ANALYSIS OF THE IMPLEMENTATION GRC INFORMATION SYSTEM IN SUPPORTING PERFORMANCE OPTIMIZATION

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Abstraksi

Sistem Informasi Tata Kelola Terintegrasi dan Risiko Kepatuhan (SIGRC) sangat penting dalam membantu institusi mencapai tujuannya dan menghadapi ketidakpastian. Sebuah Badan Pemerintah Indonesia (IGA) telah menggunakan SIGRC selama bertahun-tahun. Namun pemanfaatannya masih belum diketahui. Penelitian ini mempelajari dampak penerimaan dan pemanfaatan SIGRC menggunakan Delone McLean dan Teknologi Penerimaan dan Penggunaan Unified Technology. Kesimpulannya adalah bahwa hubungan antara penggunaan dan manfaat bersih tidak terpengaruh. Niat pengguna pada penggunaan, ekspektasi kinerja pada niat pengguna, penggunaan pada kepuasan pengguna, dan kepuasan pengguna pada manfaat bersih manfaat SIGRC adalah lima faktor yang mempengaruhi kepuasan pengguna. Sedangkan ekspektasi niat penggunaan (ITU). Kualitas informasi dengan ITU. Kualitas layanan dengan penggunaan ITU. Kualitas layanan dengan kepuasan pengguna, kualitas sistem dengan ITU, dan kualitas sistem dengan kepuasan pengguna semuanya memiliki pengaruh tetapi tidak signifikan. Penelitian ini diharapkan dapat menjadi pedoman bagi pihak lain untuk mengevaluasi efektivitas kinerja SIGRC.

Kata Kunci:
Perangkat Lunak GRC, Delone & Mclean, UTAUT, Sistem Pendukung Keputusan, Sistem Informasi Evaluasi.

Abstract

The Integrated Governance and Compliance Risk Information System (SIGRC) is critical in helping institutions achieve their goals and deal with uncertainty. An Indonesian Government Agency (IGA) has used SIGRC for years. However, its utilization is still unknown. This research studies the impact of acceptance and utilization of SIGRC using Delone McLean and Unified Technology Acceptance and Use Technology. The conclusion is that the relationship between use and net benefits is unaffected. User intention on use, performance expectations on user intention, use on user satisfaction, and user satisfaction on the net benefit of SIGRC benefits are five factors that influence user satisfaction. While the expectation of use intention (ITU). Information quality with ITU. Quality of service with the use of ITU. Service quality with user satisfaction, system quality with ITU, and system quality with user satisfaction all have an influence but are not significant. This research is expected as a guideline for others to evaluate the effectiveness of SIGRC's performance.

***Keywords*:**
GRC Software, Delone & Mclean, UTAUT, Decision Support System, Evaluation Information System.

Introduction

The rapid development of information technology has significantly influenced the work pattern of assurance implementation, which was initially fragmented by conventional methods. It has now become an integrated technology-based [1]. Organizational efforts to assess how the acceptance of the Information System (IS) functions more ideally are not made in response to this issue [2], [3]. Finding a comprehensive and complete IS measurement model is complicated [4]. Few researchers emphasize the importance of conducting a contextual understanding of using the system to be studied in more depth so that the approach can relevantly answer the issues raised [2], [5]. GRC is an integrated collection of abilities that can assist an enterprise in accomplishing its objectives, coping with uncertainty, and behaving ethically [6]. All three GRC components are required to manage businesses and assist decision-making properly, and they are intertwined [7]–[11]. The SIGRC at IGA is fully implemented in 2020. However, practically it has not been able to realize the optimal implementation of technology-based combined assurance. The top management has mandated all work units to use the application. Nevertheless, Information Systems (IS) have been fully used as a reference in the implementation of assurance.

