

**EVALUATING THE LAND
ADMINISTRATION
ORGANIZATION:
A CASE OF AGRICULTURAL
LAND REFORM OFFICE IN
THAILAND**

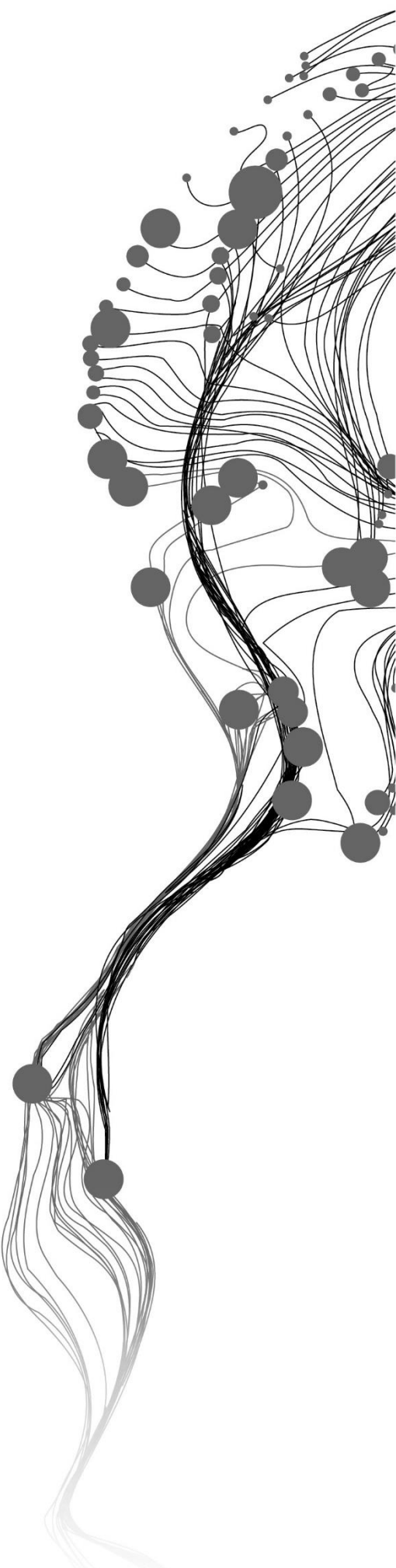
WANWISA JONGTONG

5 July 2021

SUPERVISORS:

Dr. D. Todorovski

Dr. M.C. Chipofya



EVALUATING THE LAND ADMINISTRATION ORGANIZATION: A CASE OF AGRICULTURAL LAND REFORM OFFICE IN THAILAND

WANWISA JONGTONG

Enschede, The Netherlands, 5 July 2021

Thesis submitted to the Faculty of Geo-Information Science and Earth Observation of the University of Twente in partial fulfilment of the requirements for the degree of Master of Science in Geo-information Science and Earth Observation.

Specialization: Land administration

SUPERVISORS:

Dr. D. Todorovski

Dr. M.C. Chipofya

THESIS ASSESSMENT BOARD:

Prof.dr. R.V. Sliuzas (Chair)

Dr.ir.B.van Loenen, TU Delft (External Examiner)

Dr. D. Todorovski

Dr. M.C. Chipofya

DISCLAIMER

This document describes work undertaken as part of a programme of study at the Faculty of Geo-Information Science and Earth Observation of the University of Twente. All views and opinions expressed therein remain the sole responsibility of the author, and do not necessarily represent those of the Faculty.

ABSTRACT

A land administration organization is an entity carrying out land administration activities. Although the legal framework and spatial framework used by land administration organizations are often well-functioning, the organizational framework could hinder land administration implementation. Many developing countries do not have fully registered land rights. Therefore, this study aims to evaluate a land administration organization using the Agricultural Land Reform Office (ALRO) in Thailand as a case study. ALRO has been carrying out the land reform program for more than 45 years. However, from the literature review, ALRO has some existing organizational issues that could affect work performance. Hence, understanding its organizational framework will help to identify the areas that need improvement.

There are several existing assessment frameworks in the land administration domain and other related works. However, it was found that there is no standard assessment framework for the evaluation of organizational frameworks. In addition, identifying the suitable assessment framework provides a more efficient evaluation result. Therefore, this study adopted an Organization Assessment Framework and existing indicators in the land administration domain to come up with the assessment framework for ALRO. The assessment framework for ALRO consists of three dimensions and their corresponding aspects and indicators. The qualitative approach was applied, and semi-structured interviews were used to collect data from different stakeholders. The evaluation result was integrated with the stakeholders' responses to identify possible strategies for ALRO to improve work performance and public services using SWOT analysis.

