



THE ROLE OF TRANSFORMATIONAL LEADERSHIP IN THE SUCCESSFUL IMPLEMENTATION OF INFORMATION SYSTEMS IN THE GOVERNMENT SECTOR

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ABSTRACT

This study examines the mediating role of transformational leadership in the successful implementation of information systems in government. Unlike previous research conducted in the commercial sector, the implementation of information systems in the government sector is mandatory so operational variables need to be modified. The data used are primary data collected from 86 respondents who are information system operators. Analysis was performed using Partial Least Square (PLS) SEM. The results of the study show that system quality, information quality, and service quality have a positive effect on the successful implementation of information systems in government. These results also prove that transformational leadership mediates the relationship between overall quality and information system usage. This supports the hypothesis regarding the importance of transformational leadership in the successful implementation of information systems.

1. INTRODUCTION

Assessment of information system (IS) user satisfaction is the main parameter in evaluating performance related to the benefits, features, and programs of information systems implemented by an organization (Ives et al., 1983). Several studies have linked the successful implementation of an information system to variable usage and net benefits resulting from the use of the information system. Examining the successful implementation of IS in the government sector is a challenge in itself because the use of the system is mandatory.

The government of the Republic of Indonesia has made efforts to improve the quality of public services through the implementation of e-government. As a form of e-government implementation in state financial management, the government adopted the Integrated Financial Management Information System (IFMIS) as an integrated financial management system consisting of several main subsystems of the state financial management cycle which includes budget planning, budget execution, audits, evaluation, and financial performance. The Ministry of Finance has developed IFMIS through the implementation of the State Treasury and Budget System (SPAN) which facilitates a series of processes ranging from budgeting to central government financial accountability (Sudarto, 2019).

SPAN, which is the core of IFMIS implementation in Indonesia, connects several submodules, one of which is the SAKTI application. SAKTI is a state financial management information system that is implemented mandatory in working units (Satker) to improve financial management on the side of ministries and institutions as users of the budget. This application system that interfaces with SPAN is used by all Ministries/Institutions (budget users) from the level of Satker, regions, and Ministries. The SAKTI application is a mandatory application to be implemented in all Satker using the APBN by being officially launched by the Minister of Finance Sri Mulyani Indrawati on January 27, 2022. As part of the change, the success of this implementation is felt to require the role of leaders who directly manage APBN funds in each Ministry/Institution as budget users and even heads of Satker as budget user powers. Therefore, this study includes the role of transformational leadership in mediating the successful implementation of SAKTI. This is a novelty in the implementation of systems in government.

SAKTI is a national-scale project that requires significant resources in terms of ideas, budget, and time, and needed a high level of commitment to ensure its successful execution. In the early stages of

piloting SAKTI, Nasrudin (2017) found several problems related to the unsimplicity of application features. This also happened to public sector information technology projects in the UK where there were around 16% of projects were successful, while the remaining 84% of projects failed to implement due to several factors including certainty, stability, and simplicity in the system (Cuthbertson & Sauer, 2003).

Several studies related to the implementation of SAKTI have been carried out, including Nasrudin (2017) and Pambudi & Adam (2018). Nasrudin (2017) in his research used several models including the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM). Meanwhile, Pambudi & Adam (2018) examined the effect of information quality variables, system quality, and service quality on SAKTI user satisfaction. Furthermore, this research also examines the effect of user satisfaction on the net benefits of SAKTI. According to Pambudi & Adam (2018), the dimension of usage is considered less relevant to explaining the successful implementation of an information system whose use is mandatory. Therefore, the use of the TAM model which tests intention to use, and UTAUT which tests voluntariness of use is considered less relevant. However, there are not a few studies that use voluntary use to measure the success of implementing new information technology (Taylor & Todd, 1995; Venkatesh & Davis, 2000). Therefore, this study adopts the research of Kwahk et al. (2018) which uses the Conative IS Usage as a variable that is more suitable for mandatory environments.

The conative factor is the relationship between cognition and influence factor on the one hand and behavior on the other. This reflects the components of intention, intentionality, goal-oriented, motivation to work hard, and aspects of proactive behavior (Huitt, 1999). Acceptance of IS implementation can be understood using conative factors which refer to the use of information systems that are proactively motivated by individual intentions and reasons so that it can be interpreted that conative use is the level of use that is proactively carried out based on user intentions and motivation. As such, it is in contrast to customary use, which is often found in mandatory environments.

