Model of Readiness and Success in Adopting Government Mobile (mGov) among Government Institutions in Indonesia

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Abstract. The concept of cellular government presents information that is oriented towards improving the quality of public services and organizations that use efficient and effective cellular services. This study discusses the preparation and successful adoption of cellular government mobile (mGov) among government institutions in Indonesia. This study provides knowledge and alternatives for implementing mobile adoption with mGov modeling that can be applied in determining readiness and success in adopting mobile applications. The researcher developed a research model using descriptive analytical methods by supporting, evaluating and adapting the model of readiness and success (ISRS), the technology readiness model (TRI), the successful model of construction IS from DeLone & McLead, the theory Information System (IS) use and security. In this study the models to be developed in this structure are 11 variables and 52 indicators. Path influence between variables is presented by 25 relationships. This study obtained an assessment of the implementation strategy, analysis of the readiness assessment model and adoption model that is appropriate for the development of government mobile applications among Indonesian government institutions.

Keywords*:* eGovernment, Government Mobile, Government Mobile Applications, Model Development, Model Adoption, IT Security.

1 Introduction

The development of modern information and communication technology (ICT) has an impact on how citizens and government organizations interact with each other. The role of information technology in the delivery of information at this time is increasingly needed, and effected the speed of getting information at government implementing agencies in Indonesia. Mobile cellular is an important driver for governments around the world to provide public information services to citizens and government organizations. In developing countries readiness to apply government mobile (mGov) is primarily determined internally by the readiness of its organization [1]. However, even though the application of IT will bring benefits to the organization, the organization must first succeed in its application [2]. Sheu and Kim said the success of the implementation and adoption of new technologies, especially ICTs in an organization, was largely determined by brainware readiness factors, namely ICT users

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themselves [3]. Therefore, in determining the level of government mobile readiness (mGov) it is necessary to measure the success rate of government mobile devices (mGov) so that the information management system can provide benefits effectively and efficiently, both to the public and government organizations. [4].

In measuring the problem of IS performance, researchers have discussed the structure of the effectiveness and efficiency of computer-based business over the past few years, then it has been investigated in a number of different themes, such as satisfaction, readiness, utilization, acceptance, and construct success models in the next period of some previous studies [5-9]. From several previous studies [7, 9-13], in the development of modeling information systems will be developed from previous empirical studies.

Next in measuring the readiness modeling and success of Mobile Government adoption, it is necessary to model and measure the evaluation and performance of information system capabilities (IS) [9]. Developing a new success of system information (IS) model by adopting system information (IS), combining system information (IS) and adapting from previous system information (IS) models, needs to be done to explore new opportunities for improving system information (IS) performance.

This research is to explore the effect of further preparedness in developing technology for successful implementation and to develop preparedness modeling for the success of adopting mobile government (mGov) in the context of adopting mobile government information systems (mGov). The aim is to develop a model of readiness and success of cellular governance by adopting information systems (IS), combining information systems (IS), and adapting information systems (IS) readiness and success of information systems (IS) [9], technological readiness [12], usability [13], security [14] and models of SI success [16]. In accordance with the above research program, two later research questions were asked to guide the implementation of this study.

Q-1. How to explore the relationship between constructs of technological readiness, usability, and security to the success of IS?
Q-2. How do you combine the model of technology readiness, usability, and security in the success of IS model in the context of mobile government (mGov) information system?

This paper is structurally composed of five parts. The first part explains the research program of this study. Then followed by the literature review section, research methods, results, and discussions, each in sections two and three. Finally, part five is the conclusion section.

2 Literature Review

In an effort to improve the effectiveness and efficiency of public services by utilizing ICTs, e-Government is a result of the development of ICTs that affect the global order and bring new values to the government and its citizens, business entities and other government units. The new order that formed is towards the information society. Along with the rapid development of ICTs, mobile utilization has also influenced the development of eGov, government mobile is a subset of eGov [16]. Government mobile is the latest advancements in wireless and communications mobile infrastructure enabling the government to provide and manage information services to the public efficiently and economically. Governments utilizing technological advancements effectively are the main drivers of the next generation of eGovernment services, the

development of e-government services which is sometimes called government mobile (mGov) [17]. Therefore, it has become imperative for the government to adopt and implement ICT in this case m-Gov in the government to improve the quality of its services to the community.

