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Application of Technology Acceptance Model and Delone and McLean IS Success Model to Measure Information System Design for Academic Activities in Higher Education Institution

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Abstract

The purpose of this study is to investigate the variables that may affect how well the academic information system performs. Quantitative approaches are employed in this study. The basic random sampling technique was used in this study to get samples from the community of academic information system users. There were 100 samples used in this investigation. The Technology Acceptance Model (TAM) and the Delone & Mclean model are used in this study. In this study, questionnaires were distributed as part of the data collection process. The SmartPLS was used in this study's inferential statistical analysis. According to the analysis results, introducing elements that have the biggest impact namely, perceived ease of use and service quality should be prioritized in order to improve helpdesk services in academic information systems. This involves establishing a report ticket function to resolve user complaints and offer updates on problem resolution, as well as optimizing academic information system for mobile displays to promote simple access to various academic information system -related demands. Perceived ease of use on perceived usefulness (path coefficient value: 0.79); service quality on perceived ease of use (path coefficient value: 0.79); user satisfaction on net benefits (path coefficient value: 0.74); and system quality on net benefits (path coefficient value: 0.03), are the variables that have the biggest influence in this research.

Keywords: Success Of Information Systems, Academic Information Systems, Delone and Mclean, TAM.

1. Introduction

Information technology (IT) is currently very important in today's developments; this is proven by the use of computers as a means of supporting human activities in various fields, including in the higher education sector [1]. In an effort to implement information technology, educational institutions in Indonesia must build a higher education information system (SI) to support every activity of students, lecturers, employees, and others [2]. Information technology (IT)-supported systems can provide value to enterprises, but in order for an organization to reap the benefits of information technology (IS), it must first successfully adopt it. It is crucial for a university to assess the effectiveness of an information system's implementation in terms of how well it functions, how user-friendly it is, and how well the technology is utilized [3]. The ability of an information system to process input and generate high-quality information, user satisfaction, and the system's capacity to meet organizational objectives are just a few of the many intricate elements that affect an information system's effective implementation [4][5]. In the meanwhile, an information system's incompatibility with the data and business procedures that the organization needs to conduct typically results in its failure to be implemented. Failures during the implementation of an information system can happen in two ways [6]. First, there is the technical aspect, or more specifically, the technical quality of the information system, which is the part that deals with the system itself [7]. Many syntax problems, logical errors, and even information faults are indicative of poor technical quality [8]. The second is a non-technical factor that has to do with how information system users perceive the system and whether or not they desire to utilize the established information system [9].

A number of models are available for assessing how well an organization or government agency has implemented information systems [10]. One such model is the Task Technology Fit (TTF), which was created to balance the requirements of tasks and individual capabilities with the capabilities of technology [11]. The D&M IS Success Model is the following model [12]. This approach gauges an information system's effectiveness by looking at user happiness, personal impact, and organizational impact [13]. The next model is the Technology adoption Model (TAM), which is based on the characteristics of perceived usefulness and ease of use to predict

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consumer adoption of technology (acceptance of IT) [14][15]. The Human-Organization-Technology (HOT) Fit Model is the following [16]. According to this model, interactions that are appropriate between people, organizations, and technology all have a significant role in determining whether or not an information system is implemented successfully [17]. It is a known fact that there is always a chance that an information system implementation may go wrong [18]. For this reason, it's critical to gauge and assess its execution [19].

The TAM model, which is seen as having significant influence, describes how individuals embrace information technology solutions [20]. The Theory of Reasoned Action (TRA) model, which is the foundation of the TAM model, is founded on the idea that an individual's attitudes and conduct are determined by how they react to and perceive certain situations [21][22]. Users' acceptance of the information technology system is explained by this concept [23]. Two criteria, namely perceived usefulness and perceived ease of use, impact user adoption of information systems in the Technology adoption Model (TAM). The most popular model for forecasting acceptance of information technology up to this point has been TAM [24]. The goal of TAM is to quantify and explain how well a technology or information system is accepted by users. However, TAM also clarifies the causal relationship between users' goals, behavior, and actual use of an information system and their ideas about its advantages and ease of use [25]. The university in Indonesia is devoted to constructing a dependable and online campus management information system, as well as creating a computerized campus management system to help the academic community [26]. One of them involves developing an academic information system as a component of the higher education information system, which is the company's duty for development and management [27]. In 2005, the corporation established a consulting and development firm for information technology [28]. Creating a Financial and HR Management Information System (SIM) in partnership with academic institutions will facilitate the oversight of financial reports and enhance the governance of employee performance [29].

