

# Designing a M-Learning as a Solution of Change Management

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**Abstract**—The existence of e-government system which is employed by the current government aims to supply and strengthen public services. It is expected to be able to provide reciprocal benefits between the government and its citizens. E-government has the ultimate goal to meet the various needs of the community in order to improve the quality of human life. Based on this premise, the developed vision should focus on the interests of the community. In some cases, e-government also aims to improve the internal performance of the government and its organizational structure.

There are many things that can affect the success and the failure of e-government implementation, one of them is the change management. Technology is one of strategies that can accelerate change. The SIMDIK mobile learning application (m-learning) which is applied for the Training Center is a proposed prototyping model as one of e-government applications. It is aimed at facilitating the needs of training participants. Furthermore, it can connect the exchange of ideas between: training participants, government officials as decision makers, and expert or teacher as a mentor, as well as a place to solve problems found in the ministry. This prototype is built using Just In Mind software and tested on Focus Group Discussion (FGD) participants.

**Keywords** -e-government; change management; prototype; m-learning; focus group discussion

## I. INTRODUCTION

One of government tasks is to create benefits and improvement of community's life quality for a long period. Ndou argues that through e-government, the government is not only saving more costs, but also revolutionizes and improves the processes and functions of government order [1]. According to Chen's research, in developing countries, the role of technology

through e-government can improve life by 80% of the global population [2].

E-government has three objectives, namely, focusing on services (external), focusing on processes (internal), and relational goals. The external objective of e-government is to provide services for the public, for example business or company organizations, and also for private and government institutions whenever needed. It is expected also to provide a non-stop service with zero queue by simplifying the process of online e-government services. While the internal objective is to facilitate public administration activities by administering a quickly, transparent, responsible, effective and efficient service to produce optimal government budget savings [3]. The relational goal of adopting ICT enables fundamental changes in the relationship between the state and its citizens, and also between government to government so that it has implications for the democratic process and governance structure. The existence of vertical and horizontal integration allows state institutions to facilitate communities and for the other stakeholders to get unlimited services [4].

However, there are many obstacles and challenges that cause e-government implementation to run slowly in developing countries. Heeks says that in developing countries, 35% of e-government projects have a total failure, 50% has a partial failure, and only 15% are successful [5]. Altameem in his research argues that to achieve successful e-government implementation there are influencing factors, namely, policies and issues related to law, quality, reward system, implementation, training, organizational structure, technical staff, change management, business process re-engineering, organizational culture and awareness of e-government [6]. The factors influencing e-government implementation are shown in Figure 1 below:



Figure 1. Factors affecting e-government implementation [6]

Change management is one of the factors that influence the implementation of e-government. It consists of three different types, where each type requires a different change management strategy. According to Prayitno, the three type of changes are:

- 1) *Routine Change*, which has been planned and built through the organizational process;
- 2) *Improvement Change*, which includes the profit or value that has been achieved by the organization;
- 3) *Innovative Change*, which covers how the organization provides its services [7].

Within the context of organizational change, the change management consists of hard side and soft side. Hard side comprises of processes, systems, strategies, tactics, and technologies that will help implement change, while the soft side involves behavior and attitudes (inviting, convincing in communication, identification and delivery of emotions, influence and motivating) to enable success on the hard side [8]. Poor change management is one of the reasons why e-government is often not implemented well [9]. Changes in terms of technology will bring changes towards policy, culture, mindset, organizational structure, and processes [10]. This is in accordance with the socio-technical point of view in an organization which states that an organization is built on two correlated systems, namely social and technical. The technical system entails a collection of processes, jobs, and technologies needed to change a process from input into output. While the social system includes trust, skills, values, knowledge, and needs [11].

Every transformation in an organization should consider these two aspects. Under the principle of socio-engineering, to form an advanced organization, transformation should be followed by the implementation of a new technology [12]. According to Ahmad's research, it was found that in practice between organizations and employees, there are three change management factors involved, namely trust in management, communication, and organizational commitment. In the communication factor, it was found that there must be good communication between supervisors and employees regarding organizational policy [13]. Then change is not something that is obtained individually, but will succeed if it is connected each other.

To implement this, a system is needed to connect the needs of training participants. This system allows training participants,

public officials as decision makers, and experts as coaches / mentors to communicate with each other and to be able to provide ideas or input for the existing problems within the organization, while also providing control for training participants to remain active in giving contribution and change for organizations. The SIMDIK application at the Training Center is a breakthrough in terms of information technology that will open opportunities and challenges to create new ideas and innovations, to access, to process and to utilize data into an information to make the idea that emerges becomes feasible to be implemented in the organization. With the SIMDIK application, it is expected that it will make it easier for training participants, public officials, and coaches / mentors to take part in the training, knowing information related to the training that will and has taken place, as well as conducting discussions or sharing information so that the training activities will run optimally, be effective and organizational objectives can be achieved.