The preliminary results of a survey conducted to the 20 respondents who are active users of SIGRC from the staff level to the Director indicate 42.9% of users rarely access the system with an average frequency of application usage of less than 3 times a week. The rarely used application is from the central business processes, including the risk profile module, risk event database, Continuous Audit Continuous Monitoring, Internal Audit, Quality Control, Liaison Officer External Audit, and reporting team member

violations. In addition, interviews were conducted to identify problems and causes for the ineffectiveness use of SI GRC. In general, there are four main problems:

1. Reporting and Data Analysis processes are not fully integrated
2. The application has not fully become a reference for work
3. Low application user satisfaction
4. The current system has not fully encouraged the performance of integrated assurance implementation

The leading causes of these problems are errors/bugs, and the modules are separate and limited. Furthermore, the application has not been used as the primary performance indicator. In addition, 71.5% of respondents said the implementation of the system was not effective for support assurance implementation.

The proper measurement methodology to answer the problem is to use a combination of Delone & McClean and UTAUT [4]. The approach is expected to measure the net benefits of system implementation in supporting the combined assurance. The evaluation carried out is net benefits as a positive impact after interaction with IS [12]]. In addition, net benefits can also be used as a benchmark to see the productivity and effectiveness of the system in implementing assurance to improve user and organizational performance [13].

Based on empirical studies, it is necessary to expand the different conceptualizations to strengthen the understanding between antecedent relationships and usage behavior. For example, Burton-Jones [5] provides a two-stage method for imagining an operational use system based on theory.

This research provides an update not only limited to theory and operations but also from a managerial aspect. Therefore, this research is expected to be used as a reference for agencies/institutions/companies in the pre-implementation and post-implementation SI GRC.

Literature Review

The author used a few prior studies [2], [6], [9], [14]–[20] as a guide for conducting this study. Referring to Madlener provides new capabilities for organizations in risk management [9]. It creates corporate value by leveraging technology to manage risk efficiently and effectively throughout the organization. Through a moderator analysis, Mou & Benyoucef provides theoretical advances that improve the understanding of consumer behavior and further analyze the function of trust in integrating such ideas [17]. Additionally, the study informs social commerce platform providers about how their users behave while making purchasing decisions. Using the Delone-Mclean Model and UTAUT, Yus & Jayadi, 2021 will examine whether YouTube may help students study more effectively [18]. The impact of UTAUT and the DeLone and McLean IS success model on various aspects of system utilization for digital library systems is examined by Alajmi & Alotaibi [19]. For academics and professionals working in disciplines related to digital library systems, this study offers pertinent theoretical contributions and practical implications. Ananda determine the factors influencing the adoption of digital banking by retail banking customers [20]. This study is helpful for planning and promoting service models to increase digital banking adoption. A thorough study of the system's application, its ancient ones, and its effects on personnel in firms is provided by Bala & Bhagwatwar [2]. In a brand-new business resource planning initiative at the University, Ahmed et al., investigated the transit intention and acceptability determinants [14]. The article's outcome is creating a model that will assist the higher education sector in making decisions regarding adopting and using ERP. Shivakumar et al., discuss the challenges of GRC technology by analyzing commercial GRC software. This analysis aims to ascertain whether the challenge is valid and whether the organization should invest in GRC software [6].

Research Methodology

The entire flow of this research can be seen in Figure one below:

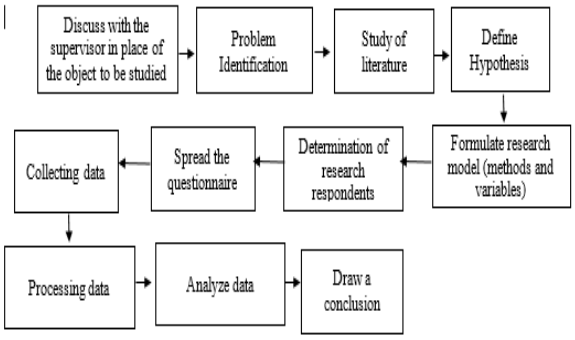

Figure 1 Research Stages

Participants and Data Collection

This research has distributed questionnaires to all active users of Integrated SI GRC, as many as 235. Questionnaires were distributed using Google Forms. The distribution of the questionnaire was carried out from June 2022 to August 2022.