An academic information system is used in this research [30]. The university introduces and implements academic information system, a web-based system, to help organize academic activities for the academic community (users). Users can use academic information system to carry out learning activities in the semester that will take place in accordance with the applicable numbers and conditions [31]. We hope that all users actively participate in the usage process of academic information system. Based on researchers' observations, this system includes lecture flow, such as filling out the Study Plan Card, taking the Study Result Card, lecture scheduling, validation of academic advisors, scholarship information, tuition payment information, and graduation registration [32]. The results of the interview found that, until now, academic information system had never evaluated the success factors of its information system from the user's perspective [33]. So until now, there has been no report that can describe whether academic information system has been successfully implemented at the university and meets the needs of its users [34]. Apart from that, if there are additional features to academic information system before it is submitted to SEVIMA, the university first needs to know based on the user's needs. Based on these problems, it can result in obstacles to realizing the vision and mission of the university, which is committed to building a campus management information system that is reliable and goes online [35] [36] [37].

2. Research Methods

This research uses quantitative methods. This research took a population of academic information system users, and researchers collected samples using the simple random sampling technique. Where the researcher determines the sample with certain considerations. There were 100 samples used in this investigation. The Technology Acceptance Model (TAM) and the Delone & Mclean model are used in this study. In order to collect data for this study, researchers sent respondents questionnaires both directly and indirectly. To find the proper participants, researchers used direct distribution, going door-to-door and meeting in person with possible respondents. Researchers used the Google Forms function to help respondents fill it out and shared the link on social media. This study used the SmartPLS to do inferential statistical analysis, which entailed examining the data in order to make significant findings. The interpretation of the results comes next after the aforementioned step is finished. The researcher interprets the model analysis results quantitatively by comparing and taking into account a number of prior related pieces of literature in addition to discussing the results of the demographic analysis of respondents under the present field settings.

3. Results and Discussion

The structural analysis of the model indicated a path coefficient value of 0.3 between the two variables, SQ and PUF, along with a t test result of 3.9. This demonstrates that there is a statistically acceptable and substantial link between SQ and PUF. As a result, this study finds that, in the current situation, SQ has a considerable impact on PUF. Previous study indicates that variables such as reliability, data accuracy, fast reaction time, ease of use, and connectivity across sections of an information system are essential factors that foster user trust in the system, which is consistent with our finding. According to earlier studies, information systems that satisfy these

requirements are typically thought of as being very beneficial and light on their users' burdens. Researchers' direct observations, in which users of academic information systems report reliability, data accuracy, quick reaction times, ease of use, and connectedness across various sections of the system, corroborate these findings. This demonstrates that these elements are not just theoretical ideas but that system users are also able to actually identify and recognize them. As a result, the study's findings consistently and pertinently advance our knowledge of how SQ and PUF relate to one another in the context of information systems. It follows that raising the standard of service in an information system may help users see it as more beneficial, which will help acceptance and confidence in the system.

The structural analysis of the model revealed a path coefficient value of 0.2 between the two variables, SQ and EOU, along with a t test result of 2.5. These results indicate that there is a significant relationship between SQ and EOU, and this relationship is statistically acceptable. Therefore, we can conclude that SQ significantly influences EOU in the context of this research. This result is consistent with other studies' findings, which demonstrate that the primary determinants of user trust in an information system are dependability, data correctness, quick response times, usability, and connectivity between system components. These results are strengthened by the agreement between the study's results and those of other studies, demonstrating that a system's perceived ease of use can be positively impacted by high-quality services. Direct observations by researchers also strengthen these findings, with academic information system users revealing that they experience reliability, data accuracy, fast response time, ease of use, and connectivity between parts within academic information system. This provides confirmation that these elements are not just theoretical concepts but also real experiences felt by system users. Thus, this research not only confirms the relationship between SQ and EOU but also provides a more specific context within the scope of academic information system. The implication is that improving the quality of service at academic information system can increase the perception of ease of use, which in turn can increase user satisfaction and acceptance of the system.

The path coefficient value between SQ and NB is 0.03, with a t-test of 0.33, as observed from the structural model results. These results suggest that, in the context of this investigation, SQ does not significantly affect NB and that the link between SQ and NB is not statistically acceptable. These findings are consistent with earlier research, which indicates that while critical factors such as data accuracy, speed, ease of use, dependability, and connectivity between various parts of an information system can be identified, they do not always result in benefits that users can experience in the absence of other barriers. This shows that certain aspects of the user experience can become obstacles to realizing the expected benefits of service quality. Direct observation by researchers also adds understanding to these results, with academic information system users expressing access difficulties, especially during the KRS and grades filling season. During these periods, the high traffic on academic information system caused users to experience a lack of efficiency in using the system, resulting in suboptimal time-saving and effectiveness in work. Thus, the results of this study provide additional insight that although SQ is considered important, there are still other factors that need to be considered to increase NB in academic information system. To ensure the expected benefits can be realized effectively, improving service quality may need to be accompanied by addressing practical constraints, such as managing traffic during busy periods.