The need to study the influence of leadership on the adoption and use of new technologies is increasing (Dubelaar et al., 2005). This is a reflection of previous research which found a significant influence of leadership on innovation (Boerner et al., 2007; Gumusluoğlu &

Ilsev, 2009). Several recent studies on the success of information systems have also paid more attention to transformational leadership as an important factor (A. Aldholay et al., 2020; A. H. Aldholay et al., 2018; Alos-Simo et al., 2017; Bai et al., 2016; Cho et al., 2011; Justin et al., 2022; Khasawneh, 2020; Rezvani et al., 2017; Sari & Rina Novianty Ariawaty, 2019; Tajuddin, 2015; Wang et al., 2022). Several positive conclusions were obtained, including that transformational leadership influences the level of employee acceptance of the implementation of new technology (Khasawneh, 2020). Transformational leadership also examines its role in facilitating e-business adoption. The external pressures of the digital economy can create organizational obstacles that often result in failed e-business adoption processes. These obstacles can be traced back to their leadership and ability to influence the values, norms, and motivations of their followers. Therefore, transformational leadership is crucial in changing cultural characteristics and ultimately facilitating the successful adoption of e-business practices (Alos-Simo et al., 2017).

According to Yukl (1981), transformational leadership is about how leaders create behaviors of mutual cooperation, mutual trust, team learning, and collective self-efficacy. From an information systems perspective, transformational leadership can inspire users to perform better (Cho et al., 2011). Transformative leaders provide followers with values and role models and motivate followers to perform beyond expectations. The four components of transformational leadership (Bass, 1985) include ideal influence, individual consideration, inspirational motivation, and intellectual stimulation.

Ajzen & Fishbein (1980) stated that predicting the behavior of information system users based on usage intentions is not suitable for use in a mandatory context because the relationship between usage intentions and actual behavior can only be said to be valid if the behavior is voluntary. The effectiveness of the use of mandatory information systems is highly dependent on the goals and objectives of the organization (Adamson & Shine, 2003). Characteristics of use such as frequency and duration of use may be indicators that are less effective in measuring the success of information system implementation, so it is necessary to use substitute variables such as conative use.

This study seeks to determine whether earlier studies in the private sector have reached similar conclusions about transformative leadership. In addition, because the implementation of SAKTI in government is mandatory, this research also makes modifications by including conative IS usage

variables. This research model uses DeLone and McLean's (2003) IS success model as the main model by adding variables from Aldholay et al. (2018), namely Transformational Leadership and research by Kwahk et al. (2018) namely Conative IS Usage. This research is expected to contribute to providing policy recommendations regarding the implementation of SAKTI and its development in the future. More broadly, this research can be input for organizations, especially the government sector when they develop information systems.

2. LITERATURE REVIEW

The perception of information system users is one of the determinants of the success of an information system. Assessment of user satisfaction is the main parameter in evaluating performance related to the benefits, features and programs of information systems implemented by an organization (Ives et al., 1983). Several studies link the success of implementing an information system with usage variables and net benefit variables resulting from the use of the information system.

Models that are commonly used to analyze the success of implementing an information system include models End User Computing Satisfaction (EUCS) by Doll & Torkzadeh (1988), Technology Acceptance Model (TAM) by Davis (1989), Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), and D&M IS Success Model by DeLone & McLean (1992, 2003). Two models that are often used in research to measure information system success are the TAM model and the DeLone and McLean information system success model. The TAM model (Davis, 1989) compares information systems that are more readily accepted by users compared to other information systems. DeLone and McLean designed a model to assess the success of information systems, where the success of information systems is outlined in a model that combines processes and causal relationships with measurement variables consisting of system quality, information quality, system usage, user satisfaction, organizational impact, and individual impact

In the D&M Model, it is said that system use is not suitable for use in causal models because it is a behaviour. Meanwhile, according to Seddon & Kiew (1996), system use is a precondition for the benefits of an information system, but system use cannot be said to be the cause of the benefits of an

information system. Rai et al. (2002) conducted research by comparing the information systems success model created by Seddon & Kiew (1996) with the information systems success model of DeLone & McLean (1992) and found that DeLone and McLean's model was superior to Seddon's model. Furthermore, in 2003, DeLone and McLean made improvements to their model based on research using the model. Service quality variables were a variable added by DeLone and McLean in the updated model. In addition, the individual impact variable and the organizational impact variable are combined into the net benefit variable. The usage intention variable (intention to use) is added as a modification to the usage variable (use) on previous models.

The Framework

This research adapts the information systems success model of DeLone & McLean (2003), Aldholay et al. (2018), and Kwahk et al. (2018). The DeLone & McLean (2003) model was used as the main model and added variables from the research of Aldholay et al. (2018), namely Transformative Leadership and research by Kwahk et al. (2018), namely Conative Use.

Overall quality has been studied as a second construct containing system quality, information quality, and service quality (Isaac et al., 2017; Aldholay et al., 2018). a quality system is a user's perception that information systems are easy to learn, easy to use, easy to access, and fun to use (Petter & McLean, 2009). Quality information is the user's perception that the information system is up-to-date, relevant, accurate, comprehensive, and sufficient (Acton et al., 2009). Meanwhile, service quality has attributes: facts, reliability, responsiveness, certainty, interactive, function, and empathy (DeLone & McLean, 2003; Lin et al., 2011). The higher the overall quality of the system, the more likely the leader is to encourage and motivate individuals to use the system (Aldholay et al., 2018).

