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A Soft Systems Methodology Application to Promote the Multidimensional Model of e-Government Project Management in Indonesia's Construction Services

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ABSTRACT

Purpose: The Integrated Construction Services Information System (ICSIS) project is one of the Indonesian government's initiatives to meet public demand for better construction business services.

Design/methodology/approach: Despite being in operation for approximately 6 (six) years, ICSIS performs poorly. Fragmented business processes, noninteroperable systems, and unaccountable data all demonstrate poor performance in this regard. With all the best efforts, ICSIS only reaches 12% of the total target users.

Findings: This paper discusses a problem-structuring approach to problem analysis and comprehension, as well as the critical factors to consider through stakeholder interaction. From various perspectives, the results of this structuring phase using literature study, comparative analysis and soft systems methodology indicate that multidimensional factors must be considered in order to achieve the expected ICSIS values. This technique assists decision makers in developing a multidimensional model in ICSIS project management with the goal of fostering more dependable and long-term e-government in the construction services.

Paper type: Research Paper

Keyword: *Soft Systems Methodology; E-Government; Multidimensional Model; Project Management; Construction Services*

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I. INTRODUCTION

Law Number 2 of 2017 concerning Indonesia's Construction Services emphasizes the transformation of business services governance by mandating the development of ICSIS, which an implementation of construction business services utilizing the information and communication technology (ICT)–otherwise known as e-government. The creation of ICSIS is intended to improve the quality of business services governance while also anticipating the expansion of the construction sector, which is recognized to be increasingly complex and competitive at both the national and international levels. In addition, the initiative was also carried out to meet public demands for a higher quality of public services in the construction sector. The main areas of the government's concern in the creation of public value through e-government are the quality of public services, the effectiveness of public organizations, and the increase of social value.

The Ministry of Public Works and Housing of the Republic of Indonesia (MPWH) created ICSIS by integrating 6 (six) applications that provide services such as registration of professional and business experience, registration of construction material and heavy equipment, registration of construction company certificate, registration of construction worker certificate, procurement management of construction projects, management of e-owner estimate (e-OE), and management of e-construction project contract (e-contract). The main users of ICSIS are construction company, construction worker, material and heavy equipment vendor, government official in charge of construction project as well as public procurement team. ICSIS interoperability is also carried out

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with several systems owned by 5 (five) ministries or institutions that provide services on population data system, online taxes, electronic public procurement, online company incorporation, and the online single submission system for business licensing processes. In addition, interoperability is also carried out with systems developed by 12 (twelve) Construction Company Certification Agency (CCCA) and 19 (nineteen) Professional Certification Agency (PCA) which provide services for the issuance of construction company certification and construction worker certification. Figure 1 depicts the design of interoperability between the MPWH's construction service system and systems built by other ministries and the construction community.

