Requirement Analysis of Monitoring Information System for Indonesian Migrant Workers Protection

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Abstract. There are still many Indonesian Migrant Workers, or commonly referred to as Tenaga Kerja Indonesia (TKI), who are involved in criminality whether as the victim or under criminal prosecution while working abroad. This indicates that the involvement of stakeholders including the government in protecting TKI has not yet been maximized. The existing efforts only focus on law and regulation and lack in quick and proper response. These issues can ideally be minimized if there is a form of continuous communication between migrant workers and the stakeholders during TKI placement. This research focus on analyzing the requirements to develop TKI protection information system. The requirements are obtained through SWOT analysis. The results show that TKI need to make regular reports through the information system. System then monitors TKI condition overtime to assess their situations and notifies government and/or other stakeholders if any response needs to be taken. Through this information system analysis, the model for TKI monitoring information system that connects every stakeholders is developed. It is expected that this work would provide government a model for information system to assist TKI work safely and comfortably. TKI will have confident that they are with caring government. Therefore various issues that occur can be dealt seriously, quickly, and appropriately.

1. Introduction

The definition of a worker from Employment Law is “any person who is able to do the job in order to produce goods and/or provide services to meet their own needs or those of the community” [1]. Indonesian Migrant Workers which is commonly referred to as Tenaga Kerja Indonesia (TKI) are those who are able to work abroad for a certain period of time under an agreed contract of employment [2]. There are term and conditions that must be complied if one intends to become TKI. By this way, their rights are guaranteed by Indonesian government [3,4]. In order to protect TKI, government keeps on monitoring them even after their placement abroad. However, monitoring TKI is still a challenging task for government since they work outside Indonesia territory and some problems happen repeatedly. Some cases are known through news by mass media when TKI has undergone legal proceedings in a foreign country without government assistance or even already in the process of waiting for the execution of punishment. It shows that government monitoring is not yet maximized. Therefore, our work aims to analyze the requirements of information system for TKI monitoring in order to enhance the effort to protect TKI rights.
Indonesia government actively involved in serving TKI via its Badan Nasional Penempatan dan Perlindungan TKI (BNP2TKI) in which its formation is based on legal basis [5-10]. However the work in protecting TKI is seen to be not yet satisfying since so many problems experienced by TKI are revealed first from mass media and social media, in which some are categorized as citizen journalism [11,12]. In many cases the main causes is those TKI are illegally recruited. But for those legal TKI, government assistance for the process is needed as early as possible. The trend if the matter is not handled properly is that it will get worse [13,14]. This is commonly due to the problems are handled partially and late. Our research question arises “how about those cases where TKI experience maltreatment or murder but not exposed by mass media?”, this is a homework for everyone. It cannot be denied that violation, criminality, and the other problems faced by TKI is still an iceberg phenomenon.

Not only Indonesia [15], other countries face similar problems as well and actually these issues are real problems faced by every country [16]. Therefore there are active global efforts in protecting migrant workers. Those efforts are delivered in 1998 ILO Declaration which is ‘to respect, to promote, and to realise’ – the four ‘fundamental rights’. The International Bill of Rights concerns with handling workers issues such as non-discrimination and child exploitation ban. This can help Indonesian government to establish regulations that support migrant workers [17].

The other related works on monitoring information system include the development of Foreign Workers Centralized Management Systems (FWCMS) or MIGRAMS from Malaysia[18], Philippines’ Foreign Labor Operations Information System (FLOIS)[19], and Singapore’s monitoring system that use Geographic Information System[20]. One such a system uses location base service for TKI monitoring system [21].