H1: Overall quality has a positive effect on transformational leadership

Transformational leadership is increasingly playing a role in the success of information systems and technology adaptation (Alos-Simo et al., 2017; Aldholay et al., 2018). Management can provide encouragement by widely reporting positive experiences in the use of information systems (Cho et al., 2011). Research Aldholay et al. (2018) revealed that transformational leadership has a positive effect on actual use. The research shows that the more users are inspired, motivated and encouraged to utilize IS, the higher the frequency and duration of using information systems. Boumans et al. (2017) found that transformational leadership has a direct and indirect

positive relationship to system use. The results of Aldholay et al. (2018) also stated that the overall quality of the information system affects the use of the system indirectly through transformational leadership. If IS are more flexible, easy to use, provide up-to-date, accurate, interactive, responsive and reliable information, then the frequency and duration of using the system will increase. This is especially the case when users are encouraged, motivated, and their efforts are recognized by their leaders.

H2: Transformational leadership has a positive effect on the IS usage

H6: The overall quality has a positive effect on the IS usage through transformational leadership

Several studies have been conducted regarding the effect of actual use on user satisfaction and performance (Hou, 2012; Sun et al., 2012). There is a significant relationship between actual use and satisfaction and performance (D'Ambra et al., 2013; Isaac et al., 2017; Makokha & Ochieng, 2014; Ramirez-Correa et al., 2017; Aldholay et al., 2018). According to Igbaria & Tan (1997), individual impact (quality of decision making, performance, productivity, and work effectiveness) is formed from the use of the system and user satisfaction. Satisfied users of information systems tend to voluntarily apply the system to their tasks in order to benefit from the system. Ultimately, users will exert effort to use the information system in a conative way. Research Aldholay et al. (2018) show that the actual use of an IS increases, the user satisfaction increases, which is understandable because the more users become more familiar with using the system and realize its benefits, the more they become satisfied with their decision to use it.

H3: The IS usage has a positive effect on the User satisfaction.

H4: The IS usage has a positive effect on performance impact.

Several studies show that user satisfaction affects performance in various contexts and technology usage. Isaac et al. (2017) in their research found that user satisfaction significantly affects performance impact. Stefanovic et al. (2016) found a significant relationship between user satisfaction and net benefits. Similarly, it was found that user satisfaction positively influences the performance impact as found by previous studies (Abrego et al., 2017; Aparicio et al., 2017; Isaac et al., 2017, Aldholay et al., 2018). Research

Aldholay et al. (2018) shows that the more satisfied users are in terms of assessing content and believe that they have made a wise decision to use an information system, the greater the impact on their performance.

H5: User satisfaction has a positive effect on performance impact.

3. METHODOLOGY & RESEARCH DATA

This research was conducted through a 47-item questionnaire which was developed from previous studies. Variables were measured using a 6-point Likert scale, with a Likert scale of 1 (Strongly Disagree) – 6 (Strongly Agree). The population of this study is all users of the SAKTI application in vertical work units (Satker) within the Ministry of Finance. The selection of the sample in this study was carried out using a non-probability sampling method. The sample selected in this study is a user of the SAKTI application with authority as an operator because it has the most frequent interactions with the SAKTI application. The level of authority above the operator is not included so that the research results on transformational leadership are not biased.

The variables used in this study adopted the variables in the study by Aldholay et al. (2018) which was conducted to test the effect of transformational leadership as a mediating variable on the use of online learning systems in Yemen and research by Kwahk et al. (2018) who examine how outcome expectations affect conative usage in the use of mandatory information systems. The measurement points shown through the indicators in each variable are adjusted to the conditions of SAKTI implementation on the research object so that they are relevant to the initial objectives of this research.

Analysis was performed using Partial Least Square (PLS) SEM. The structural model in this study has one direction of causality in explaining the relationship between one construct and another. Evaluation of the measurement model consists of 2 (two) tests, namely the validity test and reliability test. Validity test is done by testing convergent validity and discriminant validity, then testing the reliability is done by looking at the value of composite reliability and Cronbach's alpha. Convergent validity has a high level of validity if the loading factor value is greater than 0.5 (Hair et al., 2014). Tests on mediating variables were carried out using the Preacher & Hayes (2004, 2008) method, namely the bootstrapping method – indirect effect.

4. RESULTS AND DISCUSSION

Research Respondents

Complete questionnaires that could be obtained were 86 out of a total of 100 questionnaires distributed, so the return rate for the questionnaires was 86%. The distribution of respondent demographic data based on the authority to use SAKTI is shown in Table 1.

Table 1. Respondent Demographics

Authority	%	Number
Treasurer	19%	16
Budgeting Module Operator	7%	6
Commitment Module Operator	16%	14
Payment Module Operators	14%	12
Inventory Module Operator	20%	17
Fixed Asset Module Operator	9%	8
GL and Reporting Module Operators	15%	13
	100%	86

Source: Processed data, 2022

Measurement Model

Assessment of the measurement model is done through validity (convergent and discriminant validity) and construct reliability. Validity test is done by testing convergent validity and discriminant validity. Convergent validity test is determined by looking at the loading factor value for each indicator. A loading factor value greater than 0.5 is considered significant (Hair et al., 2014). Of all the indicators tested, there were 9 indicators that had low loading factor values so they were eliminated. Furthermore, the remaining loading factor indicators have fulfilled all the requirements. A summary of the convergent validity test results can be seen in Table 2.