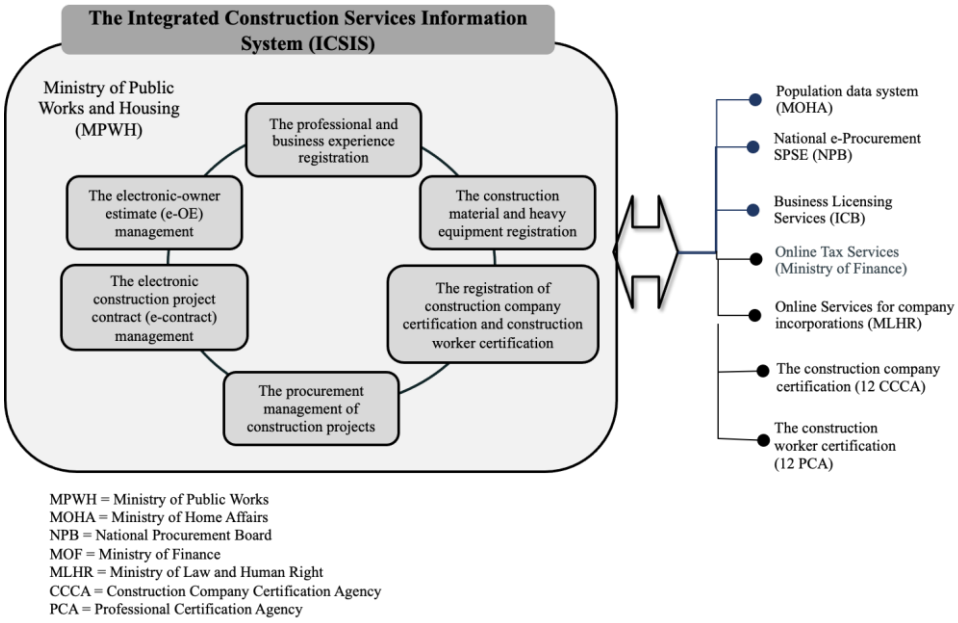

Figure 1. The Interoperability System of ICSIS

ICSIS showed a poor performance while in operation for approximately 6 (six) years. Poor performance in this regard is indicated by a variety of indications, including fragmented business processes, noninteroperable systems and unaccountable data. Regulation No. 59/2020, issued by the Minister of State Apparatus Empowerment and Bureaucracy Reform, regulates e-government maturity level measurement methods that can indicate the government's level of readiness in implementing e-government. The findings of an independent assessment of ICISS's maturity level are depicted in Figure 2. The ICSIS maturity level receives a fair rating of 2.6 on a 5-point scale. With all the best intentions, ICSIS fails to achieve widespread adoption, with adoption level as 12% of the total target users (https://siki.pu.go.id, 2022). It has faced numerous challenges and has failed to deliver the expected value.

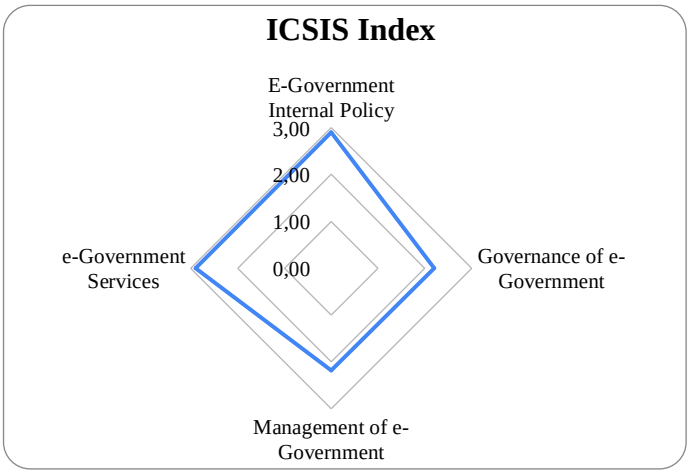

Figure 2. e-Government Index on ICSIS, 2022

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According to the process of managing the ICSIS project from the design stage to the current operation, the management framework of the ICSIS project has yet to be fully implemented. It is still being implemented using generic project management and does not directly address the complexities of e-government transformation. ICSIS project management adopts an engineering project management approach in which information technology acts as a single process through the development of various applications. The budget allocation for ICSIS project is almost entirely to spent on application development and information technology procurement (Ministry of Public Works and Housing, 2022).

The experience of various countries on digital transformation practice shows that generic project management are unable to meet the demands of the complexity of e-government projects with stakeholders of different perspectives and goals. In this sense, ICSIS has various stakeholders with varying perspectives and interests in digital transformation, not limited to the government but also the construction community.

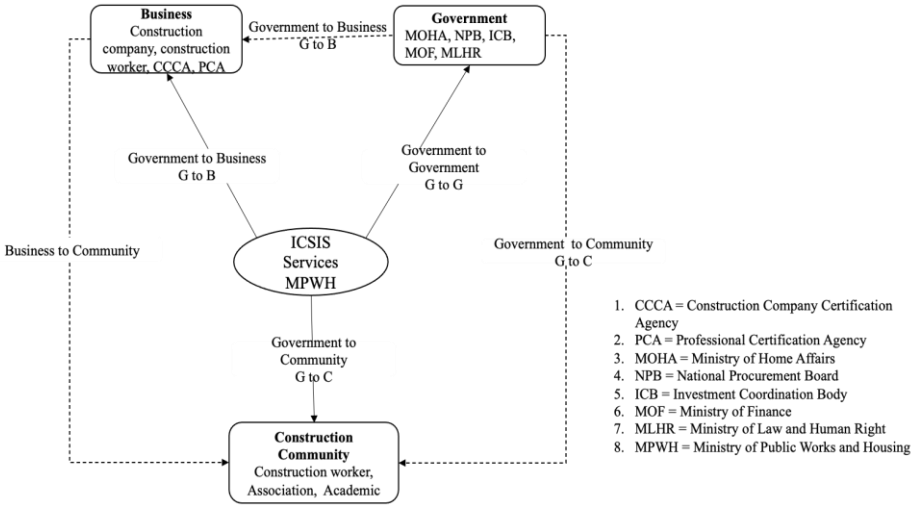

Figure 3. ICSIS Service Relationship Patterns

As illustrated in figure 3, there are 3 (three) relationship patterns in ICSIS, namely government to government (G2G), government to community (G2C) and government to business (G2B). Thus, ICSIS business processes are becoming more complex. This condition necessitates a comprehensive approach that incorporates the perspectives of multiple stakeholders, including the public, policymakers, and construction stakeholders.

