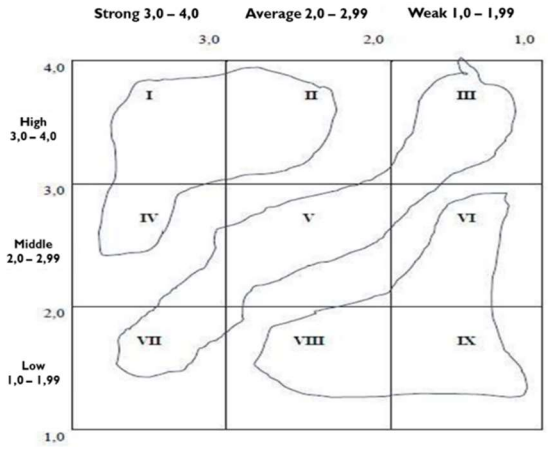

Figure 4:IE Matrix.

The IE matrix image shows that the position of the Higher Education Academic Information System is in cell V, namely the position of maintaining and maintaining. Maintain and maintain the strengths of the Higher Education Academic Information System, namely the ease of use of the information system and the adequate tools available for operational needs. A suitable strategy for higher education information systems is to recruit a new IT team so that its implementation and services can be fully met by the wishes and needs of users.

QSPM Matrix (Quantitative Strategic Planning Matrix) In working on the QSPM matrix, it is preceded by a SWOT analysis as Table 4 aims to determine what strategy is the effective strategy for the Higher Education Academic Information System.

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Table 4: SWOT Analysis.

SWOT		Analysis
Strength ✓ Ease of information system to operate. ✓ The available tools are adequate for operational needs.	Opportunity ✓ Cooperation with outside IT parties so that the information system can be more reliable. ✓ The existence of an IT assistance program that can assist the implementation of the information system.	SO Analysis: Consider recruiting human resources in the IT field to implement the system according to the user's wishes, easy to operate, and has features that can save time.
Weakness ✓ Slow data processing. ✓ Errors occur frequently. ✓ Inaccurate data.	Threat ✓ Competition for academic information system services so that the information system must always be up to date. ✓ Force majeure which can cause the implementation of the information system cannot be carried out.	WT Analysis: Obstacles or constraints felt by users are caused by system competition which results in delays in receiving information which makes it inaccurate and ineffective. Therefore, updates must be made every time there is a change and every change must be accompanied by QA.
Weakness ✓ Ease of information system to operate. ✓ The available tools are adequate for operational needs.	Opportunity ✓ Cooperation with outside IT parties so that the information system can be more reliable. ✓ The existence of an IT assistance program can assist the implementation of the information system.	WO Analysis: By recruiting external IT human resources, it can help any problems that occur in the current system.

From the SWOT analysis table, it can be explained that there are several strategies to overcome problems and stabilize the system, which are:

- ✓ Recruiting human resources in the IT field. Recruitment in the IT field is carried out carefully according to needs and with experts.
- ✓ Simplify every system feature. Simplification of features will make the entire system used not confuse the user and according to the needs of the user.
- ✓ Re-check every system feature through QA. A QA (Quality Assurance) system is needed to check the entire set of processes and features that are already in or newly released to avoid difficulties in their use.
- ✓ Re-check the data before integration into the system. Re-check is done before integrating into the system to avoid errors and difficulties in its use.

In the final stage of this strategic analysis, namely the QSPM (Quantitative Strategic Planning Matrix) analysis, the right strategy will be determined, and can implement the strategy through the best strategy priorities. The attractiveness score (AS) is determined, by whether the main SWOT factor will affect the alternative strategy, and the attractiveness of the alternative strategy is in the range of 1-4. The higher the attractiveness score, the more attractive the alternative strategy. The following is Table 5 QSPM analysis of the propositions of 4 studies.

Table 5: QSPM Analysis

SWOT	Weight	Recruiting human resources in	Simplifying each system	Re-checking each system	Re-checking data before integr

