

Factors Affecting the Use of Green Information Systems (GIS) in Higher Education

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Abstract

Several organizations create awareness to activities that can damage the living environment. Therefore, this study aims to examine the effect of knowledge sharing, individual capabilities, and organizational commitment on the use of green information systems (GIS) in higher education. A total of 164 lecturers who worked at 26 universities were selected as the participants. Data were collected through a questionnaire with 40 items of questions and analyzed using classical assumption and multiple regression tests. The results indicated that knowledge sharing and individual capabilities insignificantly affect the use of GIS, while organizational commitment shows a significant effect. Simultaneously, it was discovered that knowledge sharing, individual capabilities, and organizational commitment affected the use of GIS. The results can be used as input for universities to develop environmental-based technology.

Keywords: *Green Information System, Knowledge Sharing, Individual Capabilities, Organizational Commitment, Higher Education.*

INTRODUCTION

The development of a country needs to be in line with economic performance and people's welfare. This shows it is important to face the current challenging movement with good governance (Jannah et al., 2018). In the digital era, human depends on information systems (IS) to deal with COVID-19 in the entire world. However, the side effects of using this technology that make people forget about the environmental conditions include weather changes and global warming. Several countries have realized these side effects and started thinking about how to make IS become friendly in an organization.

Continuous use of information systems for several activities tends to worse environmental conditions. These conditions bring about people's awareness or attention to improving their country. To maintain this sustainability, the government makes regulations, laws, and policies to protect the environment (Dedrick, 2010).

The issue of reducing the negative effect of IS becomes a paramount concern when improving energy efficiency. It was discovered that the development of information technology-based requires the right

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concepts including:

1. An understanding of innovative environmentally friendly IS.
2. Understanding of energy optimization systems.
3. Understanding of IS to respond to peak usage loads energy (Mustafid, 2013).
4. Green information systems (GIS) are initiatives that directly or indirectly address environmental sustainability. GIS is intended for sustainability because it allows organizational activities to improve economic performance (Mustafid, 2013).

Currently, higher education governance is faced with industrialization since COVID-19 causes the learning process to switch from an offline to an online model that requires information systems. An appropriate and accountable IS causes environmental sustainability to continue improving organizational performance. Therefore, this study aims to determine the internal factors influencing the use of GIS in higher education.

LITERATURE REVIEW

A new concept was created due to the awareness of using information systems in a sustainable environment. This development needs to be carried out without compromising the children's lives in meeting their needs. In this context, it is important to ensure that economic performance is maintained without damaging the environment. Several parties initiated the term green information systems (GIS) where its activities need to be aligned with the developmental goals.

GIS helps to ensure there is environmental sustainability (Mustafid, 2013; Anthony, 2019; Anthony et al., 2018; Anthony et al., 2019; Anthony & Anthony, 2016; Carberry, et al., 2019; Malhotra, et al., 2013; Sahu & Singh, 2016; Singh & Sahu, 2020). Several studies discussed the GIS development in an organization (Singh & Sahu, 2020; Bhardwaj & Gajpal, 2016; Jenkin, et al., 2011; Recker, 2016; Sarkis et al., 2013; Watson et al., 2010; Ijab, 2017).

Several researcher investigated how the transformative power of IS is harnessed to create environmental sustainability (Watson et al., 2010; Ijab, 2017). Furthermore, GIS plays an important role in developing organizations, particularly for those facing economic pressures (Yang et al., 2017). Green information systems showed that sustainable processes help in achieving environmental and economic performance (Melville, 2010).