Because of the heterogeneous aspects and stakeholders from numerous disciplines that must be considered, the management of e-government initiatives is particularly complicated and requires detailed review from various angles. This article will structure the ICSIS performance problem to gain an understanding of the factors that must be considered in ICSIS project management to see the interests of all stakeholders. These factors cannot be observed separately as there are interactions between them. Rather, they must be observed comprehensively, which are solvable through system thinking.

II. METHODS

The methodology utilized in this research is a combination of literature study, comparative analysis and Soft System Methodology (SSM). Literature study and comparative analysis are carried out by carefully researching numerous studies on factors that influence the effectiveness of e-government implementation and how e-government project management is carried out in various nations. Given the complexity of ICSIS project management, the results of the comparative analysis are utilized as a foundation for using SSM, particularly in constructing the ICSIS project management problem, identifying variables that must be considered while keeping all stakeholders' interests in mind. The LUMAS model is used for problem analysis, followed by CATWOE analysis, which is used to explore factors that must be considered in e-government project management in order to find models that can improve ICSIS performance.

SSM is a qualitative research methodology developed into a systemic and organized process that is used to address problems with an action-orientation to bring about improvements (Checkland & Poulter, 2006; Nair, 2014). SSM does not assume the world as something systemic and orderly. Instead, SSM assumes social reality as problematic characterized by various angles of approach and perspectives, as well as the readiness of actors to

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decide on actions to accommodate the perceptions, judgments and values of different actors (Železnik et al., 2017). SSM was developed in response to the failure of hard systems methodology to address complex real-world situations (Checkland & Poulter, 2006; Warren et al., 2019), addresses soft problems, issues that are difficult to resolve due to complex social interdependencies (Kamari et al., 2019).

Four SSM activities which are the revision of the 7 (seven) stages of SSM were introduced by Checkland (2000) are as follows:

a. Problem Situation: Identify problems or situations that need to be addressed, by collecting data and information, defining problems and aligning the understanding of all stakeholders on existing problems;
b. Developing a suitable purposeful activity model;
c. Debating the circumstance, utilizing the models, and seeking to learn from these debates in these aspects:

1) modifications that are both ideal and culturally achievable and would improve the situation, and
2) the arrangements between opposing interests that will allow better improvements to be established;

d. Taking measures in the circumstance to make it better.

Checkland introduced the concept of LUMAS (Learning for a User by a Methodology-informed Approach to a problem Situation) as part of the SSM (Checkland, 2000). LUMAS is an approach used to understand problem situations and solve them. In LUMAS, "Learning" refers to learning about the methodology to be used, "User" refers to the individual or organization experiencing the problem, "Methodology-informed" refers to the application of the understood and applied methodology, and "Situation" refers to the problem situation to be solved. LUMAS is very useful in solving complex and unclear organizational problems, such as environmental problems, social problems, and organizational problems.

The CATWOE analysis was conducted to identify the key stakeholders and the issues that concern them, as well as the success criteria and potential solutions. On the other hand, a CATWOE analysis is utilized to identify the potential impact of solutions on various stakeholders and assess the likelihood of each solution.

A. Literature Review

1. Implementation of e-Government: Key Success Factor

E-Government implementation refers to how an organization or government institution manages all stages of an integrated e-government project, from inception to completion, including change management and project sustainability, in order to maximize output and project service benefits (Gil-Garcia & Flores-Zúñiga, 2020; Indrajit et al., 2016). Various literatures discuss the key factors influencing the success of e-government implementation. However, the literature on the application of e-government in the construction sector is extremely limited.

Looking at the experience of e-government development in various countries, it is clear that as many as 35% of developing countries have failed, 50% have been partially successful, and only 15% have succeeded (Kuldosheva, 2021; Manurung, 2017; Twizeyimana & Andersson, 2019). Failure of e-government causes many problems, including lost time and money, damage to key actors' reputations, and the potential for increased funding to improve it in the future (Twizeyimana & Andersson, 2019).