The research provides an assessment framework for evaluating a land administration organization. In the case of ALRO, the assessed dimensions partially align with the indicators. The work process, ICT infrastructure and human resources aspects are the priority areas that need improvement. The national policy related to land reform and governance, and ALRO's stakeholders are external components that affect ALRO's performance. To improve ALRO's performance, there is a need to enhance the ICT and business strategies. Finally, the lessons learned from the adopted organizational assessment framework and its performance on evaluating the case study were presented.

Key words: organizational assessment framework, land administration organization, organizational aspect, agricultural land reform

ACKNOWLEDGEMENTS

I would like to take this opportunity to acknowledge who supported me in completing this thesis.

I would like to acknowledge the Royal Thai Government for funding my MSc study, the Agricultural Land Reform Office for giving me the study leave, and the Faculty of Geo-Information Science and Earth Observation (ITC) of the University of Twente for the enrolment in the land administration specialization. I appreciate this opportunity for making my dream of improving my skills and knowledge became true.

I would like to express my sincere gratitude to my first supervisor, Dr. Dimo Todorovski and my second supervisor, Dr. Malumbo Chipofya. I am very glad to work with them, especially that our meetings were always lively. Without their consistent support and encouragement for the whole 2020-2021 academic year, I could not imagine how I can complete this thesis. Their guidance and suggestions were always valuable. They were always patient and gave me many explanations and clarifications in a simple way to understand. To Dr. Dimo Todorovski, who is also my mentor and lecturer in some courses in the Land Administration specialization: I always felt inspired by his lecture, and what I learned contributed to my thesis a lot. Thanks to his critical suggestions since I had little idea of this thesis until it was finished.

I would like to extend my sincere appreciation to all key informants for their participation and valuable information. The interviews with them were impressive, and I appreciate their interest in contributing to this research.

I would like to acknowledge the lecturers and staff from the Faculty ITC. The knowledge I gained from many courses is the foundation of this thesis, and I am confident that it will be helpful in my future career.

Special thanks to my siblings in the Netherlands, Kingkan and Lucia. Being with them makes me feel like I am at home in Enschede. Thank you for being together during the either happy or hard times. I also would like to thank Francisca for the encouragement and helping in the proofread. Thanks to Mateo, Nestor, Jesse, LA classmates and friends from other specializations for creating such a wonderful life experience.

Last but not the least, I would like to express my gratitude to my mother, father and sisters: Nantawan and Kanokwan, who always supported me to fulfil my dream study.

"I can do it. You can do it. We can do it!"

Wanwisa Jongtong

July 2020

Enschede, the Netherlands

TABLE OF CONTENTS

List of Figures	iv
List of Tables.....	v
List of Acronyms	vi
1. Introduction.....	1
1.1. Research Background	1
1.2. Research justification	2
1.3. Statement of the problem	3
1.4. Research objectives	4
1.5. Conceptual framework	5
1.6. Overview of Research Methodology	5
1.7. Thesis structure.....	6
2. Literature Review.....	7
2.1. Concept of land administration	7
2.2. Evaluation and assessment frameworks	9
2.3. Selection of assessment framework and justification.....	12
2.4. Summary	16
3. Methodology.....	17
3.1. Research Design and Methods.....	17
3.2. Case Study Area	18
3.3. Data Collection Methods	18
3.4. Sampling Technique.....	19
3.5. Data Analysis Methods.....	19
3.6. Ethical Considerations.....	20
3.7. Limitation of the research.....	20
3.8. Summary	21
4. Results.....	22
4.1. Current land administration in ALRO.....	22
4.2. External factors affecting ALRO's performance as a land administration organization.....	34
4.3. Summary of the results.....	39
5. Discussion of the Results	40
5.1. Evaluation of ALRO's current organizational framework.....	40
5.2. SWOT analysis.....	45
5.3. Possible strategies to improve the work performance.....	46
5.4. Lessons learned from the selected assessment framework performed on the case of ALRO	48
5.5. Summary of the discussion	50
6. Conclusions and Recommendations	51
6.1. Conclusions	51
6.2. Recommendations.....	52
List of References	54
Appendices	58

