

Measurement of Successful Implementation of Institution Level Financial Application System (SAKTI) Web Full Module with DeLone and McLean Information System Success Model Approach

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Abstract

The Directorate General of Treasury (DJPB), Ministry of Finance, has developed a system that is integrated with all work units (Satker) of central government agencies throughout Indonesia, named the Institutional Level Financial Application System (SAKTI). The purpose of this study is to measure how successful the implementation of the SAKTI web full module which is in the phase II trial phase at the Ministry of State Secretariat is, as well as to analyze the factors that influence the success of using the DeLone and McLean (2003) Information System Success Model approach. The sample selection method used is a non-probability method using purposive sampling technique and getting as many as 98 respondents in this study. The results of the analysis using Partial Least Square- Structural Equation Modeling (PLS-SEM), show that system quality and information quality have a significant positive effect on user satisfaction, while in this study service quality has no effect on SAKTI web user satisfaction. This study also provides empirical evidence that user satisfaction has a positive and significant effect on the SAKTI web in terms of user perceptions of the system's ability to contribute which has an impact on improving its performance. The results of the Fit Model test in this study showed a good fit based on the SRMR value of 0.065. Meanwhile, based on the NFI value, it can be concluded that the fit of the model in this study is 74%.

Keywords

DeLone and McLean information system success model, partial least square (PLS), SAKTI, structural equation modeling (SEM).



I. Introduction

The implementation of e-government in Indonesia, especially in the field of state financial management, is manifested in the form of the Integrated Financial Management Information System (IFMIS). The goal of installing IFMIS is to eliminate issues that occur from the usage of manual systems or separate systems in budgeting and accounting procedures. In this regard, the Directorate General of Treasury (DJPB), Ministry of Finance, has developed an integrated application system intended for all work units (Satker) of central government agencies throughout Indonesia, named the Institutional Level Financial Application System (SAKTI). This system was built to support the principles of orderly, effective, efficient, economical, transparent, accountable, integrated and performance-based financial management.

The Ministry of Finance's DJPB which is responsible for developing SAKTI should make it one of the main priorities in strategic initiatives. Prior to 2019, the SAKTI application used was desktop-based and was still limited to certain satkers. As stated by Nasrudin (2017),

several problems were found in desktop-based SAKTI, which were related to unsimplicity of application features, unstable internet signal, and unable to display complete reports.

In 2019, the SAKTI application, which was previously desktop-based, was developed into a web-based application, which in this study was named the SAKTI Web Full Module. The obligation to use this application is also regulated in a wider work unit. Study of Amriani and Iskandar (2019), performed during piloting SAKTI Phase III states that the implementation of the SAKTI application in the BPPK environment has been empirically proven not to be successful. This research also suggests that the lack of technical training, lack of communication between admins and operators as well as between central and regional, triggers the emergence of obstacles in the SAKTI application.

Several studies show that the failure of information technology-based projects mainly occurs in projects that have high complexity and are short term ((Bloch et al., 2012); (Cahyono, L. A., & Nugroho, 2014); (Apriyanto & Putro, 2018)). Failures that occur are in the form of the amount of project funds that ultimately exceed the agreed budget, processing time that exceeds the stipulated time limit and non-compliance with the project-promised benefits. Meanwhile, Dada (2006) discovered that a large number of e-government initiatives in underdeveloped nations fail because of a misalignment between the system's design and its implementation.

Another finding put forward by Sauer & Cuthbertson (2003) states that the failure of information systems projects is due to the elements of simplicity, certainty, and stability in the system which are inadequate. This failure was also caused by the low support and competence of the organization's managerial parties in system development.

The development of information technology is rapidly evolving. Various small to large business activities utilize this development to run their business. The number of competitors is a consideration for entrepreneurs to enter into very tight competition. The right marketing and media strategy is used to be able to reach the intended market so that sales volume is always increasing and profit. Digital Marketing is one of the marketing media that is currently in demand by the public to support various activities carried out. They are little by little starting to abandon the conventional/traditional marketing model of switching to modern digital marketing. (Gunawan, G. et al. 2020)

One of the models that can be used to evaluate the successful implementation of accounting-based information systems is DeLone and McLean. According to this model, the quality of the system, the quality of the information, and the quality of the service will all influence the intention to use and satisfaction with a particular application. Perceived satisfaction will then have an influence on the perceived benefits of users (DeLone & McLean, 2003).