Ansyori et al. (2018) and Chomistriana et al. (2022) conducted a thorough literature review and came to the conclusion that technical and non-technical factors were interrelated and critical to the success of e-government. The effectiveness of e-government implementation is determined not only by the availability of information technology tools, but also by how users use e-government to support operational and organizational goals in achieving e-government value. Non-technical factors influencing e-government implementation performance include human resource leadership (Dias, 2020; Sandoval-Almazán et al., 2017; Sulistiyani & Susanto, 2018; UNDESA, 2020; Villanueva, 2018), policy and regulation (Al-Muftah et al., 2018; Nachit et al., 2021; Omoyiola, 2019; Sandoval-Almazán et al., 2017; Sulistiyani & Susanto, 2018; UNDESA, 2020; Villanueva, 2018; Wilson & Mergel, 2022), organization (Al-Muftah et al., 2018; Ashaye & Irani, 2019; Dias, 2020; Gilman, 2018; Omoyiola, 2019; Sandoval-Almazán et al., 2017), business process (Nachit et al., 2021; Omoyiola, 2019; Sandoval-Almazán et al., 2017; UNDESA, 2020; Wilson & Mergel, 2022), culture (Humbeck et al., 2019; Wilson & Mergel, 2022), economy (Gong et al., 2020; Omoyiola, 2019; Sandoval-Almazán et al., 2017; Srinavin et al., 2021; Wilson & Mergel, 2022), demographics and geographical conditions (Dias, 2020; Gong et al., 2020; Omoyiola, 2019; Sandoval-Almazán et al., 2017; Wilson & Mergel, 2022). Non-technical factors often become dominant and are used as a reference to determine technical standards. Human resources, policies, and regulations are the main factors that must be present in e-government initiatives, according to 83% of respondents in a literature review conducted by Chomistriana and Simanjuntak (2022). This is closely followed by organization, which comes in at 71%. 67% and 50% are accounted for by technical factors, specifically technology and business processes.

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2. Adoption of e-Government: Key Success Factor

Adoption of e-government represents how users engage with e-government services (Gil-Garcia & Flores-Zúñiga, 2020). According to various sources, the success of e-government projects cannot be measured solely on the basis of implementation. Rather, it is necessary to see the process of achieving the value of e-government. All too often, a beautifully-built, robust, and highly technical application is delivered to intended end-users, and it gets almost no use because it does not solve real problems experienced by those users. Digital transformation in public sector services should be viewed as a change in all aspects of the technology system, processes, and organizations that result in changes in how people behave in order to adopt the services.

Creating an e-government project entails transformation, which is carried out not only on technology but on all aspects of the technology system, processes, and organizations that bring about change, and is also centred not only on the implementation perspective but also on society (Hornstein, 2015; Sarantis et al., 2009; Takagi & Varajão, 2019). An issue that is often present in technology for good failures is not approaching the problem from a user-centred perspective. Ecosystem innovation is highly dependent on continuous adaptability to the evolving nature of the user's needs and emerging technologies (Linde et al., 2021; Marnada et al., 2022).

An organization is almost certain to implement e-government well by interpreting customer needs into specific products and services. The existence of an organizational culture that facilitates and supports ecosystem transformation is an important factor that plays a fundamental and significant role in the success of digitally sustainable services (Kamalaldin et al., 2020; Valdés et al., 2011). In some cases, the state of the community's socioeconomic structure and average income level, as well as geographic and demographic conditions, influence the success of e-government (Al-Muftah et al., 2018; Kuldosheva, 2021; Wilson & Mergel, 2022). Community readiness as e-government users is an important determinant (Al-Muftah et al., 2018; Kuldosheva, 2021; Sam & Chatwin, 2019). The level of use of e-government services is affected by the condition of people with a high level of digital literacy (Sandoval-Almazán et al., 2017; UNDESA, 2020; Wilson & Mergel, 2022). To be able to use digital services, the entire community's mindset must be changed (Elnaghi et al., 2019).

The experience of implementing e-government demonstrates that the adoption of e-government services is determined by factors such as how users perceive the benefits of the service (Ahmad et al., 2020; Rabaa et al., 2016); how users perceive the ease of the service (Ahmad et al., 2020; Hyytinen et al., 2022; Rabaa et al., 2016; Veeramootoo et al., 2018; Witarsyah et al., 2017) and the users' readiness of technology (Malodia et al., 2021; Rabaa et al., 2016). Many studies have examined the successful application of e-government by examining variables formulated by Technology Readiness and Acceptance Model (TRAM) theory,

3. Project Management of e-Government

Increasing the success rate of e-government programs is an organizational challenge. To achieve the desired outcome, it is required to define success criteria, which then become factors addressed in the integrated project management methodology throughout the initiation and planning phases, as well as during monitoring and control activities (Takagi & Varajão, 2019). To improve e-government performance, the factors of implementation by the government and adoption by users should be seen as equally important and interrelated in a project management cycle (Alkaabi et al., 2017; Gil-Garcia & Flores-Zúñiga, 2020).