Information system technology should support human life [22], especially in supporting TKI protection. When this technology is used properly, it can help TKI to feel safe and comfort while working abroad. It can improve many aspects as well such as politics, social, and economy [23,24,25]. In this work, information system builds information medium between TKI and government. Therefore in this study we purpose to analyze the requirements to build an information system for TKI monitoring system. This information system will link up TKI and BNP2TKI. Another stakeholders involved in the ecosystem are Indonesian Embassy, authorized parties, and TKI family. Mobile based application will be provided for TKI. TKI will use this mobile application to update their condition regularly. A web based application to monitor TKI status will be built for BNP2TKI. The information system is equipped with the ability to analyze TKI conditions based on their regular reports. BNP2TKI will collaborate with Indonesian embassy in the destination countries or any authorized parties, and TKI family in monitoring or in responding to TKI reports through this integrated system. It is expected that with the involvement of government in the system, we can strive for the zero problems while TKI live and work abroad.

2. Research Methodology

Research methodology consists of 4 phases: (1) Data collection, (2) Data analysis, (3) Strategy and knowledge management development, and (4) Information system blueprint development. Figure 1 depicts the research phases taken.

Figure 1. Research Methodology.

Data are collected from TKI, government and non-government instances, and society via interview and observation. The collected data are then analyzed using SWOT Analysis. SWOT is used for internal and external environment analysis. The result is then used to capture possible strategies taken by government for information system activity and to build knowledge management to identify TKI
and government needs. Based on that acquired knowledge, the TKI monitoring information system blueprint is developed.

3. Results and Discussions
SWOT analysis model is used to develop strategies based on internal and external environment analysis [26]. The detailed strength and weakness of internal environment, the opportunity and threat from external environment, and the possible strategies taken by government are described in table 1.

Table 1. The Internal and External Environment Analysis for the Development of TKI Monitoring Information System Based on SWOT Model.

| Strengths | Weakness |
|-----------|----------|
| 1. There are still a lot of Indonesian willing to become TKI. |
| 2. Good government regulations for TKI training, placement, protection and repatriation run by BNP2TKI. |
| 3. The broad media information and strong broadcast industry. |
| 1. There are still many low-educated, low-skilled TKI. |
| 2. Minimal TKI control and monitoring. |
| 3. Inefficient use of information technology. |
| 4. The placement of TKI which is far from Indonesia representative location. |

| Opportunities |  |
|---------------|-------------------------------|
| 1. Collaboration with other ASEAN countries. | 1. To collaborate with other countries in drafting and enforcing the laws for migrant worker protection. (S1, S2 – O1, O2) |
| 2. Collaboration with destination countries where TKI work. | 2. To build integrated information system for TKI monitoring. (S3 – O3) |
| 3. Advances in information technology and the common use of mobile devices among TKI. |  |

| Threats |  |
|---------|-------------------------------|
| 1. Unofficial parties/agents that recruits TKI. | 1. To regulate and enforce laws that punish unofficial parties. (S2 – T1, T2) |
| 2. Employer who are willing to employ illegal TKI. | 2. To collaborate with other stakeholders in monitoring TKI. (S3 – T3) |
| 3. A lot of criminal acts experienced by TKI. | 1. To run more socialization programs in order to inform more people about the TKI official recruitment program. (W1 – T1, T2) |
|  | 2. Withhold travel permission of illegal TKI candidates. (W1 – T1, T2) |
|  | 3. To penalize those who run illegal TKI recruitments. (W1 – T1, T2) |
|  | 4. To collaborate with the government of destination country concerning TKI protection. (W2, W3, W4 – T3) |

Based on those possible strategies taken by government in protecting TKI rights, our approach is to build a TKI monitoring system using information system technology. In doing so, we need to develop a knowledge management to capture the needs of the stakeholders.

The knowledge management for the preparation of TKI monitoring information system is developed using SECI Model: Socialization, Externalization, Combination, and Internalization. The
knowledge acquired is then transformed to become the foundation of the design of the whole system [27].

The knowledge that we acquired clarifies that Indonesia government needs TKI to regularly report their state and situations, whereas TKI needs an interactive communication and readiness in responding to their needs. Using information system, those needs can be met. TKI regular reports are the data source collected by the system. The system then analyzes them to assess TKI states and conditions continuously. The system makes report about TKI status and notifies government when there is urgent needs. By this, required response can be delivered properly and in time.