Based on several problems found in the early stages of implementing (piloting) SAKTI Web Full Module, this study aims to analyze the factors that influence the successful implementation of the Sakti within the Ministry of State Secretariat who carried out the piloting of the SAKTI Web Full Module phase II.

II. Research Method

The object studied in this study was the SAKTI web application on Sakti in the Ministry of State Secretariat which carried out the piloting of Sakti web full module phase II. The sample in this study is SAKTI users who have the level of operational authority of modules, namely operators, validators and approvers of 98 people.

The sample selection method used is non-probability method using purposive sampling technique. The data collection method in this study used a self-administrative survey method

with a questionnaire as a tool. The distribution of research questionnaires was carried out online to all respondents using Google Forms devices via an internet link sent using the Whatsapp Messenger application.

The research model used is the Delone and McLean (2003) model approach as shown in Figure 1. The research model used is strengthened by several studies which show that the better the quality of the system will have a positive and significant effect on user satisfaction ((Amriani & Iskandar, 2019); (Wu & Wang, 2006); (Chiu et al., 2007); (Wahyuni, 2011); (Efendy, 2013); (Noviyanti, 2016); (Pambudi & Adam, 2018)). Other research found a strong relationship between information quality and information system user satisfaction ((Noviyanti, 2016); (Pambudi & Adam, 2018); (Halawi et al., 2007)).

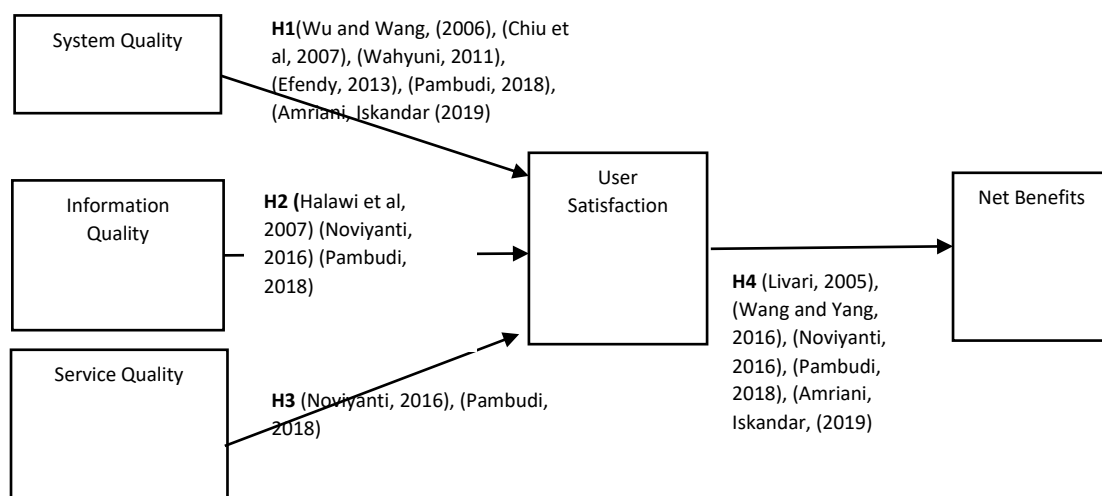


Figure 1. Research Model

Regarding service quality (Halawi et al., 2007) and (Pambudi & Adam, 2018) shows that the service quality variable has a positive and significant effect on user satisfaction. While the findings (Amriani & Iskandar, 2019); (Pambudi & Adam, 2018); (Iivari, 2005); (Wang & Yang, 2016), show that user satisfaction will have an impact on perceived usefulness of users.

Based on previous research, the alternative hypothesis can be stated as follows: first hypothesis (H1): System quality has a positive effect on user satisfaction. The second hypothesis proposed in this study is (H2): Information quality has a positive effect on user satisfaction. The third hypothesis proposed in this study is (H3): Service quality has a positive effect on user satisfaction. The fourth hypothesis proposed in this study is: (H4): User satisfaction has a positive effect on net benefits.