Table 2. Convergent Validity Test Results

Variable	Indicator	Loading Factor	AVE
System Quality (SQ)	SQ1	0,817	0,645
	SQ2	0,779	
	SQ3	0,785	
	SQ5	0,846	
	SQ6	0,785	
Information Quality (IQ)	IQ1	0,839	0,710
	IQ2	0,896	
	IQ3	0,904	
	IQ4	0,892	
	IQ5	0,654	
Service Quality (SeQ)	SeQ 1	0,912	0,832
	SeQ2	0,905	

Variable	Indicator	Loading Factor	AVE
	SeQ3	0,920	
Transformational Leadership (TL)	TL\1	0,923	0,882
	TL2	0,967	
	TL3	0,932	
	TL4	0,934	
Conative Usage (QU)	IM1	0,679	0,578
	IM2	0,639	
	IM3	0,865	
	IM4	0,877	
	RE2	0,738	
User Satisfaction (US)	RE4	0,732	0,772
	US1	0,904	
	US2	0,884	
	US3	0,906	
	US4	0,887	
Performance Impact (PI)	US5	0,809	0,694
	PI1	0,889	
	PI2	0,843	
	PI3	0,799	
	PI4	0,927	
	PI5	0,889	
	PI6	0,839	
	PI7	0,842	
	PI8	0,599	
	PI9	0,782	
	PI10	0,879	

Source: Processed data, 2022

Furthermore, discriminant validity was tested by comparing the square root of the AVE for each variable with the correlation between the variable and the other variables in the model. The model is said to have sufficient discriminant validity if the AVE root for each variable is greater than the correlation between the variable and the other variables. A summary of the results of discriminant validity testing can be seen in Table 3.

Table 3. Discriminant Validity Test Results

	PI	TL	US	IQ	SeQ	SQ	CU
PI	0,833						
TL	0,700	0,939					
US	0,790	0,697	0,879				
IQ	0,655	0,616	0,693	0,842			
SeQ	0,692	0,605	0,659	0,643	0,912		
SQ	0,610	0,520	0,674	0,777	0,714	0,803	
CU	0,763	0,683	0,718	0,583	0,629	0,511	0,760

Source: Processed data, 2022

Based on Table 3, it can be concluded that the AVE roots of all variables meet the requirements, which are higher than the correlation between the variables and other variables (according to the values in the rows and columns). Another test to see the validity of the variable is by looking at the AVE value,

with a good model criterion, the AVE value for each variable is greater than 0.5. The AVE output results based on Table 3 show that the AVE value of all variables is greater than 0.5.

The next stage is to test the reliability of constructs/variables by looking at the cross loading value, namely looking at the composite reliability and Cronbach's alpha values. The composite reliability value of each variable is more than 0.7 so it can be concluded that the variables in this study are reliable (see Table 4). Then when seen at the Cronbach's alpha value, each variable meets the requirements, which is more than 0.7, so it can be concluded that the variable has good reliability.

Table 4. Composite Reliability and Cronbach's Alpha Value

Variable	Cronbach's Alpha	Composite Reliability
System Quality	0,862	0,901
Information Quality	0,893	0,923
Service Quality	0,899	0,937
Transformational Leadership	0,955	0,968
Conative Usage	0,851	0,890
User Satisfaction	0,926	0,944
Performance Impact	0,950	0,957

Source: Processed data, 2022

Structural Model

Tests on the structural model describe the relationship between latent variables based on substantive theory. This test was carried out by looking at the R-square value which is the goodness-fit test model of the dependent variable and the Q-square value of the research model. The R-square and Q-square values are presented in Table 5.

Table 5. The R-square and Q-square Value

Variable	R-square	Q-square
Transformational Leadership	0,413	0,358
Conative Usage	0,467	0,250
User Satisfaction	0,515	0,383
Performance Impact	0,704	0,476

Source: Processed data, 2022

The R-square value for the Performance Impact variable is 0.704. This value indicates that 70.4% of the Performance Impact variable is influenced by the Actual & Conative Usage variable and the User Satisfaction variable of 70.4%, while the remaining 29.6% is explained by other variables outside this study.