Table 1 Participant Demographics

Characters	Values	Percentages
Ages	20-29 years old	12,61%
	30-40 years old	60,50%
	41-50 years old	18,49%
	>= 50 years old	8,40%
Job Positions	Directors	5,00%
	Deputy Directors	3,40%
	Head Division	28,60%
	SubHead Division	36,10%
	Staff	26,90%
Compartments	Strategic Management	10%
	Banking	5,08%
	Capital Market	4,24%
	Education Consumer Protection	1,69%
	Non-Bank Industries	5,08%
	Audit, Risk Management, Quality Management	54,24%
	Provincial Office	7,63%
	Branch Office	12,71%

Periodically, there is always a reminder to fill out the questionnaire via email. However, of the 235 respondents who had been distributed, 119 returned. Most respondents are 30-40 years old (60.6%), having the title of Sub Head Division (36.10%), where the position in compartment GRC (54.24%).

Variables Measurement

The variables and indicators that will be used in this research are carried out by models from Mathew Lashayo [4]. The purpose of determining the variables and indicators is to determine the connectedness of the related variables. The variables and indicators used in this study are as follows: 6 variables were taken from Delone and Mclean IS Model, namely Information Quality, System Quality, Intention To Use, Net Benefits, Use, User Satisfaction and Service Quality, while the other two variables come from Venkantesh [21] namely Effort Expectation and Performance Expectation. Each of these variables is used as a reference in determining indicators. Each variable consists of four indicators. Therefore, this study consists of 8 variables and 32 indicators.

Hypothesis Development

Some earlier investigations have established the correlation between the variables of each technique [4], [5], [12], [19], [21]–[25]. Twelve variables that were found to interact with one another in the prior research yield the following hypotheses:

a) Information Quality (IQ)

A desirable attribute of a system's output is information. Information system output quality is gauged by information quality. Similarly, a quality system, or quality information, refers to the subjective user evaluation of information quality. The term "quality of perceptual information" is used to describe it (perceived information quality). Measurements are applicable, clear, precise, concise, thorough, and usable. Information quality is measured differently based on the nature and purpose of Use, like how system quality is measured. The main factor in determining the accuracy of the information used is consistency. Timeliness, completeness, correctness, dependability, and understandability are suggested metrics.

Hypothesis 1: Intention to Use is positively impacted by information quality.

Hypothesis 2: User satisfaction is positively impacted by information quality.

a. *System Quality (SQ)*

System quality is a metric used to assess the system's overall quality, including its hardware and software. System performance is referred to as system quality, or how well the information system's hardware, software, policies, and procedures can meet users' information needs. A desirable trait of an information system is system quality. Examples include system flexibility, usability, dependability, and learning simplicity. The user determines the system's quality subjectively. Hence the system's actual quality is the system's perceived quality. Different metrics might be used to determine its performance depending on why an information system is being implemented. As a result, it is impossible to quantify the effectiveness of a universal system. Easy to use, availability, response speed, system reliability, adaptability, individual aptitude, system interaction, and system security are the metrics that are advised.

Hypothesis 3: System quality has a positive influence on Intention to Use.

Hypothesis 4: System quality has a positive influence on User Satisfaction.

b) Service Quality (SEQ)

Service quality describes the caliber of help offered by IT support personnel and information technology companies to system users. To assess service quality, customer expectations and perceptions of their essential services are contrasted. The level of service is shaped by three variables, including assurance and the system's quality assurance. The critical distinction between service quality and system quality is that the former focuses more on the caliber of support offered by employees or information systems. On the other hand, system quality refers to the information system as a whole's technical quality. The recommended metrics include dependability, empathy, responsiveness, contact, and interaction.

Hypothesis 5: Service Quality has a positive effect on Intention to Use.

Hypothesis 6: Service Quality has a positive effect on User Satisfaction.

c) User Satisfaction (US)

A user's response and feedback after utilizing an information system are known as system user satisfaction. Information system user attitudes are a subjective criterion for determining how much users like the system. User response to information system output is referred to as user satisfaction. To understand how information system users, react to their Use, user satisfaction is crucial.

Hypothesis 7: User satisfaction has a positive effect on Net benefits.

d) Net Benefits (NB)

Net benefit quantifies the personal consequences of an information system, including how well users understand the decision context, how productively decisions are made, how user behavior has changed, or how decision-makers view the value of the decision information systems [26]. Additionally, this model assumes that user happiness with information systems and system use impacts personal impact.