The variables used in this study were classified into exogenous variables and endogenous variables. The exogenous variables consist of Information Quality, System Quality, and Service Quality, while the endogenous variables consist of User Satisfaction and Net Benefits.

The quality of the system in this study is defined as the inherent characteristics of the SAKTI application based on the user's interpretation of his experience using the information system. The indicators used to measure system quality variables based on (Bailey & Pearson, 1983); (Jogiyanto, 2007) are convenience of access, flexibility of the system, realization of user expectations, usability of specific functions, system reliability, speed of access, integration, reliability, ease of use, response time, security and language.

Information quality is related to accuracy, completeness, timeliness, ease of understanding, up-to-date, and the form of output produced by SAKTI. The indicators used to measure the information quality variable based on (Iivari, 2005);(Ardana, C., Lukman, 2016) are relevant, reliable, complete, timely, understandable, verifiable, accessible, currency, format of output.

Service quality is the quality of the support system from the information systems department and information technology officers (Petter et al., 2008). Service quality in this study is defined as the perception of SAKTI users regarding the characteristics of assistance and support services provided by the Directorate of Information Systems and Treasury Technology (SITP) and the HAI integrated helpdesk service of the Directorate General of State Treasury (HAI-DJPb). The indicators used to measure the service quality variable were adopted from research (Parasuraman et al., 1988), namely; tangibles, reliability, freshness, assurance, and empathy.

User satisfaction in this study refers to the interpretation of SAKTI web users' perceptions regarding the suitability between the system attributes required to complete the tasks and responsibilities of state financial management and the real SAKTI web capabilities (Efendy, 2013). Overall user satisfaction is related to satisfaction with the system, information (output) and support services of SAKTI web. According to (Amriani & Iskandar, 2019) and (Pambudi & Adam, 2018), indicators for measuring user satisfaction variables include system fit for need, system effectiveness, system efficiency and overall satisfaction.

Net benefits in this study are defined as users' perceptions of SAKTI's ability to contribute to individual performance in the form of increased productivity, ease and speed of work completion, increased work performance and effectiveness of decision making. The indicators used to measure SAKTI's net benefit variable on individual performance were adopted from research Segars & Grover (1993), namely usefulness and effectiveness.

Statistical analysis technique used in this research is Structural Equation Modeling (SEM) based on variance. Researchers used the PLS method considering the number of samples in this study was relatively small. The specification model in PLS consists of a measurement model (outer model) that assesses the validity and reliability of items on variables and a structural model (inner model) which is used to predict causality relationships between latent variables (Abdillah & Jogiyanto, 2015).

III. Result and Discussion

3.1. Respondent Demographics

In this study there were 98 respondents, most of them were man, namely 65 people or equal to (66.3%) and 33 women or equal to (33.7%). The age of most of the respondents is between 30-50 years with a total of 80 people or (81.6%), age over 50 years as many as 12 people or 12.2%, and age under 30 years as many as 6 people or equal to (6.2%). The education of the respondents is mostly D4/S1 (Bachelor) with a total of 57 people, 26 people for Masters, 12 people for high school/equivalent, and 3 people with D3/Diploma. Most of the respondents' work experience ranged from 10-20 years as many as 62 people, 21 people with more than 20 years work experience and 15 people with less than 10 years work experience. Based on the data collected, as many as 59 people have the authority as operators, while for the authority of validators and approvers there are 28 and 11 users, respectively. The experience of using the SAKTI application was 78 people or equivalent to 79.8% more than one year, while another 20.2% or as many as 20 people had less than one year experience.

3.2. Evaluation of the Measurement Model (Outer Model)

A validity test and a reliability test are used to evaluate the measurement model. The value of the loading factor and the Average Variance Extracted (AVE) can be used to establish convergent validity. Items on the variable will be declared valid if the loading factor value is > 0.7 , and has an AVE of more than 0.5. Based on the test results, it was found that all variables had an AVE value of more than 0.5. The AVE value in the system quality construct is 0.597, the information quality construct is 0.661, the service quality construct is 0.715, the user satisfaction construct is 0.810, and the net benefit construct is 0.862.