In this analysis, bootstrapping was carried out from 86 samples to 500 samples and the hypothesis was accepted if the t-statistics value was greater than

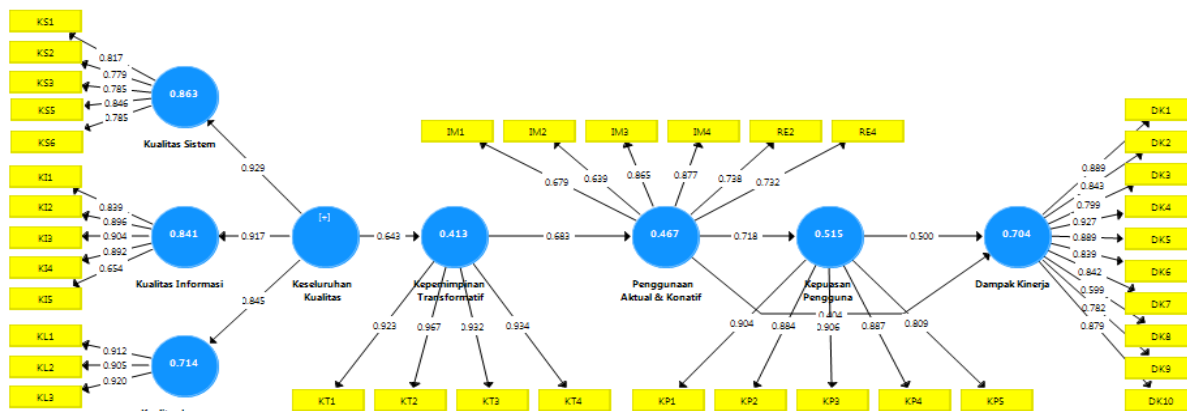
1.96 and the p-value was less than 0.05. Path coefficient values, t-statistics values, and p-values are presented in Table 6 and Figure 1.

Table 6. Path Coefficient Values and T-Statistic

	Path Coefficient	T Statistic	P Value
Overall Q → TL	0,643	11,455	0,000
TL → CU	0,683	6,461	0,000
CU → US	0,718	12,361	0,000
CU → PI	0,404	4,784	0,000
US → PI	0,500	5,997	0,000
Overall Q → TL → CU	0,439	4,870	0,000

Source: Processed data, 2022

Figure 1. Structural Model



Direct Influence of Overall Quality (System Quality, Information Quality, and Service Quality) on Transformational Leadership

Overall quality has been studied as a second construct containing system quality, information quality, and service quality (Isaac et al., 2017; Aldholay et al., 2018). A quality system is a user's perception that information systems are easy to learn, easy to use, easy to access, and fun to use (Petter & McLean, 2009). Quality information is the user's perception that the information system is up-to-date, relevant, accurate, comprehensive, and sufficient (Acton et al., 2009). Meanwhile, service quality has attributes: facts, reliability, responsiveness, certainty, interactive, function, and empathy (DeLone & McLean, 2003; Lin et al., 2011). The higher the overall quality of the system, the more likely the leader is to encourage and motivate individuals to use the system (Aldholay et al., 2018).

The results of this study are consistent with the results of Aldholay et al. (2018) which state that

overall quality has a positive effect on transformational leadership. The direction of positive influence indicates that the higher the overall quality of the information system, the higher the leader encourages and motivates users to use the information system. The average response of respondents to this variable is above 4 (median score of 1 – 6). This indicates that the user's perception of system quality, information quality, and service quality attached to the SAKTI application meets these quality characteristics. The results of this study support the DeLone and McLean (2003) model which states that system quality, information quality, and service quality are

dimensions that determine the success of information system implementation.

Direct Influence of Transformational Leadership on Conative Usage

Transformational leadership is increasingly playing a role in the success of information systems and technology adaptation (Alos-Simo et al., 2017; Aldholay et al., 2018). Management can encourage by widely reporting positive experiences in the use of information systems (Cho et al., 2011). Research by Aldholay et al. (2018) revealed that transformational leadership has a positive effect on actual use. The research shows that the more users are inspired, motivated, and encouraged to utilize IS, the higher the frequency and duration of using information systems. Boumans et al. (2017) found that transformational leadership has a direct and indirect positive relationship to system use. The results of this study are consistent with the results of Aldholay et al. (2018) which concluded that Transformational Leadership has a significant positive effect on Actual & Conative Use.

Direct Influence of Conative Usage on User Satisfaction and Performance Impact

Several studies have been conducted regarding the effect of actual use on user satisfaction and performance (Hou, 2012; Sun et al., 2012). There is a significant relationship between actual use and satisfaction and performance (D'Ambra et al., 2013; Isaac et al., 2017; Makokha & Ochieng, 2014; Ramirez-Correa et al., 2017; Aldholay et al., 2018). According to Igbaria & Tan (1997), individual impact (quality of decision making, performance, productivity, and work effectiveness) is formed from the use of the system and user satisfaction. Satisfied users of information systems tend to voluntarily apply the system to their tasks to benefit from the system. Ultimately, users will exert effort to use the information system in a conative way. Research by Aldholay et al. (2018) show that as the actual use of an IS increases, user satisfaction increases, which is understandable because the more users become familiar with using the system and realize its benefits, the more they become satisfied with their decision to use it.