The adoption of ICT in Indonesia is very reasonable because only 10% of the population is ICT literate from the total population of Indonesia. Seeing conditions like this, an organization needs to plan as well as possible if it will adopt ICT and need to know the level of readiness of ICT users to be adopted, so that the resistance process does not emerge. It can be seen clearly that although the application of IS brings benefits to its owners, they must first succeed in its application [2, 8, 18, 19]. This shows that the success of the IS implementation is a major challenge for the owner before benefiting from the IS. In addition, failure to implement IS will result in financial losses [20]. The previous success study of IS shows that the criteria for the success of IS development are related to effectiveness, efficiency, user satisfaction, and the problem of meeting requirements [5, 8, 9, 12,18]. Some of the success studies of IS [9, 21-23] suggest that one indicator of the failure of IS implementation is even though IS has been successfully developed technically, but the system owner does not get the optimal benefits from implementing the IS that refers to system requirements in system development planning. For example in the case of adopting an information system mGov, in this case understanding readiness and success in adopting mGov and knowing the factors that might influence are the initial stages of adaptation of mGov itself [24].

To understand and explore the factors that influence the readiness and successful adoption of mGov, a measurement model is needed that can be a forum to evaluate and improve the performance of its IS. Developing a new succes of IS model by adopting, combining, and adapting from previous IS models, needs to be done to explore new opportunities for improving IS performance [7, 9-11, 13]. In developing the model, several previous researchers [7, 9-11, 13, 25] showed that many IS models were developed referring to previous theories rather than based on empirical studies. In this research program, researchers adopted, combined, and adapted the model of readiness and succes of IS (ISRS) [9] which is a combination of readiness models [12] and succes of IS models [15] with usability variable [13] and security variable [14].

Taking into account the important role of the security factor as explained by Sathye [14] that security and privacy are the main obstacles in adopting information technology. Information system security is a form of mechanism that must be implemented in a system so that the system avoids all threats that can endanger the security of information data and the security of the perpetrators of the system [26].

In developing an interactive system, evaluating usability is an important activity to do. The user iteration design must go through design and evaluation iterations to show satisfactory results [27], and system interfaces are easy to use [28] and easy to learn [29] Relevant evaluations are by identifying usability factors [30].

This study the model was developed with technology adoption of information systems (IS), merging (combination techniques) and adapting models from ISRS [9] which is a combination techniques of the model readiness [12] and information systems of succes [15], usability theory [13], and security theory [14].

3 Research Methods

The study of the development of the government mobile model (mGov) carried out in 4 main stages (Figure 1). Starting from the preliminary study (S1) is carried out by reviewing the

theory and model, and the development of the initial model that was developed based on the existing references from the readiness model [8] and the IT Adoption model [21, 31]. Aside from looking at literature studies, in this research phase formulates the stages of research that will be carried out in the research phase. The second model phase (S2) was developed for adoption models, combination techniques, and will be adapted to the modeling that has been developed. This stage begins with the beginning of the first or first sub-chapter (S2.1), that is, with the assumptions that exist in developing theories that have been selected and started (Table 1).

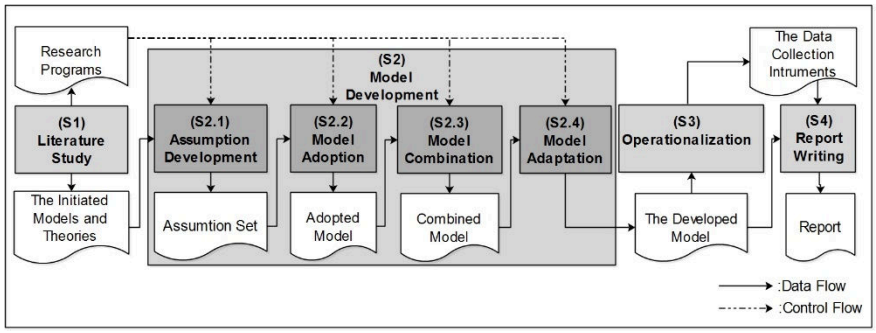

Figure 1. Methodology Research

Following the set of assumptions developed from model ISRS [9] which is a combination of the readiness model [12] and the succes of IS model [15], usability theory [13] and security theory [14], then adopted (S2.2), in combine (S2.3), and adapted (S2.4). The model developed, then in stage three (S3) is broken down into the level of the research instrument in the operationalization stage, at this stage, the researcher determines the indicators of the model developed, then develops them into questions for each measurement of instruments taking into account existing studies. The last stage is the stage of making a report (S4), researchers make a report about the research model developed and data collection instruments which are then proposed for the reporting stage and in terms of conducting research.