According to Watson et al., (2010), the use of GIS needs to be performed through good strategic planning that is in line with the organization's objectives. The study showed the IS strategy is "a long-term precept for directing, implementing, and supervising information management left undefined". Furthermore, Watson et al. (2010), indicated that GIS is a tool that helps in achieving organizational goals. Yang et al. (2017), Daugherty et al. (2005), and Gholami et al. (2013) showed strategy is an agreed perspective on how to invest in and deploy IS. However, higher education is the dominant form of social

management that deteriorate the environment due to the use of IS and other chemicals [18]. Several organizations, particularly the educational sector, have used GIS to improve their performance indicated that GIS is influenced by knowledge sharing, individual capabilities, and organizational commitment (Anthony & Anthony, 2016; Yang et al., 2017; Ermawati, 2017; Hariyanti & Wirapraja, 2017; Kurkalova & Carter, 2017; Meacham et al., 2013; Nugroho, 2013).

Knowledge Sharing and the Use of Green Information Systems

The adoption of sustainability strategies requires new information on environmental effects and knowledge sharing about why, what, and what does not work (Melville, 2010). Humans are considered the implementers of organizational information systems. Their knowledge gap about the environment creates special attention to the importance of GIS (Raharjo et al., 2016). To reduce this gap, employees exchange ideas and share knowledge. All problems faced by individuals are slowly eliminated to enable organizational members to support the use of IS (Yang et al., 2017; Raharjo et al., 2016). H₁: Knowledge sharing significantly affects the use of green information systems

Individual Capabilities and the Use of Green Information Systems

A large number of resources were used for IS in universities that are currently embedding green initiatives on their campuses. Several parties still doubt how to instill environmentally friendly practices (Anthony et al., 2018; Mustafid, 2013; Nurhayati, & Sk, 2017). Therefore, it is necessary to have professional human resources with high capability to develop and use IS. H₂: Individual capabilities significantly affect the use of green information systems

Organizational Commitment and the Use of Green Information Systems

This kind of commitment is a strong desire to remain a member and make quality efforts, as well as a belief in organizational goals (Robbins & Judge, 2018). According to Lingga (2021), it affects the successful implementation of information systems. The use of GIS help in improving performance, particularly in terms of environmental management (Anthony & Anthony, 2016; Jongsaguan & Ghoneim, 2017; Mithas et al., 2010). Strong organizational commitment ensure the programs that have been planned and used become successful (Lingga, 2021). H₃: Organizational commitments significantly affect the use of green information systems

METHOD

This study used an association of descriptive approach. A total 164 respondents from 26 universities who have a vision as a green campus were selected as the participants. All primary data were collected in the form of a closed questionnaire using a Likert scale ranging from strongly agree to disagree. The factors examined in this study included knowledge sharing, individual capabilities,

organizational commitment, and green information systems. Data were analyzed using reliability and validity tests, classical assumption, multiple regression, product-moment correlation, and coefficient of determination.

The following shows the conceptual model in this study:

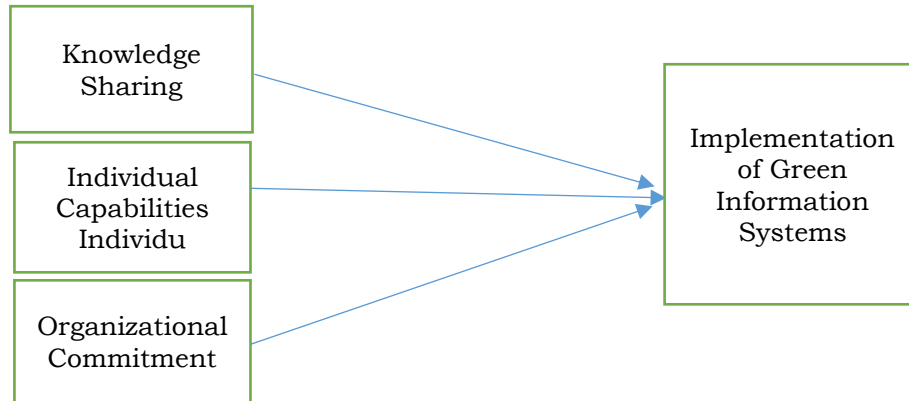


Figure 1. Conceptual Model

RESULTS AND DISCUSSION

Universities developed GIS by paying attention to environmental sustainability to achieve their goals. People are part of the organization because they have an impact on attitudes. In universities, decisions related to IS are influenced by lecturers' behavior. Knowledge sharing becomes an important part of the conceptual model since it helps in improving an organization. Lecturers tend to support the use of information systems to promote the success of higher education. Also, knowledge sharing ensures that the IS built and developed by the university becomes successful. Therefore, lecturers play an important role in GIS because their ability to use this technology help the organization achieve its goals. In providing green information systems, high commitment tends to support environmental sustainability.