Hypothesis 8: Net benefit has a positive effect on Intention to Use.

Hypothesis 9: Net benefit has a positive effect on User Satisfaction.

e) Intention To Use (ITU)

The user's intention to utilize information's possibilities is known as the intention to use. For instance, the metrics include the quantity, regularity, intent, and suitability of Use. When using information systems is required, the user variable in the DeLone and McLean model should be eliminated [23], [27]. No system, however, is entirely essential, for instance, at the highest management level, where using an information system is mandatory for all staff members. Additionally, although the system's Use is initially required, it will eventually become optional. Top management always has the option to use an information system going forward or quit utilizing it together based on their past experiences.

Hypothesis 10: Intention to use has a positive effect on Use.

f) Effort Expectancy (EE)

Effort expectancy is the ease with which information technology can be used to lessen human effort (both in terms of time and energy). In this study, effort expectancy enables consumers to navigate information technology's intricacies [28]. Identify that ease of Use influences the Use of information technology. The ease of Use of information technology will create a feeling in a person that the system is functional and therefore creates a sense of comfort when working with it [21], [28], [29].

Hypothesis 11: Effort Expectation has a positive influence on Intention to Use.

g) Performance Expectancy (PE)

The degree to which a person anticipates adopting information technology to improve their performance at work is known as their performance expectancy [21], [29].

Hypothesis 12: Performance expectations have a positive effect on Intention to Use.

h) Validity and Reliability

Validity and reliability tests are conducted to evaluate the viability of each indicator when creating variables. An indicator is valid if the outer loading is greater than 0.50 for convergent validity and more significant than 0.50 for discriminative validity, or the construct can account for 50% of the variance. A Cronbach's Alpha value of at least 0.6 and a composite Reliability value of at least 0.70 are required for the indicator to be considered reliable [30].

Result and Discussion

Data Analysis Result

In the context of this research, an analysis is carried out using Smart PLS version 3.3 and then a bootstrap analysis will be carried out using 5000 samples [30]. The initial test was carried out using the 8 variables derived from Delone & Mclean and in combination with UTAUT. In the data calculation process using the PLS Algorithm calculation, several invalid indicators were found, namely EE2, SEQ1, SEQ2, SEQ3, SQ4, U1, and US4. The test results obtained as follows:

Table 2 Validity and Reliability Testing

Variable	Indicator	Loading Factor	Cronbach's Alpha	Composite Reliability	AVE
IQ	IQ1	0.843	0.872	0.872	0.723
	IQ2	0.858			
	IQ3	0.836			
	IQ4	0.837			
SQ	SQ1	0.899	0.677	0859	0.754
	SQ3	0.836			
SEQ	SEQ4	1.000	1.000	1.000	1.000
ITU	ITU1	0.771	0.847	0.847	0.685
	ITU2	0.867			
	ITU3	0.823			
	ITU4	0.846			
U	U2	0.895	0.838	0.902	0.755
	U3	0.811			
	U4	0.898			
US	US1	0.825	0.838	0.907	0.764
	US2	0.911			
	US3	0.885			
NB	NB1	0.907	0.943	0.943	0.854
	NB2	0.952			
	NB3	0.937			
	NB4	0.899			
PE	PE1	0.904	0.929	0.949	0.825
	PE2	0.911			
	PE3	0.886			
	PE4	0.931			
EE	EE1	0.749	0.802	0.882	0.714
	EE3	0.893			
	EE4	0.886			

After statistical analysis of 12 hypotheses, 11 were accepted, and one was rejected. The hypothesis was investigated using the bootstrapping method to quantify the significance level or likelihood of direct, indirect, and total impacts.