Traditional project management that only considers implementation factors, based on experience in various countries, is unable to meet the requirements of e-government transformation due to the complex range and character of e-government initiatives. This is a common finding in developing-country e-government projects, where project management is engineering in nature (i.e., information technology) with a concentrate on data (instead of information), technology (rather than human resources), processes (rather than services), and management structures (rather than knowledge) (Sarantis et al., 2009). The research on various e-government projects in Indonesia suggests that there are gaps in e-government project management, where most of them still use traditional approaches, which are formed with an emphasis on implementation factors in the form of measurement, control and rules (Marnada et al., 2022). Traditional project management focuses on activities that reduce costs and boost productivity; as a result, more emphasis is paid to information technology components as a single process through application development, which poses a number of issues (Marnada et al., 2022).

Large-scale digital transformation must result in changes in the behavior of many actors, takes time, and involves complex relationships between various social and technical entities in one ecosystem (Burmeister et al., 2019). Various implementation factors related to process, technology, and human resources, as well as adoption factors, must be diffused in all stages of project management, with realistic milestones, involvement of all stakeholders, and elaboration of system development methods and knowledge of governance processes (Ziemba, 2013). There are 4 (four) major gaps in e-government project management (Sarantis et al., 2009), namely: inability to capture the ultimate goal of the e-government project; inadequacy in capturing the project's multidimensional characteristics; no knowledge transfer; and no e-government stakeholder modelling.

The development of project management theory presented in the PMBOK 7th edition (2021) emphasizes the value achieved by a project with a focus on outcomes rather than deliverables. It describes 12 (twelve) basic

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principles that form the foundation of all projects, with various approaches to producing project outcomes. There are eight performance domains, which are groups of activities that determine how well project delivery can be carried out. Overall, the performance domain represents a project management system that includes interactive, interconnected, and interdependent management that will achieve the desired project results. When the performance domains interact with one another, changes occur that must be continuously reviewed and viewed as a unified system. This theory is consistent with what is required in e-government project management, namely integrated, flexible, and dynamic project management capable of dealing with change, using a behaviour-focused, knowledge-centred, and systemic approach.

It was found that more research is needed to determine what implementation and adoption factors influence the success of digital transformation programs in the construction services. Implementation variables include not just technical aspects like technology, data, and business processes, but also non-technical factors like culture, organization, human resources, economic conditions, and others. Furthermore, adoption factors such as technology readiness, user perceptions of system benefits, and ease of access must all be considered in order to achieve ICSIS value. As a result, structuring the internalized success characteristics and obstacles in e-government project management is a significant step toward improving ICSIS performance.

III. RESULTS AND DISCUSSION

The MPWH has implemented digital transformation by creating ICSIS, which intends to improve construction business services in Indonesia. Despite ICSIS's six-year operation, the resulting performance has not met the intended values, such as improving the quality of construction business services, improving the quality governance of the government administrative system, and boosting the social value of the construction community. The system maturity level was only 2.6 out of 5, and the system adoption rate was only 12% of the entire target users (https://siki.pu.go.id, 2022).

It is known that the ICSIS project management still emphasizes engineering matters with the main focus on developing applications and information technology (Ministry of Public Works and Housing, 2022). Digital transformation is not followed by changes in organizational structure, mindset changes, mapping of user behaviour, mapping of employee and user technology readiness, and other non-technical factors. Literature review and comparative analysis of factors affecting e-government performance as well as e-government project management in various sectors and countries was conducted with the aim of:

a. Analysing the problems which result in the inability to achieve ICSIS value;
b. Optimizing the factors that can improve ICSIS performance by recognizing how the interaction of key implementation and adoption factors affect ICSIS performance;
c. Evaluation of project management used in various e-government projects;
d. Evaluation of factors that must be considered in ICSIS project management to achieve the desired value;
e. Building a conceptual model for ICSIS Management Project;
f. As a reference to develop a model that will be used for further research using quantitative methods, which can later be used to develop an operational framework for ICSIS project management.

Figure 4 depicts an analysis of ICSIS project management challenges using LUMAS. The government anticipates that the value of ICSIS (increasing the quality of public services, governance of government administrative systems, and the social value of society) will be realized, and thus the performance of construction business services will improve. However, if ICSIS project management is implemented using a traditional project management approach with an emphasis on technology and information development as well as applications, a digital transformation failure will occur, characterized by fragmented business processes, noninteroperable systems, a low level of data accountability, and low system adoption rates.