The validity test that will be carried out next is the discriminant validity test with the values listed in Table 1.

Information:

Loading factor > 0.7 : valid variable item

Loading factor < 0.7 : Invalid variable item

Table 1. Table of Discriminant Validity Test (Cross Loading)

| Items | Construct | | | | |
|-------|----------------|---------------------|-----------------|-------------------|--------------|
| | System Quality | Information Quality | Service Quality | User Satisfaction | Net Benefits |
| KS1 | 0,769 | 0,666 | 0,518 | 0,615 | 0,549 |
| KS2 | 0,792 | 0,621 | 0,587 | 0,689 | 0,519 |
| KS5 | 0,702 | 0,630 | 0,574 | 0,639 | 0,656 |
| KS6 | 0,797 | 0,672 | 0,565 | 0,675 | 0,621 |
| KS7 | 0,798 | 0,669 | 0,575 | 0,594 | 0,519 |
| KS8 | 0,775 | 0,626 | 0,635 | 0,610 | 0,575 |
| KI1 | 0,636 | 0,769 | 0,512 | 0,522 | 0,535 |
| KI2 | 0,645 | 0,767 | 0,549 | 0,616 | 0,548 |
| KI4 | 0,691 | 0,841 | 0,626 | 0,685 | 0,689 |
| KI5 | 0,753 | 0,875 | 0,622 | 0,759 | 0,767 |
| KI6 | 0,658 | 0,815 | 0,649 | 0,725 | 0,677 |
| KI7 | 0,650 | 0,771 | 0,624 | 0,672 | 0,686 |
| KI8 | 0,723 | 0,843 | 0,721 | 0,705 | 0,707 |
| KL1 | 0,662 | 0,659 | 0,738 | 0,592 | 0,586 |
| KL2 | 0,574 | 0,569 | 0,717 | 0,466 | 0,478 |
| KL3 | 0,528 | 0,547 | 0,852 | 0,656 | 0,572 |
| KL4 | 0,554 | 0,590 | 0,865 | 0,635 | 0,602 |
| KL5 | 0,675 | 0,629 | 0,909 | 0,618 | 0,558 |
| KL6 | 0,555 | 0,588 | 0,810 | 0,633 | 0,602 |
| KL7 | 0,736 | 0,764 | 0,925 | 0,740 | 0,688 |
| KL8 | 0,738 | 0,737 | 0,909 | 0,697 | 0,653 |
| KL9 | 0,599 | 0,626 | 0,791 | 0,588 | 0,566 |
| KL10 | 0,683 | 0,702 | 0,911 | 0,692 | 0,624 |
| KP1 | 0,730 | 0,687 | 0,607 | 0,879 | 0,729 |
| KP2 | 0,796 | 0,806 | 0,733 | 0,919 | 0,796 |
| KP3 | 0,731 | 0,787 | 0,686 | 0,900 | 0,787 |
| KP4 | 0,719 | 0,704 | 0,680 | 0,902 | 0,782 |
| MB1 | 0,733 | 0,794 | 0,692 | 0,833 | 0,901 |
| MB2 | 0,748 | 0,795 | 0,675 | 0,829 | 0,931 |
| MB3 | 0,630 | 0,718 | 0,640 | 0,772 | 0,901 |
| MB4 | 0,653 | 0,717 | 0,607 | 0,761 | 0,917 |
| MB5 | 0,596 | 0,679 | 0,579 | 0,700 | 0,895 |

As can be observed from the cross loading value in Table 1, all measurement items have good discriminant validity because they have the highest loading value when correlated to the variable itself (bold value) compared to its correlation to other variables. In addition, it can be seen in Table 1, all the highest loading values on a measurement item have a value of more than 0.7, as a result, it is possible to infer that all of the indicators used in this study met the requirements for discriminant validity.

The reliability test is intended to determine the accuracy and consistency of the instrument as a measuring instrument, so that the results of a measurement can be trusted (Table 2). The values in Table 2 show that all research constructs have Cronbach's Alpha and Composite Reliability values > 0.7 so it can be concluded that the reliability test has been fulfilled.