The structural model results show a t-test of 0.33 and a route coefficient value of 0.03 between IQ and PUF. According to these findings, there is no statistically significant association between IQ and PUF, and in the particular context of this study, IQ has no effect on PUF. This discovery is consistent with earlier research's findings, which indicated that speedy task completion is not always correlated with a system's information quality level. By implication, these results indicate that although IQ in academic information system is considered important, it does not significantly influence user perceptions of system usability. Direct observation by researchers adds a new dimension to the understanding of these results. According to observations, researchers have found that academic information system users do not perceive the usefulness of the system based on the quality of the information it produces. This may be due to other factors such as user interface, navigation, or ease of use playing a greater role in shaping perceptions of usability. Thus, this research provides insight that although IQ is considered an important factor, other factors also need to be considered in an effort to increase users' perceived usefulness of information systems. The implication is that information system development should not only focus on improving the quality of information but also on other aspects that can influence the overall user experience.

The structural model's findings show a t-test of 0.33 and a route coefficient value of 0.03 between IQ and EOU. These findings suggest that, in the particular setting of this study, IQ has no discernible impact on ease of use and that the association between IQ and EOU is not statistically significant. According to earlier studies, an information system's usability is more affected by its architecture and internal workings than by the information that it contains. The result is that while intelligence quotient (IQ) is a significant component of information systems, perceived ease of use is largely determined by other factors, such as system operations and user interface design. These conclusions are given a practical perspective by the researchers' direct observation. Based

on observations, academic information systems are perceived as being easy to use not only by users due to the high quality of the information they contain, but also because of their intuitive layout and easily accessible capabilities. This demonstrates how an information system's ability to be user-friendly depends not just on the information's quality but also on the functionality and design elements that enhance the user experience. Thus, these findings demonstrate the need to focus on aspects of information system design and operation beyond simply improving information quality to increase perceived ease of use. The implication is that improvements in design and operations may have a greater impact on the user experience than improving information quality alone.

A t-test of 2.7 and a route coefficient value of 0.2 between IQ and NB are shown by the structural analysis of the model. These results show that, in the context of this investigation, IQ significantly affects net benefits and that the relationship between IQ and NB is statistically valid. These findings are consistent with earlier studies that produced comparable findings. When an information system generates high-quality information, users will feel the benefits, which will boost productivity. The literature and the researchers' own first-hand observations both provide support for the study's findings. Observations show that because the academic information system generates material that meets their demands, users really profit from it. This demonstrates how high-quality content on academic information systems affects user perceptions in addition to having a demonstrable positive effect on performance or overall advantages experienced by users. As a result, these findings significantly advance our knowledge of how IQ and NB relate to one another in the context of academic information systems. It may be inferred that enhancing the quality of content on academic information systems is a viable approach to augmenting the overall advantages experienced by users. In addition, these results provide a basis for further development in improving information quality and net benefits in similar information systems.

A t-test of 24.3 and a route coefficient value of 0.8 between SEQ and EOU are shown by the structural analysis of the model. These results show that, in the context of this investigation, SEQ significantly affects ease of use and that the link between SEQ and EOU is statistically acceptable. These findings are consistent with other research demonstrating that system quality affects usability. The impact of website quality on the degree of usability lends credence to the research conclusions. Researchers' direct observations are supported by feedback from users of the academic information system, who report that it is simple for them to use the system to suit their needs due to its high quality. This illustrates how features of a high-quality system, including an easy-to-use interface and robust functionality, favorably impact usability. As a result, our findings significantly advance our knowledge of how SEQ and EOU relate to one another in the context of academic information systems. It follows that preserving and enhancing system quality in academic information systems might be a useful tactic to boost usability, which can raise user satisfaction and system adoption.

The path coefficient value between EOU and PUF is 0.8, with a t-test of 24.6, according to the structural model results. These results demonstrate that, in the particular setting of this investigation, EOU significantly affects perceived utility and that the association between EOU and PUF is statistically significant. These findings are consistent with earlier research, which indicates that users' perceptions of an information system's utility or usefulness can be influenced by its ease of use, which includes features like learning curve, accessibility, comprehension, and adaptability. By implication, these results confirm that ease-of-use elements in a system can shape users' perceptions of the system's usability. Researchers directly observe that academic information system users easily use the system and are aware of its various uses. These findings demonstrate that users not only accept the ease of use of the system theoretically but also perceive and experience it directly. Thus, these findings provide a deeper understanding of the positive relationship between EOU and PUF in the academic information system context. The implication is that information system developers and managers can focus more on improving aspects of ease of use to support users' positive perceptions of system usability.