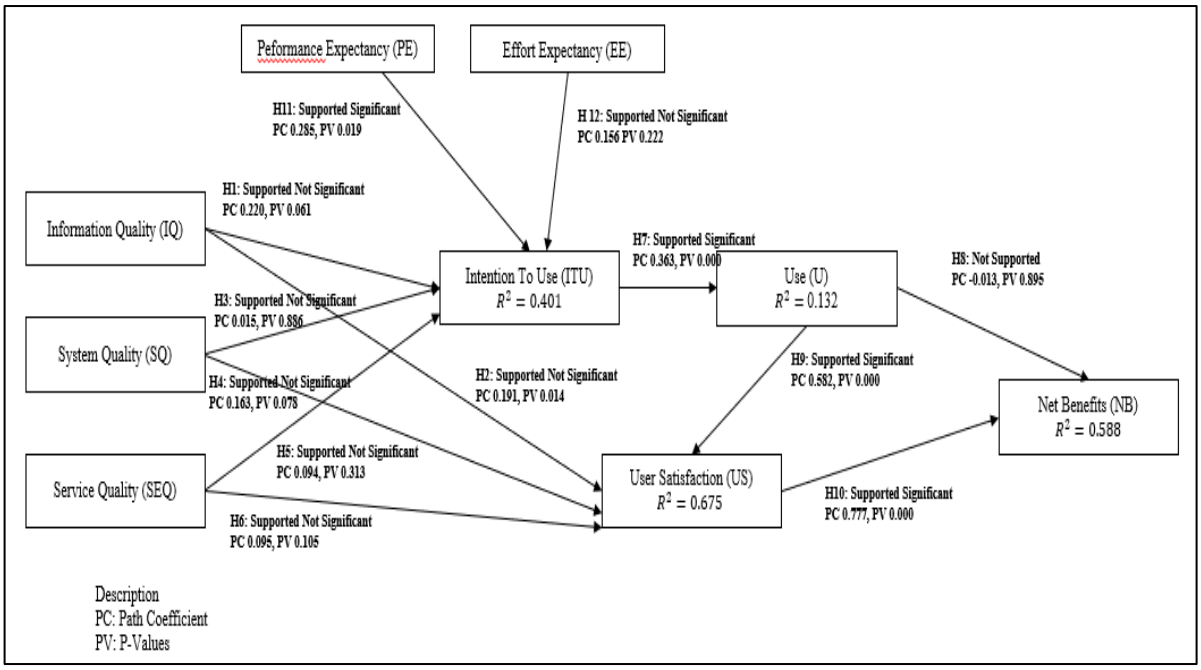

Figure 2 Result Research Model

The indirect effect and level of significance are evaluated in this study. According to the 5% threshold for significance, a relationship between two variables is considered significant if the p-value is less than 0.05. The findings of the hypothesis analysis show that each external (free) variable's more significant influence are ITU->U with p-values=0.000 and O= 0.363, PE- > ITU with p-values= 0.019 and O=0.285, U->US with p-values=0.000 and O=0.582, US->NB with p-values=0.000 and O=0.777.

Table 3 Hypotesis Testing

Hypothesis (H)	Variable Corellation	Path coefficient	t-statistics	p-value	Result
H1	IQ->ITU	0.220	1.914	0.061	Supported Not Significant
H2	IQ->US	0.191	2.490	0.014	Supported Not Significant
H3	SQ->ITU	0.015	0.143	0.886	Supported Not Significant
H4	SQ->US	0.163	1.754	0.078	Supported Not Significant
H5	SEQ->ITU	0.094	1.006	0.313	Supported Not Significant
H6	SEQ->US	0.095	1.609	0.105	Supported Not Significant
H7	ITU-> U	0.363	4.174	0.000	Supported Significant
H8	U->NB	-0.013	0.131	0.895	**Not Supported**
H9	U>US	0.582	10.286	0.000	Supported Significant
H10	US->NB	0.777	9.779	0.000	Supported Significant
H11	PE->ITU	0.285	2.368	0.019	Supported Significant
H12	EE->ITU	0.156	1.242	0.222	Supported Not Significant

The final goal of this research is to see to what extent the Use of SI GRC has been running in influencing the performance of assurance providers at IGA. Through this research, it can be concluded that the implementation of the system has not been adequate to optimize the performance of SI GRC.