LIST OF FIGURES

Figure 1-1: Research Conceptual Framework.....	5
Figure 2-1: The Fit-For-Purpose Concept (Enemark et al., 2016, Figure 3.2)	10
Figure 2-2: Framework to Assess Land Administration Efficiency and Effectiveness (Burns, 2007, Figure 6).....	11
Figure 2-3: System framework to understand Organizational performance (OPA) (FAO, 2012a, P.103)..	13
Figure 3-1: Flow chart of the research approach.....	17
Figure 4-1: ALRO’s institutional arrangement (Source: Adopted from ALRO’s website)	22
Figure 4-2: Tools being using in ALRO’s survey work (Source: ALRO’s presentation slides from a key informant)	24
Figure 4-3: Land allocation process (Source: Author created based on the interviews and ALRO’s regulations).....	25
Figure 4-4: Perception of ALRO’s processes related to land allocation.....	27
Figure 4-5: Perception of ICT applications to support the work processes and business objectives.....	28
Figure 4-6: Perception on information technology sufficiency for development and maintenance of LIS	29
Figure 4-7: ALRO’s human resources capacity	31
Figure 4-8: ALRO’s readiness to adopt new technologies.....	31
Figure 4-9: Survey using RTK GNSS Network training in the field (Source: Key Informant).....	32
Figure 4-10: Perception of internal key informants on organization culture that supports the priority goals	33
Figure 4-11: Stakeholders mapping in land allocation in the case of ALRO	38
Figure 5-1: Transfer or inheritance for the whole parcel to the first or second level of heirs (Source: Authors created based on the interviews and ALRO’s regulations.)	41
Figure 5-2: The approach of evaluating a land administration organization.....	49

LIST OF TABLES

Table 1-1: Research Sub-Objectives and Questions of this Study	4
Table 2-1: Summary of other related works	11
Table 2-2: Assessment framework for evaluating the land administration organization in the case of ALRO	14
Table 3-1: Key informants for the semi-structured interview	19
Table 4-1: Effects of the technology adoption on work performance identified by internal key informants	29
Table 4-2: Perception of internal key informants of making LIS transparent to all.....	30
Table 5-1: Summary of evaluation of ALRO's current organizational framework.....	44
Table 5-2: SWOT analysis matrix in evaluating ALRO's performance.	45
Table 5-3: Alternative ICT strategies for ALRO's performance improvement	47
Table 5-4: Alternative business strategies for ALRO's performance improvement.....	48

LIST OF ACRONYMS

ALRO	Agricultural Land Reform Office
BAAC	Bank for Agriculture and Agricultural Cooperatives
DLRC	District Land Reform Committee
DOL	Department of Lands
FAO	Food and Agriculture Organization of the United Nations
FFP	Fit-For-Purpose
FIG	International Federation of Surveyors
LAS	Land administration system
LGAF	Land Governance Assessment Framework
LIS	Land information system
LRAs	Agricultural land reform area
MOAC	Ministry of Agriculture and Cooperatives
MOU	Memorandum of Understanding
NLRC	National Agricultural Land Reform Executive Committee
OECD	Economic Co-operation and Development
PLRC	Provincial Land Reform Committee
RFD	Royal Forest Department
RRRs	Rights, Responsibly, and Restrictions
SAO	Subdistrict Administrative Organization
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UNECE	United Nations Economic Commission for Europe
UNEG	United Nations Evaluation Group
UN-GGIM	United Nations Committee of Experts on Global Geospatial Information Management

1. INTRODUCTION

1.1. Research Background

Land administration is established to manage the relationship between people to land. It can support the integrated land management through four functions in the land management paradigm: land tenure, land value, land use, and land development (Williamson, Enemark, Wallace, & Rajabifard, 2010). However, land administration is not a simple task because land has unique characteristics: limited, immovable, and includes attached properties and resources. Land ownership can be a wide range, from formal to informal. Moreover, land administration operation varies across different countries, and the institutional arrangement is also diverse and changeable to support the national policy (Enemark, 2006). Some countries have one organization responsible for land administration in the whole country, such as Kadaster in the Netherlands, while in many countries, land administration is regulated by several organizations and characterized as complex, such as the Philippines, Thailand (Burns, 2007), and Switzerland (Stuedler & Williamson, 2005).

It is estimated that, 75% of the world's land ownership information has not been registered in the formal system (Enemark, Bell, Lemmen, & McLaren, 2014). This is because conventional land administration requires high cost, human resources and technology, which can be the constraints in many developing countries. Therefore, the International Federation of Surveyors (FIG) and the World Bank developed the Fit-For-Purpose (FFP) land administration approach to support developing countries. It provides guidelines to build land administration systems (LAS), focusing on society's purpose and incremental improvement. The FFP approach consists of three associated frameworks: spatial, legal, and institutional (Enemark, McLaren, & Lemmen, 2016).

Many innovative tools and data acquisition methods are developed to build the spatial framework. For example, in Rwanda, the survey techniques used orthophotos surveys to cover the whole country's land register (Enemark et al., 2016). In Columbia and Indonesia, the mapping methods used are the Smart Device and the Real-Time Kinematic (RTK). In addition, the legal and institutional framework can support LAS based on the country context. In other words, FFP principles in the three frameworks are key to the development of the LAS to meet the society's purpose as much as needed. It is suggested by Enemark and McLaren (2017) that the country should analyze the existing framework before developing the specific strategy when implementing FFP in land administration.