A t-test of 3.7 and a path coefficient value of 0.3 between SEQ and USA are revealed by the structural model results. According to these results, there is a statistically significant correlation between SEQ and USA, and in the context of this study, SEQ significantly affects user satisfaction. Previous study has demonstrated that user satisfaction with information systems can be achieved through speedy service, good knowledge, caring attitudes, answers to difficulties, and suitable equipment. These findings implicitly validate the idea that SEQ directly affects the USA. Researchers' own findings, which show that academic information system users received excellent assistance when reporting issues to IT officers, provide further credence to this conclusion. This demonstrates that satisfied users of the system might have more positive interactions with IT and the solutions offered. In the context of the academic information system, these data thus offer greater insight into the favorable link between SEQ and the USA. It follows that by focusing on and raising the standard of services offered to users, academic information system managers can boost user happiness.

The path coefficient value between EOU and the USA is 0.3, with a t-test of 4.5, according to the structural model results. These results show that, in the context of this study, EOU significantly affects user happiness and that the link between EOU and the USA is statistically acceptable. These findings are consistent with earlier studies that found that user happiness is influenced by how simple it is to utilize information systems, including

how simple it is to learn, access, comprehend, and use them in a flexible way. By implication, these findings provide confirmation that aspects of EOU can shape user perceptions of user satisfaction. Direct observation by researchers adds validity to these findings, with users feeling satisfaction in using the system due to the ease they experience. These findings confirm that users not only accept ease of use theoretically but also apply and experience it practically. Thus, these findings provide further understanding of the positive relationship between EOU and the USA in the context of academic information system. Those who manage academic information system can increase user satisfaction by ensuring that the system is designed to provide an easy and efficient user experience.

The path coefficient value between PUF and USA is 0.5, with a t-test of 8.7, as indicated by the structural model results. These results verify that, under the parameters of this investigation, PUF significantly affects user happiness and that the link between PUF and the USA is statistically acceptable. These results are consistent with earlier studies that found usability benefits, such as the capacity to work more quickly, increase productivity, and facilitate work, might be a strong indicator of users' happiness with information systems. By implication, these findings support the concept that PUFs influence the USA. Direct observations by researchers provide additional evidence that academic information system users experience various benefits and uses of the system for various purposes, such as Study Plan Cards, taking Study Results Cards, lecture scheduling, validation of academic advisor lecturers, scholarship information, tuition payment information, and graduation registration. This reflects that user satisfaction is not only seen from a conceptual point of view but is also perceived and experienced by users in their daily lives. Thus, these findings provide strong confirmation of the positive influence between PUF and the USA in the academic information system context. The implication is that those who manage academic information system can focus more of their efforts on improving and maintaining features that can provide greater benefits and usability to users, thereby increasing overall user satisfaction.

The path coefficient value between USA and NB is 0.75, with a t-test of 22.5, according to the structural model results. These results demonstrate that, in the context of this investigation, the USA significantly influences net benefits and that the link between the USA and NB is statistically acceptable. These findings are in line with earlier studies that showed how user happiness can have a variety of positive effects, including decreased data mistake rates, improved performance, and time savings at work. It follows that the idea that the USA directly affects NB is strengthened by these results. Researchers' firsthand observations offer more proof that users see the advantages of academic information systems in supporting their academic endeavors. This demonstrates that user pleasure is experienced and perceived by users in their day-to-day practical experiences in addition to being observed from a theoretical perspective. Thus, in the context of the academic information system, our findings offer a clearer understanding of the beneficial interaction between the USA and NB. It follows that administrator of academic information systems should keep concentrating on raising user satisfaction by adding features that are more beneficial and useful to users, hence increasing the net advantages that they experience.

4. Conclusion

We can infer the following conclusions from the data analysis results: it is critical to take into account the recommendations based on the measurement outcomes from this study in order to assess the dependability and online functionality of academic information systems. Prioritize developing recommendations on the factors that have a large impact on perceived ease of use and service quality when improving Helpdesk services through a report ticket feature. This is especially important when academic information system users face issues and need to monitor the status of their resolution. Furthermore, optimizing it for mobile displays would enable users to conveniently access various features and functionalities on their cellphones. The suggestions for academic information system managers and researchers who will conduct further research, especially research on similar topics based on the limitations explained in the previous chapter, as follows: In the process of distributing questionnaires, it is better to do it directly, without any online distribution. So that respondent can get a direct explanation regarding the statement items in the questionnaire in order to avoid misunderstandings regarding the statements in the questionnaire, and researchers can find out the complaints felt by respondents regarding the object being studied when filling out the questionnaire. The researchers conducted this research exclusively at the university and collected a limited amount of data. In order to improve future results, future researchers should aim to collect more data and cover a wider range of areas. Sevima, as the manager of the academic information system, can continue to increase the net benefits of the system by making improvements and developments, especially in the system quality variable. According to the results of this research, these variables have a significant influence on the success of the academic information system system provided to students, lecturers, and administrative employees.

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