Information:

Cronbach's Alpha and Composite Reliability >0.7: Reliable
 Cronbach's Alpha and Composite Reliability <0.7: Unreliable

Table 2. Cronbach's Alpha and Composite Reliability Values of Reliability Test Results

| Construct | <i>Cronbach's alpha</i> | <i>Composite reliability</i> |
|---------------------|--------------------------------|-------------------------------------|
| System Quality | 0,865 | 0,899 |
| Information Quality | 0,914 | 0,931 |
| Service Quality | 0,955 | 0,961 |
| User Satisfaction | 0,922 | 0,945 |
| Net Benefits | 0,948 | 0,960 |

On the basis of the findings in Table 1 and 2, it can be inferred that the study variables employed can be used for additional model testing in the future.

3.3. Evaluation of the Structural Model (Inner Model)

The evaluation of a structural model was carried out in order to predict causality between latent variables. When performing this test, the R-square value of the dependent variable and the Q-square value of the research model are both taken into consideration.

Table 3. Values of R-Square and Q-Square

| | R-Square (R²) | 1-R² | (1-R1²)(1-R2²) | Q² =1-(1-R1²)(1-R2²) |
|-------------------|---------------------------------|------------------------|---|--|
| User Satisfaction | 0,762 | 0,238 | 0,062118 | 0,937882 |
| Net Benefits | 0,739 | 0,261 | | |

The R-square value for the User Satisfaction variable is 0.762. This value shows that 76.2% of the User Satisfaction variable is influenced by the variables of System Quality, Information Quality and Service Quality, while the remaining 23.8% is explained by other variables outside this research model. The R-square for the Net Benefits variable is 0.739, so it can be interpreted that the Net Benefits variable is influenced by the User Satisfaction variable by 73.9% while the remaining 26.1% is influenced by other variables outside this research model. Meanwhile, based on Table 3, it can be seen that the Q-square value in this research model is 0.937882. The value is greater than 0 and close to 1. This suggests that this research model falls into a strong category or in other words has good predictive relevance.

3.4. Hypothesis Test

The test results produce path coefficient values are presented in Table 4. This value is used to determine whether the hypothesis that was built previously can be accepted. Based on Table 4, it can be stated that system quality and information quality have a significant effect on user satisfaction because they have a p-value that is smaller than the value of 0.05. Service quality has no effect on user satisfaction because the p-value is greater than the value of 0.05. Furthermore, referring to the p-value which is smaller than 0.05, in the last row of Table 4, it can be said that user satisfaction has an effect on net benefits.

Table 4. Path Coefficient Value

| | <i>Original Sample (O)</i> | <i>Sample Mean (M)</i> | <i>Standard Deviation (STDEV)</i> | <i>T Statistics (O/STDEV)</i> | <i>P-Values</i> |
|---------------------------------------|----------------------------|------------------------|-----------------------------------|---------------------------------|-----------------|
| System Quality-User Satisfaction | 0,370 | 0,361 | 0,115 | 3,230 | 0,001 |
| Information Quality-User Satisfaction | 0,374 | 0,383 | 0,122 | 3,067 | 0,002 |
| Quality of Service-User Satisfaction | 0,193 | 0,195 | 0,104 | 1,850 | 0,065 |
| User Satisfaction-Net Benefits | 0,860 | 0,859 | 0,034 | 25,227 | 0,000 |

Empirical data shows that the quality of the system has a positive effect on user satisfaction which indicates that user perceptions give a positive assessment of the quality of the system that meets the characteristics of a system that is well integrated, reliable, safe, easy and comfortable to use, responsive, and uses easy-to-understand terms on the menu. These results support the model (DeLone & McLean, 2003) which states that the quality of the system is one of the dimensions in measuring the success of information systems. One of the features that are allegedly giving a positive perception of the quality of the system is security. This feature is one of the development features of the SAKTI Web Full Module application, which makes users feel safe so that they give a positive response to the system quality variable (Figure 3 and Figure 4).