A questionnaire was distributed to examine the use of GIS. The following table shows the respondents' responses to the 4 variables of this study.

Table 1 Description of Respondents' Response

No	Variable	Score	Ideal	%
1	Knowledge Sharing	6.817	8.200	83
2	Individual Capabilities	7.238	8.200	88.3
3	Organizational Commitment	6.179	8.200	75
4	Implementation of Green Information Systems	6.115	8.200	75
Total		26.349	32.800	80.3

In this study, the respondents considered that the use of IS becomes less important because most lecturers believe this technology failed to affect the environment. They make less effort to improve the use of green information systems. This is supported by the response that the problem of GIS is only meant for universities to fix. Meanwhile, lecturers feel that higher education failed to improve information

systems. They only believe that universities have not evaluated the use of existing and environmental-based technology. According to the respondents, higher education is yet to show a high commitment to the use of IS.

The analysis results showed that the data were valid and reliable. Also, the classical assumption test indicated the multiple linear regression model is feasible and has met the requirements because the data are normally distributed. In this study, the three independent variables have no multicollinearity, heteroscedasticity, or autocorrelation symptoms. From the four Classical Assumption Tests, the multiple linear regression model is feasible and has met the requirements. The following table shows the results of the correlation coefficient test.

Table 2 Multiple Regression Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.031	3.697		0.279	0.781
	Knowledge Sharing	0.074	0.127	0.048	0.585	0.559
	Individual Capabilities	-0.152	0.139	-0.091	-1.087	0.279
	Organizational Commitment	1.058	0.073	0.809	14.553	0.000

a. Dependent Variable: Implementation of Green Information System

From the table above, the following multiple regression equation is obtained: $GIS = 1.031 + 0.74 KS - 0.152 IC + 1.058 OC$. Based on the equation, individual capabilities negatively affect the successful use of green information systems. This does not mean that lecturers' capabilities bring about unsuccessful use of GIS in higher education.

Table 3 Partial Correlation Test Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.031	3.697		0.279	0.781
	Knowledge Sharing	0.074	0.127	0.048	0.585	0.559
	Individual Capabilities	-0.152	0.139	-0.091	-1.087	0.279
	Organizational Commitment	1.058	0.073	0.809	14.553	0.000

a. Dependent Variable: Implementation of Green Information System

From the table above, knowledge sharing and individual capabilities insignificantly affect green information systems. The results contradict the study of Anthony et al. (2018), Yang et al. (2017), and Raharjo et al. (2016). Partially, organizational commitment significantly affects the use of GIS. These results are in line with the study of Alziady & Enayah (2019).

Table 4 Simultaneous Test Results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6851,936	3	2283,979	88,664	0.000 ^b
	Residual	4121,594	160	25,760		
	Total	10973,530	163			

a. Dependent Variable: Implementation of Green Information Systems

b. Predictors: (Constant), Organizational Commitment, Knowledge Sharing, Individual Capabilities

Based on the table above, knowledge sharing, individual capabilities, and organizational commitment significantly affect the use of GIS.

CONCLUSION

There is an increasing concern about the negative effect of information systems on the environment. Green information systems (GIS) are an effective way to facilitate the strategic orientation of universities. Therefore, this study develops a conceptual framework that influences the successful use of GIS in higher education. A total of 164 lecturers from 26 universities were selected as the respondents. It was concluded that knowledge sharing and lecturers' capabilities insignificantly affect the use of GIS, while organizational commitment shows a significant effect. Simultaneously, knowledge sharing, individual capabilities, and organizational commitments positively affect the use of GIS in higher education.

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