## II. METHODOLOGY

### A. METHOD

The data used in this study were obtained from the results of discussions and interviews with respondents. Respondents involved were the training alumni, competent experts as mentors / coaches of education and training, public officials involved in the decision-making process in the work unit, and the organizer at the Education and Training Center of Ministry Communication and Information Technology. All respondents would be put together in a Focuss Group Discussion (FGD). FGD or Discussion Focus groups were a process of gathering information about a specific problem via group discussion [14]. This discussion aimed to obtain real data about the conditions in the work unit and found out the impact of the training for organizational change.

After conducting the research, SIMDIK application was made. It was an application which was built with an Android-based prototyping method. The system was designed using Just In Mind software that run on the Windows 10 operating system.

It was made in such a way that the research could be administered systematically and did not deviate from the research objectives. There were several stages that were determined before the research. This flow contained six phases, namely prototyping model which is shown in Figure 2:

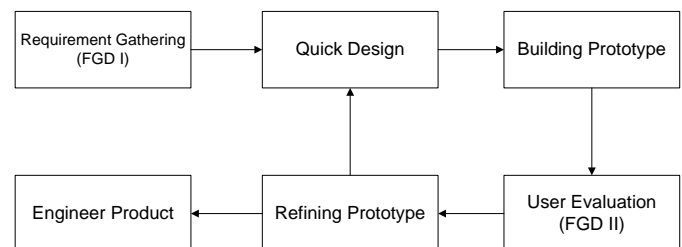


Figure 2. Research flow defined by the prototyping method

Each stage in the research flow includes:

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### 1) *Requirement Gathering (FGD I)*

At this stage data collection was carried out through Phase I FGD. The purpose of this study would be explained in FGD I. This would be an easier step for the researcher to start the discussion so that the course of the discussion became more focused and the results obtained were as needed. In FGD I, we would get the results of post-training evaluation directly from FGD participants. The results obtained were then analyzed to get the solution concept that could be resolved with the system design. At this stage, there would also be an explanation related to user needs which were useful to identify features that would appear on the application.

### 2) *Quick Design*

When the data needed had been collected, the next step was to create a preliminary design. Preliminary design was not a system design that had been made in its entirety, but it was the important designs on the system that would provide ideas about the system for users.

### 3) *Building Prototype*

At this stage the implementation of prototype was carried out. This was done after knowing the features and information obtained from quick design. The prototype represented a rough design and model from required system.

### 4) *User Evaluation (FGD II)*

The system was submitted to the user through FGD II. This evaluation stage was performed to find out whether the prototype that had been made was in accordance with users' needs, for example if there were features that should be added or reduced. All criticism and suggestions obtained were collected for system development.

### 5) *Refining Prototype*

After an evaluation from the user was obtained, then the prototype was built from the refinement. It had been adjusted to the new design. Next, the final system was developed based on the latest prototype.

### 6) *Product Engineer*

When all user needs were fulfilled and the user accepted the final prototype, the system was tested to prevent non-functioning features or system failure.

## B. MATERIALS

The research material used as a data source in this study consisted of two data sources:

### 1) *Primary data sources*

Primary data sources were sources derived from analysis of the results of data processing obtained from questions that had been answered by respondents. The intended respondents were the training alumni, coaches / mentors, and public officials as decision makers. Primary data collection was carried out by conducting interviews and observations to individual respondents.

### 2) *Secondary data sources*

Secondary data was a companion data consisting of literature review based on books, journals, regulations and policies related to the implementation of training and research results that were relevant to the purpose of this study. Both of these data sources were used to determine the things needed for system design.

## C. POPULATION AND SAMPLE

The population of this research was all employees in the Ministry of Communication and Information Technology. It comprised experts, resource persons, competent government employees, participants involved in the process of organizing education and training, and public officials involved in decision making. The considerations in sampling were as follows:

- Participants who passed the training (alumni) had been working for at least two years in their working units, therefore they had sufficient understanding on the conditions, culture, and policies in their working unit.
- A public official was the supervisor of the training participant referred to in point 1, who had been serving for at least a year.
- Coach or mentor were experts, practitioners, academics, or government employees who had accompanied the training participants.

## D. LIMITATION OF PROBLEMS

In this study the application prototype design was based on user needs analysis, and it had not been carried out until the testing stage or user evaluation reached.