Table 1. List Models and Theories

Models System, Theories IS and IT Security	References
Theory Proces Information Technologies	[32, 33]
Information System of model readiness and model success (ISRS)	[9, 12, 15, 23]
Theory Model Usability	[13]
Theory Security Model (IT Security)	[14]

4 Results and Discussion

In Figure 2, the research model presented is the proposed readiness and success model of the mobile government adoption model (mGov). The development of this model was inspired

by previous research development models [9] by following the trend of developing models from the studies of Belout and Gauvreau which state that most research developed using the previous theory is not from empirical evidence. In general, models developed with technology adoption, merging models, and adapting readiness and success models of information systems models [9] which is a combination of technology readiness models [12] and succes of IS models [15], usability theory [13] and security theory [14] with eleven variables, i.e, Optimism (OTM), Innovativeness (ITV), Discomfort (DCF), Insecurity (ICR), Usability (UBT), Information Quality (IQY), System Quality (SQY), Service Quality (QST), Security (SRT), User Satisfaction (UFS), and Government System Success (GMS). OTM, ITV, DCF, ICR, IQY, SQY, QST, UFS, GMS was adopted from the ISRS model [9] consisting of a technology readiness model and the succes of IS, UBT adopted from usability theory [13], and SRT adopted from security theory [14].

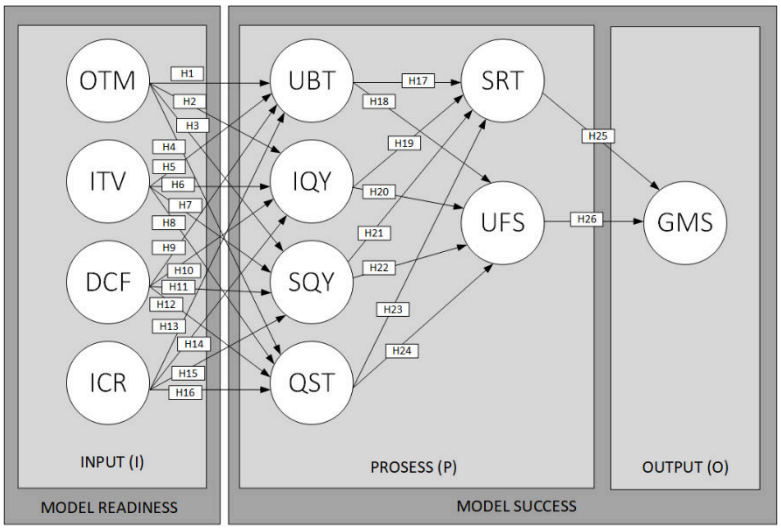

Figure 2. The proposed mGov's readiness and success model

The researcher uses the input-process-output logic (IPO Logic) in developing the proposed research model, this refers to previous studies [8, 9, 12, 19] that use IPO logic in developing the research model. In this research model the researcher places a readiness model (TRI) [12] on the input dimension. For the succes of IS model [15] and usability theory [13] and security theory [14] the researcher places in the process and output dimensions. Here, the success of government systems is assumed to be the output of the process. Briefly, the constructs of technological readiness [12], usability [13], security [14], and succes of IS [15] was then adopted, combined, and adapted in developing the readiness model and success of m-Gov adoption to assess user readiness factors towards successful adoption of m-Gov. From the model developed, the researcher developed 25 hypotheses, consisting of 52 indicators and questionnaire statements, which will then be explained in more detail regarding the definition of variables, indicators, and research statements in Table 2, Table 3, and Table 4 respectively.

Table 3. List Of Variables

Var.	Definitions
OTM	The level of confidence and positive use of technology IS/IT
ITV	The level of tendency in trying and exploring of technology IS/IT
DCF	The level of understanding of the inconvenience of using IS/IT technology and the lack of mastery of using IS / IT technology
ICR	The lack of confidence in understanding the use of IS / IT raises doubts about its use
UBT	The level of assessment of how easy to use the system interface is used
IQY	Level Measurement of the level of consistency of information systems in meeting all the requirements and expectations of users in carrying out their work
SQY	The level of measurement of the quality of content IS/IT
QST	The level of measurement of system service excellence for users IS/IT
UFS	The level of measurement of user satisfaction using the system IS/IT as a result of the project
GMS	The level of IS/IT quality measurement is based on the application of planning