[Source: SAKTI Application]

Figure 3. Sakti Web Login Validation

The Security of SAKTI web will not provide access to users if the username is active, even if the username and password have been entered correctly, so the SAKTI username can only be used on one device. In addition, Figure 4 can be seen the process of requesting One Time Password (OTP). Password disposable that functions as a security system in state financial transactions. Another feature of the SAKTI Web Full Model that relates to security indicators is the use of OTP Pins that are sent via SMS to the approver or validator so as to minimize abuse of authority in managing state finances.



[Source: SAKTI Application]

Figure 4. Transaction validation and approval process using OTP Pin

The information quality variable that has a positive effect on user satisfaction indicates that the user's perception of the quality of information that meets the characteristics of information that is accurate, complete, timely, easy to understand, and up-to-date will encourage satisfaction with the system. Based on user perception on the information quality variable SAKTI Web Full Model is considered good, because the reports/documents produced by the application are considered good and have met the relevant criteria, reliable, complete, timely, understandable, verifiable, and accessible.



[Source: SAKTI Application]

Figure 5. Filter process for displaying reports on the SAKTI Web Full Model application

Figure 5 showed that the filter for displaying reports was very complete, so SAKTI Web Full Module users can get reports/documents according to their needs. This is considered good, based on user perception, so the quality of information on SAKTI Web Full Module is considered good. In contrast to reports on desktop SAKTI, they often experience problems when they want to display/print reports.

The findings of this study indicate that service quality does not have a significant effect on user satisfaction. There were indications that the SAKTI Web Full Module service from the SITP and HAI-DJPb Directorate officers, it is perceived that there were still many obstacles for SAKTI Web Full Module users at the Ministry of State Secretariat. The SITP and HAI-

DJPb Directorates are perceived to have not been able to provide SAKTI assistance services according to the promised timeframe, in addition, based on the perception of SAKTI Web Full Module users, the SITP and HAI-DJPb Directorates has not provided assistance services quickly and swiftly when encountering problems related to with the SAKTI web application Full Module.

User satisfaction variable that has a positive effect on net benefits. These results are in line with several studies, (Amriani & Iskandar, 2019) and (Pambudi & Adam, 2018) which state that user satisfaction with information systems has a significant positive effect on the net benefits received from the system. User satisfaction which refers to the interpretation of SAKTI web users' perceptions regarding the suitability between the system attributes required to complete the tasks and responsibilities of state financial management and the real SAKTI web capabilities (Efendy, 2013). Furthermore, net benefit is users perceptions of SAKTI's ability to contribute to individual

performance in the form of increased productivity, ease and speed of work completion, increased work performance and effectiveness of decision making. The indicators used to measure SAKTI's net benefit variable on individual performance were adopted from Segars & Grover (1993), namely usefulness and effectiveness. From these result, it can be conclude that user satisfaction on net benefit has a positive effect on net benefits, due to the satisfaction on the perception of user SAKTI regarding the ability of performing the usefulness and effectiveness of the SAKTI web cappable which result in increasing the productivity, ease and speed of work completion, increasing work performance and effectiveness of decision making.

IV. Conclusion

Based on the results of analysis and testing, it is concluded that the implementation of the SAKTI web application within the Ministry of State Secretariat has empirically proven not to be successful and succeed based on all indicators or the Delone and McLean model approach. Of the four hypotheses proposed, not all of them are proven and can be accepted. Of the four hypotheses in this study, three hypotheses can be accepted while one hypothesis is rejected in this study. System quality, information quality has a significant positive effect on user satisfaction. This indicates that the higher the quality of the system, the information quality of SAKTI web, the higher the user satisfaction. Furthermore, This study also provides empirical evidence that user satisfaction has a positive and significant effect on the net benefits of SAKTI web in terms of user perceptions of the system's ability to contribute which has an impact on improving its performance. This shows that if user satisfaction increases, the net benefits of SAKTI web will also increase. While in this study the quality of service does not affect the satisfaction of SAKTI web users.

Future research is expected to be able to use other success measurement methods to evaluate the implementation of SAKTI WEB Full Module, especially using measurement methods used to assess Mandatory information systems. In addition, to test the fit model, you can use other fit model tests such as Root mean square error of approximation (RMSEA), Goodness-of-fit statistics (GFI) and the adjusted goodness-of-fit statistics (AGFI).

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