The results of this study support the research by Culibrk et al. (2016) which states that the use of the system has a significant positive effect on user satisfaction and net benefits. The results of this study also support research conducted by Kwahk et al. (2018) who proposed a new variable in the use of mandatory information systems, namely conative usage. The positive direction of influence indicates that the higher the use of SAKTI, the higher the user satisfaction with the SAKTI application, which indicates that the SAKTI application has the capability to assist operators (users) with the completion of tasks and responsibilities in managing state finances. Its also indicates that the higher the use of SAKTI, the higher the positive impact that users receive related to performance in using SAKTI.

Indirect Influence of Overall Quality on Conative Usage Mediated by Transformational Leadership

Testing the mediating effect of Overall Quality on Actual & Conative Usage through Transformational Leadership is carried out using the bootstrapping method – indirect effect. Based on Table 6, through the bootstrapping method, it can be seen that the effect of the mediation tested obtained significant results with a t-statistics of 4.870 and a p-value of 0.000 ($\alpha = 0.05$) so it can be said that there is a

significant mediating effect of transformational leadership between overall quality with the use of the system.

The results of this study support the research by Aldholay et al. (2018) which states that transformational leadership mediates the relationship between overall quality and actual use. If IS are more flexible, easy to use, and provide up-to-date, accurate, interactive, responsive, and reliable information, then the frequency and duration of using the system will increase. This is especially the case when users are encouraged, motivated, and their efforts are recognized by their leaders.

This research is also in line with the thinking of Cho et al. (2011) which revealed that transformational leadership inspires users to perform better, one of which is shown by the increasing use of the system by users. In addition, testing is carried out if the Overall Quality variable is directly related to the Actual & Conative Use variable to see the level of influence if there is no mediating variable, the t-statistics value is 2.984. This indicates that the t-statistics value of the effect of mediation is greater ($t=4.870$) than without the effect of mediation ($t=2.984$).

5. CONCLUSIONS

This study supports DeLone and McLean's (2003) information system success model and Aldholay et al. (2018) regarding the role of transformational leadership in the success of information systems. The model examined in this study succeeded in demonstrating the variables that affect the performance improvement of SAKTI operators as SAKTI users and ultimately have an impact on overall organizational performance. The results showed that overall quality consisting of system quality, information quality, and service quality had a significant positive effect on transformational leadership. This indicates that the higher the quality of an information system related to ease of use, system flexibility, ease of understanding, system stability, speed of response, timeliness, accuracy, relevance, completeness, information adequacy, responsiveness, functionality, practicality, and

interactive, the higher leaders encourage and motivate users to use the information system.

Furthermore, this study also proves that transformational leadership has a significant positive effect on the use of SAKTI. This indicates that the higher the users are inspired, motivated, and motivated to use the information system, and their efforts are recognized, the higher the level of SAKTI usage. The characteristics of transformational leadership related to the provision of stimulation, motivation, attention, and example have a significant positive effect on the use of SAKTI.

Another factor that influences the success of SAKTI implementation is the use of SAKTI. This study proves that the use of SAKTI has a significant positive effect on the satisfaction of SAKTI users. This indicates that the higher the level of use of SAKTI, the higher user satisfaction with the SAKTI application which indicates that the SAKTI application has the capability to assist operators (users) with the completion of tasks and responsibilities in managing state finances. Furthermore, this study provides evidence that the higher the level of use of SAKTI, the higher the perceived performance increase, so the SAKTI application is considered capable of contributing to improving user performance. SAKTI is considered capable of making users block distractions, concentration, and have fun while using SAKTI. Users can also provide suggestions for improvements to the development of information systems.

This study also provides evidence that user satisfaction has a significant positive effect on the performance impact of SAKTI users. Thus, if user satisfaction related to expectation fulfillment, pleasure, and satisfaction increases, then the user performance impact related to savings, target realization, and performance improvement also increases. This study also proves that transformational leadership mediates the relationship between overall quality (system quality, information quality, and service quality) and the use of SAKTI. This indicates that the better the quality of an information system, the more indirectly the use of SAKTI will increase, especially if the user feels inspired, motivated, and compelled to use it.

This study proves that transformational leadership can be used as a variable in measuring SAKTI's success. This shows that in assessing the

success of information systems, especially using the DeLone and McLean (2003) model, it is possible to propose an extension of the model according to the field of study studied.

Future research can replace or modify DeLone and McLean's information system success model with other information system success models such as the Technology Acceptance Model (TAM) to determine SAKTI's acceptability. The Directorate General of Treasury, in this case, the SITP Directorate, can use the results of this research as material for evaluating the overall SAKTI application development policy through system improvements, information, and services provided. This research also shows that transformational leadership has an important influence on the implementation of SAKTI so that the implementation of SAKTI in the future can optimize the role of leaders to maximize user capacity in operating SAKTI.