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		the IT field		feature		feature through QA		ation into the system	
		AS	TAS	AS	TAS	AS	TAS	AS	TAS
Strength									
Ease of information system to operate	0,30	2	0,6	4	1,2	3	0,9	1	0,3
The available tools are adequate for operational needs	0,20	2	0,4	4	0,8	3	0,6	1	0,2
Weakness									
Slow data processing	0,17	4	0,68	1	0,17	3	0,51	2	0,34
Errors occur frequently	0,17	3	0,51	1	0,17	4	0,68	2	0,34
Inaccurate data	0,16	3	0,48	1	0,16	2	0,32	4	0,64
Total Internal Weight	**1,00**								
Opportunity									
Cooperation with outside IT parties so that the information system can be more reliable.	0,35	4	1,4	1	0,35	3	1,05	2	0,7
The existence of an IT assistance program that can assist the implementation of the information system.	0,25	4	1	2	0,5	3	0,75	1	0,25
Threat									
Competition for academic information system services so that the information system must always be up to date	0,20	1	0,20	2	0,4	3	0,6	4	0,8
Force majeure can cause a network break so that the implementation of the information system cannot be carried out	0,20	4	0,8	2	0,4	3	0,6	1	0,20

Total of External Weight	**1,00**								
Total TAS			**6,07**		**4,15**		**6,01**		**3,77**

From the results of the calculation of the QSPM matrix, we can see the alternative strategy results that are most suitable for the Academic Information System based on the priority scale. The results of the QSPM matrix can be seen in Table 6 below:

Table 6: QSPM Result.

No	Alternative Strategy	TAS	Rank
1	Recruiting human resources in the IT field.	6,07	I
2	Simplifying each system feature	4,15	III
3	Re-checking each system feature through QA	6,01	II
4	Re-checking data before integration into the system	3,77	IV

Based on Table 6 above, recruiting human resources in the IT field is ranked I in the attractiveness score as an effective strategy, because with the increase in human resources, the faster the work on the system and its services can be fulfilled. Rank II is re-checking every system feature through QA. This is also important to minimize errors or bugs that occur after the system is built. Rank III, which simplifies every feature of the system, allows users to use the system simply. The last rank is rank IV, namely re-checking the data before integration into the system, this also needs to be implemented because it minimizes information errors in the system.

4. DISCUSSION

The discussion on determining the strategy for the effectiveness of the Higher Education Academic Information System was analyzed using a SWOT analysis of the company where the research was conducted. As explained in the background of the research, especially regarding the analysis of strengths, weaknesses, opportunities, and threats in the following universities:

- ✓ Strength. The information system is easy to operate. The available tools are adequate for operational needs.
- ✓ Weakness. Slow data processing, frequent errors, and inaccurate data.
- ✓ Opportunity. Cooperation with external IT parties so that information systems can b more reliable and minimize any obstacles or errors. There is an IT assistance program that can assist in the implementation of the information system.
- ✓ Threat. Competition for academic information system services so that information systems must always be updated. Force majeure can cause a network break so that the implementation of the information system cannot be carried out.

Program proposals that can be implemented to provide solutions to this proposition include:

- ✓ Academic Information System Hiring: Recruitment of HR in the IT sector. As previously explained, the first rank in the selection of alternative strategies in recruiting human resources in the IT field. In its implementation, universities can create recruitment programs in collaboration with related parties to bring in suitable human resource candidates. However, not only recruiting new human resources but also existing human resources need to be developed.
- ✓ Academic Information System Quality Assurance: Re-check each system feature through Quality Assurance, namely the implementation of Penetration Testing (PenTest) to test the quality level of the information generated by the Higher Education Academic Information System. Based on the results of the Pentest Application Vulnerability Scanner found several vulnerabilities with various levels as shown in Table 7 below.

Table 7: College Academic Information System Vulnerabilities List.

Risk Level	Number of Alerts
High	1
Medium	4
Low	10
Informational	4

From table 7 above, it can be concluded that the site has been secured quite well, but there are still 5 vulnerabilities that need attention, namely 1 (one) vulnerability at the High level and 4 at the Medium

level. The explanation of these vulnerabilities is as follows:

- ✓ Remote OS Command Injection (High), An attack technique used for the execution of unauthorized operating system commands. This attack may occur when an application receives untrusted input to execute operating system commands in an insecure manner involving malicious data sanitization, and/or malicious external program calls.
- ✓ X-Frame-Options Header Not Set (Medium), X-Frame-Options header not included in the HTTP response to protect against 'ClickJacking' attack.
- ✓ Application Error Disclosure (Medium), this page contains error/warning messages that can reveal sensitive information such as the location of the file that generated the unhandled exception. This information can be used to launch further attacks against web applications. The warning can be false-positive if an error message is found on the documentation page.
- ✓ Directory Browsing (Medium), the user can see a list of directory contents. The directory's table of contents can reveal hidden scripts, including files, backup sources, etc. that can be accessed to read sensitive information.