The development of TKI monitoring system is divided into several phases. Those phases consist of user requirements identification, prototype planning, evaluation and refinement.

In order to implement the required TKI monitoring information system, every component of this system should be designed accordingly. Those components of an information system technology are software, hardware, brainware, network, data and information, and procedures [28,29,30].

In software component design, the brainware which in this case is the stakeholders has the access to the different applications of the information system. For example, BNP2TKI application manages the whole monitoring system management. Whereas TKI application provides interface for TKI to report their conditions. The architecture of this system refers to the Cisco Collaboration Architecture. This information system design consists of seven aspects. Those aspects are (1) Devices as the tools for interaction among stakeholders, (2) The collaboration applications aspect which are the software applications that provides user interfaces for the information and communication, (3) Client Services aspect that provides service for each stakeholder in the ecosystem, (4) Collaboration Services aspect that provides communication and information content services, (5) Network Services aspect that build the collaboration network, (6) Security aspect that guarantees information security and privacy of the interaction and information distribution, and (7) Management aspect that manage the operational of collaboration, administration, and maintenance.

In general, the hardware requirement is already met by stakeholders but device update is still necessary in order to support software compatibility among devices. Network design in the ecosystem should build the connectivity among all stakeholders which include administrator, BNP2TKI, Indonesia embassy, TKI and their family. Whereas the network services for each stakeholders are managed and information access is restricted based on user type regulations. The information distributed among stakeholders are TKI reports, government response, and regulations. With proper design, this information system is expected to enhance TKI monitoring by the ability to respond to TKI needs quickly, properly and accurately (figure 2).

![TKI Monitoring Information System Use Case](attachment://image.png)

**Figure 2.** TKI Monitoring Information System Use Case.
In order to explain the business process of the monitoring system, we need to define use case high-level to-be. Domains included in the monitoring system is described by the relations among all cases in the management process. There are four main cases included and each activities are explained as follow.

- **Reporting Case**: In this reporting case, TKI supply their data based on questions concerning their personal attributes. TKI condition trend is monitored and verified. Their status is categorized as normal or urgent state based on state and condition analysis run continually.
- **Panic Case**: This special case is also a reporting case. It differs in that it gets direct verification without TKI answering the monitoring questions first. The report in this case will categorized TKI status as urgent. TKI status gets high priority and their location is reported directly.
- **TKI Status Case**: This case involves the process on how to determine TKI status and the notification delivery to the appropriate stakeholders.
- **Response Case**: This case describes the process of actions taken by government in this case BNP2TKI, Indonesia embassy or the authorized parties in responding TKI Status Case.

The implementation of TKI monitoring system will use the pilot conversion approach. In this approach, information system prototype is implemented in one of the TKI destination countries. Every stakeholder will get the training on how to use the TKI monitoring information system [30]. An evaluation system is developed. This first segment of users evaluate the prototype based on the developed evaluation system. The evaluation score is then used as the parameters for the system refinement to get the best practice of the system.

### 4. Summary

TKI protection is a challenging task and it requires collaboration of various parties. A lot of efforts have been done to improve migrant worker protection. Focus of our work is to develop monitoring system for TKI protection. Based on considered strategies, our approach is to develop monitoring system using information technology.

Based on the knowledge acquired, it is clarified that Indonesia government needs TKI to report their state and situations regularly, whereas TKI needs an interactive communication and readiness in responding to their needs. Our TKI monitoring information system involves not only TKI and BNP2TKI, but also Indonesian embassy in destination countries, authorized parties, and TKI family as well. This system analyzes TKI condition based on TKI regular reports. It sends notifications to the stakeholders as needed when any particular urgent situations happened to TKI. Any further acts taken by government will be documented as well.

The approach in implementing this monitoring information system will use pilot conversion. Using this approach, the developed prototype will be evaluated and improved.

It is expected that this integrated TKI monitoring information system can better protect TKI while living and working abroad. Furthermore, any system that can provide migrant workers good protection will suppress illegal TKI number.

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