REFERENCES

- Acton, T., Halonen, R., Conboy, K., & Golden, W. (2009). DeLone & McLean's success model as a descriptive tool in evaluating the use of a virtual learning environment.
- Adamson, I., & Shine, J. (2003). Extending the new technology acceptance model to measure the end user information systems satisfaction in a mandatory environment: A Bank's Treasury. *Technology Analysis and Strategic Management*, 15(4), 441–455. <https://doi.org/10.1080/09537320300013603>
- Ajzen, I., & Fishbein, M. (1980). (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ.
- Aldholay, A. H., Isaac, O., Abdullah, Z., & Ramayah, T. (2018). The role of transformational leadership as a mediating variable in DeLone and McLean information system success model: The context of online learning usage in Yemen. *Telematics and Informatics*, 35(5), 1421–1437. <https://doi.org/10.1016/j.tele.2018.03.012>
- Aldholay, A., Abdullah, Z., Isaac, O., & Mutahar, A. M. (2020). Perspective of Yemeni students on use of online learning: Extending the information systems success model with transformational leadership and

- compatibility. *Information Technology and People*, 33(1), 106–128. <https://doi.org/10.1108/ITP-02-2018-0095>
- Alos-Simo, L., Verdu-Jover, A. J., & Gomez-Gras, J.-M. (2017). How transformational leadership facilitates e-business adoption. *Industrial Management & Data Systems*.
- Bai, Y., Lin, L., & Li, P. P. (2016). How to enable employee creativity in a team context: A cross-level mediating process of transformational leadership. *Journal of Business Research*, 69(9), 3240–3250.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Collier Macmillan.
- Boerner, S., Eisenbeiss, S. A., & Griesser, D. (2007). Follower behavior and organizational performance: The impact of transformational leaders. *Journal of Leadership & Organizational Studies*, 13(3), 15–26.
- Bouwman, M., Runhaar, P., Wesselink, R., & Mulder, M. (2017). Fostering teachers' team learning: An interplay between transformational leadership and participative decision-making? *Teaching and Teacher Education*, 65, 71–80.
- Chan, D. (1996). Cognitive Misfit of Problem-Solving Style at Work: A Facet of Person-Organization Fit. *Organizational Behavior and Human Decision Processes*, 68(3), 194–207.
- Cho, J., Park, I., & Michel, J. W. (2011). How does leadership affect information systems success? the role of transformational leadership. *Information and Management*, 48(7), 270–277. <https://doi.org/10.1016/j.im.2011.07.003>
- Cuthbertson, C., & Sauer, C. (2003). The State of IT Project Management in the UK 2002-2003. *Computer Weekly*.
- D'Ambra, J., Wilson, C. S., & Akter, S. (2013). Application of the task-technology fit model to structure and evaluate the adoption of E-books by Academics. *Journal of the American Society for Information Science and Technology*, 64(1), 48–64.
- Daud, N. M., Kassim, N. E. M., Rahayu, W. S., & Noor, M. M. M. (2011). Determining critical success factors of mobile banking adoption in Malaysia. *Australian Journal of Basic and Applied Sciences*, 5(9), 252–265.
- Davis, F. D. (1989). Technology Acceptance Model: TAM. Al-Suqri, MN, Al-Aufi, AS: *Information Seeking Behavior and Technology Adoption*, 5, 205–219.
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60–95.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of Management Information Systems*, 19(4), 9–30.
- Doll, W. J., & Torkzadeh, G. (1988). The measurement of end-user computing satisfaction. *MIS Quarterly*, 259–274.
- Dubelaar, C., Sohal, A., & Savic, V. (2005). Benefits, impediments and critical success factors in B2C E-business adoption. *Technovation*, 25(11), 1251–1262.
- Gumusluoğlu, L., & Ilsev, A. (2009). Transformational leadership and organizational innovation: The roles of internal and external support for innovation. *Journal of Product Innovation Management*, 26(3), 264–277.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2014). *Pearson new international edition. Multivariate Data Analysis, Seventh Edition*. Pearson Education Limited Harlow, Essex.
- Hou, C.-K. (2012). Examining the effect of user satisfaction on system usage and individual performance with business intelligence systems: An empirical study of Taiwan's electronics industry. *International Journal of Information Management*, 32(6), 560–573.
- Huitt, W. (1999). *Success in the information age: A paradigm shift*. Educational Psychology Interactive.
- Igbaria, M., & Tan, M. (1997). The consequences of information technology acceptance on subsequent individual performance. *Information & Management*, 32(3), 113–121.
- Isaac, O., Abdullah, Z., Ramayah, T., & Mutahar Ahmed, M. (2017). Examining the relationship between overall quality, user satisfaction and internet usage: An integrated individual, technological, organizational and social perspective. *Asian Journal of Information Technology*, 16(1), 100–124.
- İşcan, Ö. F., Ersarı, G., & Naktiyok, A. (2014). Effect of leadership style on perceived organizational performance and innovation: the role of transformational leadership beyond the impact of transactional leadership—an application among Turkish SME's. *Procedia-Social and Behavioral Sciences*, 150, 881–889.
- Ives, B., Olson, M. H., & Baroudi, J. J. (1983). The measurement of user information