## III. RESULT

Based on the results of the requirements gathering, quick design and prototype development stages had been carried out, the flowchart was as follows:

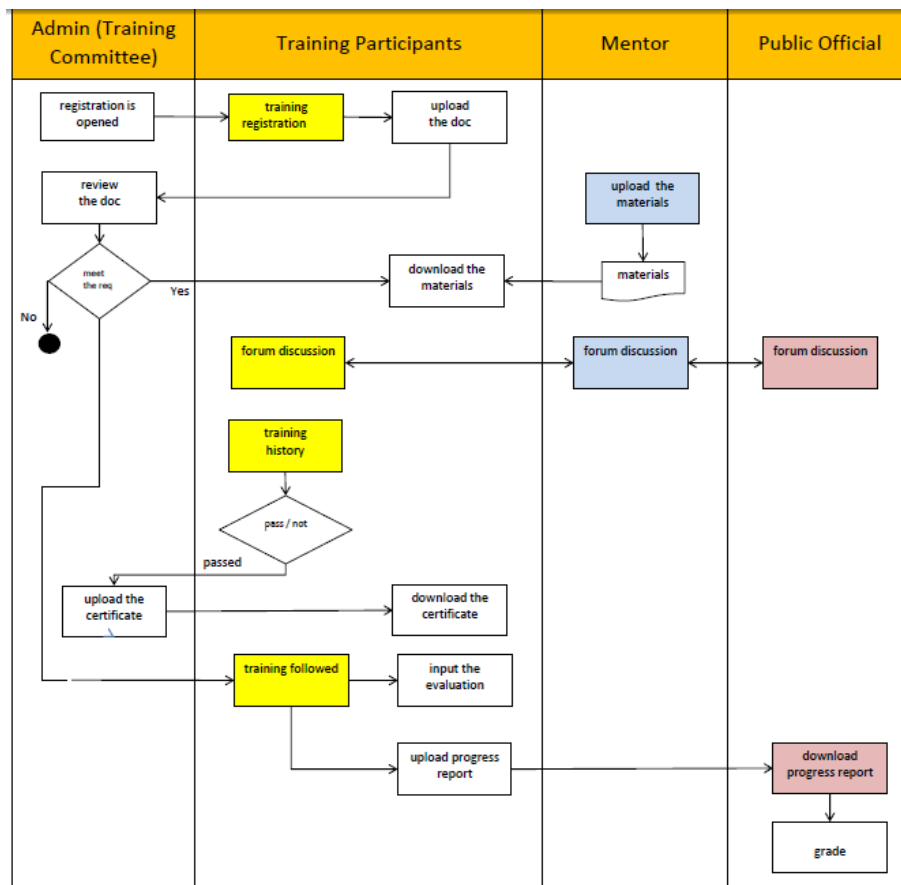


Figure 3. Research flow defined by the prototyping method

Every swimlane represents the process carried out by the actor as follows:

1) *The training participants' side*

Training participants needed the training list feature, to see the training that they were following, the training history that they had been followed, and a forum that could be used to discuss with mentors, participant supervisors or fellow participants.



Figure 4. Display menu options from the participant's side

The training participants could also see what training and information that would be administered. Users could register for training if the registration time was available.

2) *Mentors' side*

The mentor or coach which was a government official required features to see the history of the education and training that he/she had been taught, to see the results of the evaluation of the training, to take part in the forum, and upload the materials.

3) *The participants' employer / relevant officials in the working unit*

Public officials or supervisors of the participants could access the download report or progress report features that had been uploaded by participants, and joined the forum.

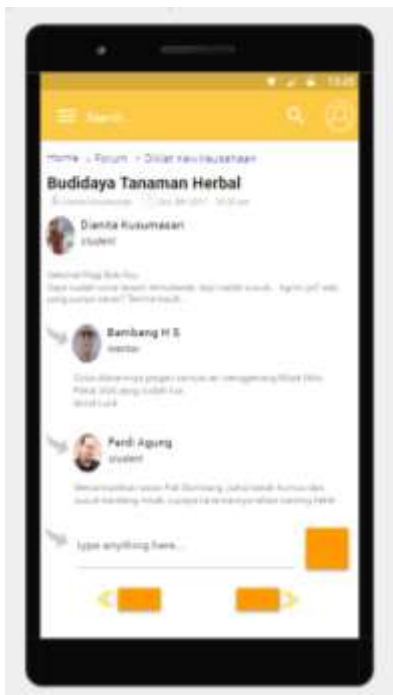


Figure 5: Display of the forum page

Those features would create a collaboration between participants, mentors, and relevant officials by utilizing information technology that could be useful for the success of education and training and had an impact towards organizational progress.

#### IV. CONCLUSION

Change Management is an important factor in the implementation of e-government. Without change management, the implementation of e-government will be difficult to be achieved, especially for developing countries. Technology is one strategy that can accelerate change. Information technology that is implemented by involving various parties will provide change because everyone has needs and therefore he/she will feel facilitated. SIMDIK application is one example of e-government implementation that facilitates the needs of users in implementing training. SIMDIK provides features that allow communication between users to participate in training.

For future research, there is still a need for supervision to enhance the driving factors in order making changes continue to run continuously. Thus, the implementation of e-government in organizations will work well and has a real impact on the community and the country.

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