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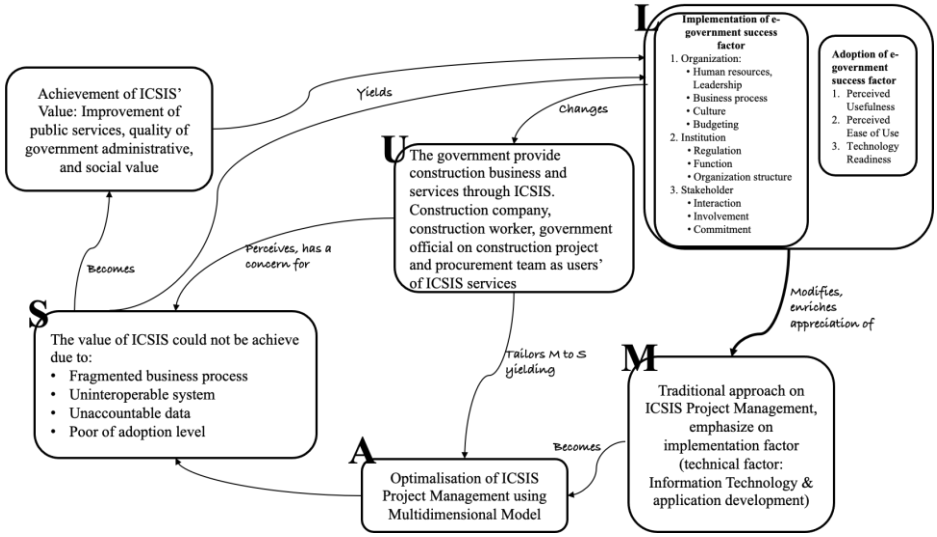

Figure 4

LUMAS Multidimensional Model in ICSIS Project Management

This study will produce an e-government project management model by including a transformation management system that takes into account the entire life cycle of the project, combining the hardware and software qualities of the project management method, as well as demonstrating how project management can meet the specific challenges of government transformation projects. The value that e-government projects seek to achieve is measured in addition to the achievement of implementation outputs. Transformation project management must incorporate all implementation and adoption factors into a multidimensional model, which is then optimized in e-government project management (Michael & Miller, 2013; Sandoval-Almazán et al., 2017).

The CATWOE (Customers - Actors - Transformation Process - Worldview - Owners - Environmental Constraints) analysis aims to map and identify problem areas, as well as see what you want to achieve and how different solutions would impact stakeholders. The analysis employs thinking solutions from a variety of perspectives. Table 1 shows the CATWOE analysis of ICSIS project.

Table 1. CATWOE Analysis

CATWOE Element	*Description*
CUSTOMER *Who are the process's beneficiaries and what effect does the issue have on them?*	*Construction company, construction worker, government official on construction project, government procurement team*
ACTOR *Who is involved in the situation*	*MPWH, MOHA, MOF, MLHR, NPB, ICB, CCCA, PCA*
TRANSFORMATION PROCESS *What is the fundamental transformation of the system?*	*How to apply the multidimensional model to ICSIS project management to improve system performance and achieve the expected value.*

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CATWOE Element	*Description*
WORLD VIEW *What is the overall picture, and what are the broader implications of the problem?*	*Construction company, construction worker, government official on construction project, public procurement team use ICSIS to obtain construction business services.* *ICSIS runs effectively, efficiently, integrated, interoperable, safe, accountable, and transparent.* *The ICSIS project achieves good maturity level and high adoption rate.* *The high quality of public services, the effective public organizations, and the increase of social value.*
OWNER *Who is in charge of the process or situation under investigation, and what role will they play in solving it?*	*Ministry of Public Works and Housing*
ENVIRONMENTAL CONSTRAINTS *What are the constraints that will affect the solution's success?*	*ICSIS project management is implemented traditionally with an emphasis on implementation factors in the form of information technology and application development;* *Inadequacy in capturing the multidimensional ecosystem;* *Lack of regulation and Standard Operational Procedure which regulate the non-technical factors;* *Lack of mapping of the needs and adequacy of qualifications and classifications of human resources for project implementation;* *The organizational structure and business processes of the organization have not been adapted to the needs of digital transformation;* *Dearth of knowledge transfer;* *Lack of Stakeholder e-government modelling;* *Lack of digitalization risk management;* *Lack of stakeholder capacity mapping of technology readiness acceptance;* *The behaviour of all stakeholders involved in regards to potential change, may have opposing viewpoints and culture.*

The author believes that the development of project management theory presented in PMBOK 7th edition is more appropriate for use in e-government projects, where projects emphasize the value achieved by focusing on results rather than deliverables (Project Management Institute, 2021). Based on the analysis of LUMAS and

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CATWOE, a multidimensional model will be built to internalize implementation and adoption factors in ICSIS' project management, as shown in figure 5.