- satisfaction. *Communications of the ACM*, 26(10), 785–793.
- Jung, D. D., Wu, A., & Chow, C. W. (2008). Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation. *The Leadership Quarterly*, 19(5), 582–594.
- Justin, Jasmi, M. F. A., Gui, A., Shahudin, F., & Shaharudin, M. S. (2022). Factors Affecting the Success of Information Technology Projects. 2022 1st International Conference on Information System and Information Technology, ICISIT 2022, 324–329. <https://doi.org/10.1109/ICISIT54091.2022.9872642>
- Khasawneh, O. Y. (2020). Transformational leaders help their employees overcome their technophobia. *International Journal of Technology and Human Interaction*, 16(3), 70–85. <https://doi.org/10.4018/IJTHI.2020070105>
- Kwahk, K.-Y., Ahn, H., & Ryu, Y. U. (2018). Understanding mandatory IS use behavior: How outcome expectations affect conative IS use. *International Journal of Information Management*, 38(1), 64–76.
- Lin, F., Fofanah, S. S., & Liang, D. (2011). Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success. *Government Information Quarterly*, 28(2), 271–279.
- Makokha, M. W., & Ochieng, D. O. (2014). Assessing the success of ICT's from a user perspective: Case study of Coffee Research Foundation, Kenya. *Journal of Management and Strategy*, 5(4), 46.
- Mutahar, A. Y., Rasli, A. M., & Al-Ghazali, B. M. (2015). Relationship of transformational leadership, organizational learning and organizational performance. *International Journal of Economics and Financial Issues*, 5(15), 406–411.
- Nasrudin, E. (2017). Analisis Faktor-Faktor yang Mempengaruhi Sikap Penerimaan, Penggunaan dan Kepuasan Pengguna Sistem Aplikasi Akuntansi Keuangan Tingkat Instansi (SAKTI). Universitas Sebelas Maret (UNS) Surabaya.
- Pambudi, K. H., & Adam, H. (2018). Analisis dimensi kesuksesan implementasi sistem aplikasi keuangan tingkat instansi (SAKTI) pada satuan kerja wilayah Provinsi Jawa Timur dengan pendekatan delone and mclean information system success model. *Jurnal Ilmiah Mahasiswa FEB*, 6(2). <https://jimfeb.ub.ac.id/index.php/jimfeb/article/view/4664>
- Petter, S., & McLean, E. R. (2009). A meta-analytic assessment of the DeLone and McLean IS success model: An examination of IS success at the individual level. *Information & Management*, 46(3), 159–166.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717–731. <https://doi.org/10.3758/BF03206553>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. <https://doi.org/10.3758/BRM.40.3.879>
- Rai, A., Lang, S. S., & Welker, R. B. (2002). Assessing the validity of IS success models: An empirical test and theoretical analysis. *Information Systems Research*, 13(1), 50–69.
- Ramirez-Correa, P. E., Rondan-Cataluña, F. J., Arenas-Gaitan, J., & Alfaro-Perez, J. L. (2017). Moderating effect of learning styles on a learning management system's success. *Telematics and Informatics*, 34(1), 272–286.
- Rezvani, A., Dong, L., & Khosravi, P. (2017). Promoting the continuing usage of strategic information systems: The role of supervisory leadership in the successful implementation of enterprise systems. *International Journal of Information Management*, 37(5), 417–430.
- Sari, N. Z. M., & Rina Novianty Ariawaty, R. (2019). The effect tranformational leadership to quality information systems and its impact on performance aparatur civil asn west java indonesia. *International Journal of Scientific and Technology Research*, 8(10), 3424–3429.
- Seddon, P., & Kiew, M.-Y. (1996). A partial test and development of DeLone and McLean's model of IS success. *Australasian Journal of Information Systems*, 4(1).
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & sons.
- Stefanovic, D., Marjanovic, U., Delić, M., Culibrk, D., & Lalic, B. (2016). Assessing the success of e-government systems: An employee perspective. *Information & Management*, 53(6), 717–726.
- Sudarto, S. (2019). Pengembangan integrated financial management information system

- (IFMIS) di Indonesia. *Indonesian Treasury Review: Jurnal Perbendaharaan, Keuangan Negara Dan Kebijakan Publik*, 4(2), 87–103.
- Sun, Y., Fang, Y., Lim, K. H., & Straub, D. (2012). User satisfaction with information technology service delivery: A social capital perspective. *Information Systems Research*, 23(4), 1195–1211.
- Tajuddin, M. (2015). Modification of Delon and McLean model in the success of information system for good university governance. *Turkish Online Journal of Educational Technology*, 14(4), 113–123.
- Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2), 144–176.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425–478.
- Wang, W.-T., Luo, M.-C., & Chang, Y.-M. (2022). Exploring the Relationship between Conflict Management and Transformational Leadership Behaviors for the Success of ERP Customization. *Information Systems Management*, 39(2), 177–200.
<https://doi.org/10.1080/10580530.2021.1913680>
- Yukl, G. (1981). *Leadership in Organizations*, 9/e. Pearson Education India