Table 4. List Of Indicators Used

Parameter	Definitions
Eases (OTM1)	The level of measurement of the ease of a system in the ability to be free of obstacles, difficulties and problems of information systems (IS/IT)
Connectivity (OTM2)	The level of measurement of the connectivity ability of a system to be connected successfully
Efficiency (OTM3)	The level of measurement of the system produces the output of the achievement of the system with the resources needed to achieve results
Effectiveness (OTM4)	The level of measurement of the ability of the system to achieve goals
Productivity (OTM5)	The level of measurement of a system is related to the system to produce output compared to the resources needed to produce output
Solving Problem (ITV1)	System level measurement to solve problems
Independency (ITV2)	The level of measurement of the ability of the system in free control of its users.
Defiance (ITV3)	The level of measurement of the success of the system in handling or achieving. difficult problem situations.
Stimulation (ITV4)	System level measurement for developing and improving systems.
Competitiveness (ITV5)	The level of measurement of a system's ability to support users is more successful than its competitor's system.
Trouble (DCF1)	System level measurement with features that are confusing or incomprehensible.
Difficult (DCF2)	The level of measurement of a system whose conditions are not easy to operate.
Depends (DCF3)	The level of measurement of the system with the condition of the system must be operated through another party.
Lack of Support (DCF4)	The level of measurement of the system is insufficient, lacks, or there is no support in their operating system.
Inappropriateness (DCF5)	The degree related to inappropriate conditions.
Failure (ICR1)	System level measurements that allow dangerous or unpleasant.
Threat (ICR2)	System level measurements that allow dangerous or unpleasant
Reducing	The level of measurement of application systems in human interaction in size,

Parameter	Definitions
Interaction (ICR3)	number, and importance
Distraction (ICR4)	The level of associated with using the system gets attention and prevents people from concentrating on other things
Incredulity (ICR5)	The degree related to doubts about the utilization system
Efficiency (UBT1)	Efficient use of IS/IT
Easy to learn (UBT2)	The level of measurement system in the ease of learning the use IS/IT
Memorability (UBT3)	The level of measurement of the ability of the system to remember in interaction with IS / IT without errors or difficulties
Accesbility (UBT4)	Level of measurement in ease of accessing IS/IT.
Accuracy (IQY1)	The actual standard level of measurement of the suitability of the information system produced.
Timeliness (IQY2)	The level of measurement of the accuracy of IS / IT information processing systems on the duration of time planned by the system.
Complete (IQY3)	The level of measurement of the completeness of information produced by IS / IT without missing parts.
Consistency (IQY4)	The measurement level of a system that shows continuous information is the same in operation, service, maintenance, or quality.
Relevance (IQY5)	The degree of measurement of relevance to the subject of information produced by IS/IT.
Use of Ease (SQY1)	The level of measurement of the system is free from obstacles, problems, and difficulties during the use of IS/IT.
Maintenance (SQY2)	The level of measurement of the ease of system maintenance in maintenance IS/IT.
Interaction Time (SQY3)	The level of measurement of the system's reaction time to command interactions from users.
Functionality (SQY4)	The level of system measurement runs on planned operating system requirements IS/IT.
Savety (SQY5)	The degree of Immune from IS from danger, attacks, and unexpected damage
Responsive (QST1)	The level of measurement system reacts in serving users quickly, the situation is right, time is short.
Flexibility (QST2)	The level of measurement the system adapts to its users according to user interaction.
Security (QST3)	The level of measurement a security system safely from unexpected dangers, attacks and damage.
Functionality (QST4)	The level of measurement associated with the scope of IS/IT is in accordance with functional requirements
Extension (QST5)	The degree associated with the scope of additional IS services that exceeds functional requirements
Access Security (SRT1)	The level of security system measurement when the user is logged in
Confidentiality Data (SRT2)	The level of measurement of the ability of the system to protect user data
Guarantee Security (SRT3)	The level of system security measurement protects user information
Preventive (SRT4)	The level of measurement of information system prevention in security.
Usefulness	The level of measurement of the usefulness of the results of the system is based

Parameter	Definitions
(UFS1)	on achieving information output compared to the resources needed.
Effective (UFS2)	The level of measurement of user satisfaction is based on the ability of the system to meet user needs in achieving goals.
Flexibility (UFS3)	The level of measurement of user satisfaction with the system's ability to adapt according to user demand.
Overall Satisfaction (UFS4)	The level of measurement of system user satisfaction with the adequacy of the overall aspects of the system.
Efficiency IS (GMS1)	The level of measurement compares the value of resources with information results in achieving outputs.
Effectiveness IS (GMS2)	The level of measurement of the ability of the system to meet the objectives of user needs.
Satisfaction User (GMS3)	System measurement helps users create user business value.
Productivity Improvement (GMS4)	The level of measurement is based on the support of system resources to improve results compared to the results released.
Competitive Advantage (GMS5)	The level of measurement related to the favorable position of system government users to compete in business competition