- ✓ Academic Information System Redesign: Simplifying every system feature, apart from enhancing SPACE, redesigning the menu display and application interface so that it looks more user-friendly and easy to use.
- ✓ Academic Information System Integration: Re-checking the data before integration into the system, the data checking mechanism is carried out with the CIA concept (Confidentiality, Integrity, and Availability) so that the results of the integration carried out will have adequate and reliable information quality.

Based on the results of the discussion of the results of the research on the proposition above, several strategies have been set to overcome problems in the application of system quality, information, services, and information security from the Higher Education academic information system, that are:

- ✓ Recruiting human resources in the IT field. Recruitment in the IT field is carried out carefully according to needs and with experts.
- ✓ Simplify every system feature. Simplification of features will make the entire system used not confuse the user and according to the needs of the user.
- ✓ Re-check every system feature through QA. A QA (Quality Assurance) system is needed to check the entire set of processes and features that are already in or newly released to avoid difficulties in their use.
- ✓ Re-check the data before integration into the system. Re-check is done before integrating into the system to avoid errors and difficulties in its use.

Of the four strategies, a ranking of strategies that will be prioritized to be implemented based on the results of the QSPM Matrix is compiled, that is:

- ✓ Priority Scale 1: Recruiting human resources in the IT field with a TAS score of 6.07
- ✓ Priority Scale 2: Re-check every system feature through QA with a TAS value of 6.01
- ✓ Priority Scale 3: Simplify each system feature with a TAS value of 4.15
- ✓ Priority Scale 4: Re-check the data before integration into the system with a TAS value of 3.77.

5. CONCLUSION

It is essential that higher education institutions frequently conduct an evaluation of academic information systems. We were able to generate conclusions for an institution to maintain and increase the efficacy and efficiency of its academic information system by using SWOT analysis and QSPM. QA testing is performed on each and every system, both old and new, to help prevent problems and errors. Simplify all functions that permit users to use the system's whole feature set. In order for the data generated and implemented to be legitimate and dependable, it is first necessary to assess the re-check in data input. This reduces delays in putting new systems into place or updating current systems and has a positive effect on users, specifically staff, lecturers, and students. The authors plan to continue evaluating academic information systems in the future using various strategies, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), which uses SmartPLS to process data using structural equation modeling (SEM) methods. UTAUT is vital in the assessment because user acceptance plays a key role in determining how successfully academic system information is applied.

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Table 1: Information System Users. Source: College (2020)

User Type	2015		2016		2017		2018		October 2019	
	Total	Access	Total	Access	Total	Access	Total	Access	Total	Access
Faculty Full Time	81	71	83	79	90	79	93	83	97	75
Faculty Part Time	192	106	196	120	209	119	247	103	243	120
Staff	82	29	85	38	85	35	92	35	93	31
Student (Bachelor)	831	592	983	687	1124	664	1.202	632	1.549	454
Student (Post Graduate)	1.644	728	1.717	1.045	2.233	914	2.294	857	2.304	889
Total Users	2.830	54%	3.064	64%	3.741	48%	3.928	44%	4.268	37%

Table 5: QSPM Analysis

SWOT	Weight	Recruiting human resources in the IT field		Simplifying each system feature		Re-checking each system feature through QA		Re-checking data before integration into the system	
		AS	TAS	AS	TAS	AS	TAS	AS	TAS
Strength									
Ease of information system to operate	0,30	2	0,6	4	1,2	3	0,9	1	0,3
The available tools are adequate for operational needs	0,20	2	0,4	4	0,8	3	0,6	1	0,2
Weakness									
Slow data processing	0,17	4	0,68	1	0,17	3	0,51	2	0,34
Errors occur frequently	0,17	3	0,51	1	0,17	4	0,68	2	0,34
Inaccurate data	0,16	3	0,48	1	0,16	2	0,32	4	0,64
Total of Internal Weight	**1,00**								
Opportunity									
Cooperation with outside IT parties so that the information system can be more reliable.	0,35	4	1,4	1	0,35	3	1,05	2	0,7
The existence of an IT assistance program that can assist the implementation of the information system.	0,25	4	1	2	0,5	3	0,75	1	0,25
Threat									
Competition for academic information system services so that the information system must always be up to date	0,20	1	0,20	2	0,4	3	0,6	4	0,8
Force majeure which can cause a network break so that the implementation of the information system cannot be carried out	0,20	4	0,8	2	0,4	3	0,6	1	0,20
Total of External Weight	**1,00**								
Total TAS			**6,07**		**4,15**		**6,01**		**3,77**