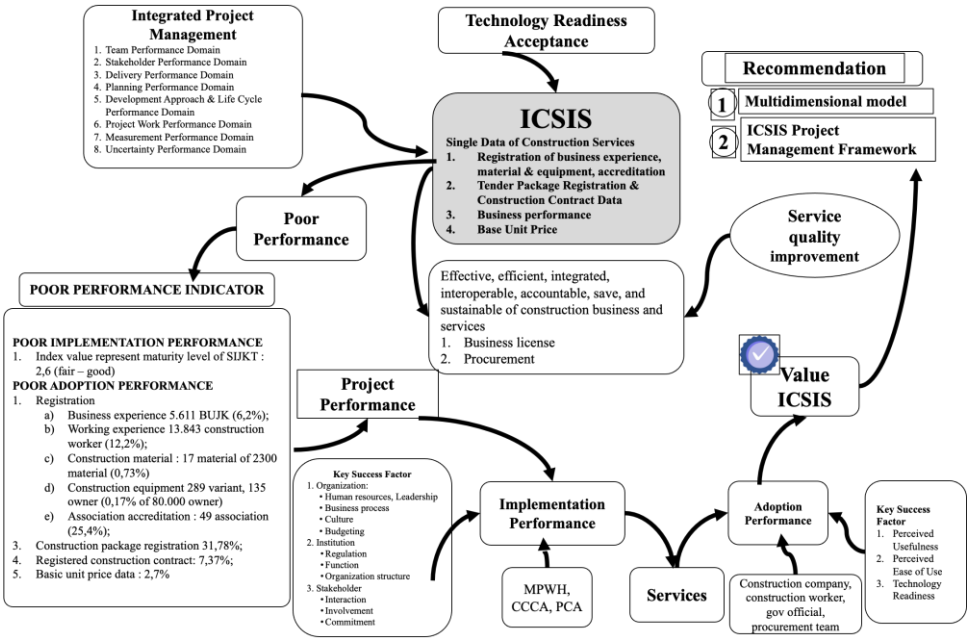

Figure 5. Multidimensional Conceptual Model of ICSIS Project Management

1) *Consumers* are the users of ICSIS. This includes construction company, construction workers, government officials on construction projects, and public procurement teams. Consumers are part of the construction community, which includes the association of business entities, professional associations, academicians and others parties who are able to influence government policy.
2) The government has the authority to provide construction business services, which results will be felt by consumers in the form of effective, efficient, integrated, interoperable, safe, transparent and accountable services.
3) Integrated Project Management is a tool used to translate policies, including ICSIS long-term planning and project implementation to ensure that ICSIS can operate to provide good service quality and achieve the desired value. In this research, project management implementation factors will be structured based on performance domain variables as stated on the PMBOK 7th edition.
4) Technological Readiness Acceptance is related to how service consumers perceive ICSIS and their readiness. TRAM is made up of user perceptions of the system's benefits and ease of use, as well as their readiness to use ICSIS. The TRAM adoption evaluation results are used as factors to consider in ICSIS project management.
5) The multidimensional model comprehensively internalizes implementation and adoption factors in ICSIS project management, which will be applied within the ICSIS operational framework to achieve the ICSIS value and construction business services as expected.

According to the PMBOK 7th edition method, implementation factors will be classified into eight performance domain variables: team, stakeholder, delivery, planning, development and life cycle, project work, measurement, and uncertainty. The performance domain is a group of activities that determine the project delivery can be done effectively. The overall performance domain represents a project management system that includes interactive, interrelated, and interdependent management, and together will achieve the desired project output. Key success factors for e-government implementation will be developed as performance domain variables. To achieve the adoption performance of ICSIS, variables from the Technology Readiness Acceptance Model (TRAM), namely perceived usefulness, perceived ease of use, and technology readiness, will be used. Changes will occur as the performance domains interact with one another, including ICSIS user behaviour, which must be continuously reviewed and viewed as a single system.

The following step is to compare the model to the actual situation, which is a juxtaposition of the actual situation sketch with the model developed so that the areas that require improvement and significant features are

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visible. This will be used as a benchmark to identify what improvements must be done to improve ICSIS performance.