a. Theoritical Implication

The empirical studies investigate how the link between factors was compared with prior research [31] using the exact ERP-based Information System in state institutions. Theoretically, it implies variations even though adopting the same methodical approach with various research subjects. According to research done at Bank Indonesia, the implementation of ERP was well received by the company's employees and supported performance optimization. However, several aspects still need to be improved, including system quality and service quality, since these two factors impact the company's user intentions and satisfaction. The system is used with considerable effort. Nonetheless, the results of this research highlighted that the employees did not favor using the Integrated SI GRC. Compared to other factors, such as Information Quality, Service Quality, and System Quality still require improvement. Thus, User Satisfaction and Net Benefit in bolstering providers' assurance performance will increase, followed by Performance Expectation and Effort Expectation. Given the results of this study, IGA must constantly strive to improve and establish what strategies can be implemented to ensure that SI GRC performs at its utmost.

b. Practical Implication

SI GRC Implementation is still a novel paradigm [8], [11], [32]–[34]. Uniformity is still necessary from the standpoint of understanding [35]. Therefore, since understanding is not constantly consistent, applying SI GRC is only feasible to use a scientific approach[36]. The main factor that causes the failure of the SI GRC implementation is the lack of alignment between the business, and the IS developed [7], [13], [28], [34], [37]–[39]. Communication and the ability to translate business strategies and organizational goals into business process design in developing information systems are mandatory. In addition, it is necessary to provide technology that can connect separate data that originally came from a pre-existing IS [1], [6], [13], [40]–[42]. Problems such as fragmented modules

between assurance implementing functional units should be able to communicate across platforms to support the optimization of integrated analytics [43].

c. Managerial Implication

To realize the alignment between business strategy and the information system developed, a need for support from top management [37]. It is also necessary to have a business analyst as an intermediary to translate the strategy from management to the technical development team to communicate its function in the context of strategy, structure and organizational systems. According to [14], [36], [40], [44], the lack of support can have a small impact on system performance, even though investments have been made in the development of the system, implementation will not run optimally. The recommendations proposed so that the implementation of the SI GRC runs optimally is to pay attention to three main aspects, namely the use of the system it is necessary to monitor performance, alignment between information system strategies and business processes, and optimize resources [2], [13], [39], [43].

In monitoring performance, it is necessary to set targets in the Key Performance Indicators (KPI) to optimize the use of SIGRC. Building awareness about why the use of the system is essential and what its benefits are so that stakeholders have the same understanding point of view and awareness that it is necessary to realize good, transparent, accountable governance with the implementation of technology-based combined assurance [11], [33], [36]. In line with the determination of the KPI for the information system, it is necessary to support the improvement of the quality of the system, information, and services so that user satisfaction increases and the intention of users to use the system increases. Consequently, there will be a positive perception of expectations arising from the effort and performance of the system to remain in line and provide benefits for the organization [36], [42], [44], [45].

Financial support and competent human resources are needed to improve systems, services, and information. The ownership of top management to continue to make continuous improvements is reflected in how much budget allocation is met for the maintenance and development of the system. In addition, carrying out evaluation and monitoring so that SI continues to run as expected must always be done. Talented human resources are also needed to build and develop systems to remain relevant to the alignment of established business strategies and processes [36], [41], [42], [44].

Conclusion

The purpose of this study is to identify the main factors that affect the optimization of the implementation of the SI GRC. The proposed research model is modified so that the measurement of the efficacy of the information system is contextual to the problems faced by IGA. The results show that Information Quality has a significant effect on the Intention To Use. Intention To Use has a significant effect on Use, and Performance Expectancy significantly affects Intention To Use. Use has a significant effect on User Satisfaction, and User Satisfaction has a significant effect on Net Benefit. This study offers an update on previous research using the same research model by analyzing the theoretical, practical, and also managerial implications more deeply. This research can be used as a reference for state institutions or companies that will and already implement an integrated IS (ERP) effectively and efficiently.

Based on the above conclusions, suggestions for further research are conducted by expanding the object not limited to one institution. It is important to gain a database on the measurement of the effectiveness of the SIGRC implementation in the government sector. Considering there is no literature on the evaluation related to SIGRC in the government sector [14], [17], [18], [34], [36], [37], [40]–[42], [44], [46]. Then, it is necessary to examine from the financial aspect [47] how the effectiveness of the IS investment returns to its use. So top leaders can refer to formulating strategies in preparing budgets and resources that need to be done so that it runs effectively and efficiently when implemented.

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