Table 4. List of statements questionnaire

Statement questionnaires
OTM1 - Trouble free system, difficulties and obstacles
OTM2 - The system is easily integrated with other systems
OTM3 - Efficient System
OTM4 - Effective System
OTM5 - Productive System
ITV1 - The system as a tool in problem solving
ITV2 - The system is free from the user influence
ITV3 - The system helps users achieve their goals in difficult conditions
ITV4 - The system helps users achieve their goals
ITV5 - The system helps users make users more successful than their competitors
DCF1 - The system is confusing for users in their use
DCF2 - A system that is not easy to use
DCF3 - The system does not have idependenly of use
DCF4 - System run without full operating support
DCF5 - The system is not in accordance with the development plan
ICR1 - The system did not go according to the plan of development
ICR2 - The system can cause danger to its users
ICR3 - The system makes interacting less for users
ICR4 - The system keeps the user from focusing on what really matters to them
ICR5 - Doubtful system to use
UBT1 - The system is appropriate for use
UBT2 - The system can be learned easily
UBT3 - This system is easy to remember
UBT4 - Easily accessible system
IQY1 - The system has accurate information output
IQY2 - The system has timely information
IQY3 - The system releases complete information
IQY4 - The system consistently provides information when running

Statement questionnaires
IQY5 - The system produces information according to the needs of its users
SQY1 - System use very easy
SQY2 - Maintenance is very easy in the system
SQY3 - The system can respond quickly to commands given
SQY4 - System able to perform all the functions required in its development
SQY5 - The system is safe for use
QST1 - System provides access to services quickly
QST2 - This system provides system adjustments to user conditions
QST3 - System provides secure services
QST4 - The system is developed according to the requirements of its development
QST5 - A safe system for use
SRT1 - In general the system can be accessed
SRT2 - The system protects and maintains the confidentiality of user data
SRT3 - The system provides a guarantee of the security of users' personal information
SRT4 - The system provides user security facilities
UFS1 - The level of user satisfaction with system efficiency performance
UFS2 - The level of user satisfaction with system effectiveness performance
UFS3 - The level of user satisfaction with system flexibility performance
UFS4 - The level of user satisfaction with system performance
GMS1 - Efficient government system implementation
GMS2 - Effective implementation of government systems
GMS3 - The application of a government system increases user satisfaction
GMS4 - Implementation of government systems increases the operational productivity of government
GMS5 - Implementation of government systems improves system user performance

Despite the fact that the exploration of this model development study was carried out in the understanding of the researchers themselves by adopting, combining, and adapting previous models and theories [9, 12-15] based on selected assumptions (Table 1), this research can contribute theoretically by submitting this model of readiness and mdel success of model adoption of mGov.

In addition, the basic assumptions in the development of models, research methods and understanding of researchers themselves are limitations in the model development study. Thus, from a different perspective both, different assumptions, methods, and understandings can result in the development of different models. As a recommendation, this limitation can be taken into consideration in future studies.

5 Conclusion

This research was conducted in order to develop a model of readiness and success in the adoption of a government mobile system (mGov). This study also aims to provide knowledge and alternatives, and recommend models that can be applied in determining the readiness and success of government mobile adoption. In developing the next model, it will refer to previous studies, researchers develop based on previous theories rather than empirical studies. Researchers develop government mobile readiness and success models by adopting, combining, and adapting the ISRS model which consists of readiness model theory, success model theory, usability theory, and security theory, in terms of assessing the success of mobile governance. The logic of the IPO is also used by researchers as an assumption of model development. The

proposed model consists of the eleven variables with 52 indicators. The researcher also proposed 52 item statements for the development of the next questionnaire. Besides this research can contribute theoretically by proposing a model of readiness and the success of this government mobile (mGov) adoption, the proposed model and instrument for data collection may be a practical consideration point for subsequent studies.

Apart from that fact, the basic assumptions in the development of models, research methods and understanding of the researchers themselves are limitations in the model development study. Thus, from a different perspective both, different assumptions, methods, and understandings can result in the development of different models. As a recommendation, this limitation can be taken into consideration in future studies. In addition, the validity of the proposed model, the credibility of the model and the basic theory used can also be considered as a model trust.

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