Table 2. Comparison between model and reality

Conceptual Model Activities	*Current Situation*	*What to do*
Identifying implementation and adoption factors and their impact on ICSIS performance improvement.	*There is no systematic approach to identifying implementation and adoption factors that influence the achievement of ICSIS value.*	*Design, develop and implement systematic approach.*
Reviewing of current ICSIS project management performance.	*ICSIS project management is focused on application and information technology development. There is no overarching strategy for ICSIS construction management.*	*Establish a comprehensive formal review of ICSIS project management.*
Assessing team performance of ICSIS.	*There was no systematic analysis.*	*Conduct a thorough evaluation of team performance.*
Mapping digitalization capacity of ICSIS stakeholders	*There is no mapping of the digitization capacity of stakeholders.* *The construction services community has not been involved in the development of ICSIS, which has resulted in a gap in readiness between CCCA and PCA in developing systems that must be interoperable.*	*Stakeholder digitalization capacity mapping and being part of ICSIS management.*
Assessing delivery performance.	*There are no key performance indicators (KPIs) for services that can be agreed upon by all ICSIS stakeholders within a specific time frame; instead, KPIs are limited to technical performance achievements.*	*Develop delivery performance standards that can be agreed upon by all ICSIS service users and stakeholders.*
Assessing planning performance	*There is no stakeholder inclusiveness strategy in the planning stage, considering all implementation and adoption factors.*	*Build an inclusive and comprehensive ICSIS planning system*
Assessing Life Cycle Performance.	*There is no overall strategy based on the ICSIS project lifecycle.*	*Develop ICSIS performance standards according to the project life cycle and define the stages to be achieved in each cycle.*

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Conceptual Model Activities	*Current Situation*	*What to do*
Assessing project work performance	*There are no project works performance standard that covers technical and non-technical performance and service adoption.*	*Develop project works performance standards that include implementation performance (technical and non-technical) and service adoption performance.*
Review Measurement performance	*There is no comprehensive and regular review strategy for KPI delivery and project performance.*	*Develop a comprehensive and regular review strategy for KPI delivery and project performance.*
Risk Management of Digital Transformation	*Risks of technological development and rapid changes in business processes have not been anticipated in ICSIS project management.*	*Preparation of Digitalization Risk Management.*
Assessing the readiness of the construction community's acceptance of the utilization of technology that will be applied through ICSIS.	*There is no strategy for mapping the readiness of the construction community's acceptance of the utilization of technology that will be applied through ICSIS.*	*Develop and implement a strategy for mapping the readiness of the construction community's acceptance of the utilization of technology.*
Applying the multidimensional model to the ICSIS project management operational framework	*No multidimensional model was used as the basis for building an operational framework for ICSIS project management.*	*Build an operational framework for ICSIS project management based on a multidimensional model*

The recommendations compiled in the article are expected to be carried out to change the current conditions so that they closely resemble the conceptual model. Under ideal conditions, all recommended activities can be implemented. However, an organization certainly has limited and finite resources, in aspects of human and cost. Pragmatically, it is necessary to prioritize the implementation of these recommendations (Burge, 2015). This is not a simple task, and it is difficult to put into action. The parties are frequently not motivated to make a change even though it needs to be done logically as outlined in the conceptual model. The SSM is intended for human activity systems; therefore, it is essential to look into the behaviour of all stakeholders involved in regards to potential change, who may have opposing viewpoints even if the conceptual model's logic is undeniable. If the changes and the culture conflict, one culture will emerge as the victor. As a result, cultural feasibility might be challenging for scientists and engineers.

V. CONCLUSION

The purpose of this article is to create and outline the essential objectives for achieving ICSIS value. The literature review and application of SSM resulted in the problem being systematized, which served as the foundation for establishing a framework for developing an ICSIS multidimensional model. Implementation and adoption factors identified in various literatures serve as the foundation for transformation project management variables that consider the entire project life cycle, combining hardware and software characteristics, and are tailored to meet the challenges of government digital transformation projects. A realistic action plan can then be built using the multidimensional framework model by comparing the expected situation to the current conditions.

This article has limitations in a way that it does not validate the implementation and adoption factors that influence the success of ICSIS to experts. Furthermore, additional study using the ease benefit matrix is required to build and organize a feasible change action plan that can be implemented immediately. The outcome will

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certainly result in a new system that influences the larger system and can provide more opportunities and problems, and the process will have to be done from the beginning once again. It is also possible to quantitatively measure the interaction of the multidimensional key factors and their significance to the ICSIS value achievement in order to further refine the system. This can be used to determine the priority scale for the recommendations made.

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