Thailand, a developing country in Asia, has implemented land administration since 1954 in registering the private land in the formal system (Burns, 2004). Like several countries worldwide, land administration in Thailand is fragmented, as a distributed responsibility of several Ministries. This results in separated land information that are kept in different organizations (Nabangchang-Srisawalak, 2006). The land is classified into two types: private land and state land. Private land cadaster and registration is the responsibility of the Department of Lands (DOL) under the Ministry of Interior. State land is mainly classified as forest area under the Royal Forest Department (RFD) in the Ministry of Natural Resources and Environment, and agricultural land reform area (LRAs) under the Agricultural Land Reform Office (ALRO) within the Ministry of Agriculture and Cooperatives (MOAC).

ALRO is one of the main actors in Thailand's land administration, which is responsible for the land reform program. Agricultural land reform or agrarian reform is implemented differently in countries. In the Thailand context, land reform aims to convert tenants and landless people to owner-operators and

provide landownership to squatters in public land (ALRO, 2006). ALRO has authority over all land administration functions in LRAs. So, ALRO can be considered as one governmental organization responsible for all land administration activities at the national level. But within ALRO's organization, there are multiple bureaus having different functions. In addition, the implementation of all activities has to be approved by the National Agricultural Land Reform Executive Committee (NLRC) at the national level and the Provincial Land Reform Committee (PLRC) at the provincial level, which comprise many governmental organizations.

As a land administration organization, ALRO is accountable for the cadaster and registration in LRAs. Registered parcels are classified into state land and purchased private land. Although the initial purpose is to distribute land to the landless or the near-landless farmers through private land purchasing and expropriation, most LRAs are transferred from the degraded and encroached forest area (Giné, 2005). ALRO shifted the focus operation from private land purchasing to the allocation of state land. This makes the operation more like land regularization rather than land redistribution. To date, ALRO has registered the first acquisition of around 90% of the classified LRAs (89% is state land). It seems ALRO is successful in the registration, but a governmental organization's efficient performance cannot simply be linked to the number of the registered parcels. In addition, there are various problems, such as illegal land sale, outdated land information and the organization's structure.

1.2. Research justification

Evaluation of land administration can measure the performance of an organization or a system. It also helps identify the priority areas for performance improvement according to the national policy or the society's requirement. At present, there is no standardized global land administration evaluation methodology (Steudler, Rajabifard, & Williamson, 2004). Some assessment frameworks are developed to evaluate the LAS's overall performance, for example, Land Governance Assessment Framework (LGAF) by the World Bank (Deininger, Selod, & Burns, 2012), Doing Business in land registration performance (World Bank, 2020b), Capacity assessment by the FIG (Enemark & van der Molen, 2008), and FFP land administration framework by FIG and the World Bank (Enemark et al., 2014).

The organization framework is key in determining the land administration's success, especially in land registration. Zevenbergen (2002) states that land registration can be problematic if the organizational aspect is poor, even if the spatial and legal aspects are well operated. In the general organization assessment, SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis is mostly used because it helps formulate the organization's strategy or plan based on internal and external factors (Gürel & Tat, 2017). However, there is no standard assessment framework for a land administration organization's evaluation.

The evaluation of land administration in Thailand mainly focuses on the private land system. For example, the World Bank's Doing Business Index's Registering property indicator measures Thailand's registration in private land only and does not include the registration in the LRAs. Another land administration assessment in Thailand was done by Burns (2007), which concluded that Thailand's LAS is one of the most effective. However, this study also only assesses private land registration.

Little has been done concerning the evaluation of land administration in LRAs under ALRO. Khanmad (2017) used the LGAF to assess the performance of ALRO and found problems, such as lack of a good land information system (LIS), cost-ineffective services, and unclarified practice procedures. His study also shows the weaknesses in the reliability of registration information and the unclear institution arrangement. Brits, Grant, and Burns (2002) compared the LAS in Thailand, Indonesia and India focusing on private land titling, and stated that land reform in Thailand has limited success because of the practical issues such as lack of interest to register the land by the farmers.

Therefore, this research selects ALRO as a case study and then develops an evaluation framework because some studies used the global assessment framework in the comparative study within several countries case study while Lusthaus, Adrien, Anderson, Carden, and Montalvan (2002) argue that specific tools development can improve the efficiency of the evaluation. The indicators in the global assessment frameworks might not be applicable to a particular land administration organization or country. So, this research contributes to the evaluation of land administration from the organizational perspective and the lessons learned from the context of ALRO in Thailand.

The lack of evaluation framework to assess the organization performance hinders the ability to identify the organization's capability. This research intends to develop an evaluation framework to assess the organizational performance of ALRO which is specific to the organization.

1.3. Statement of the problem

ALRO has implemented the land reform program since 1975 and successfully registered around 3.7 million parcels, including state and private lands, to 2.9 million farmers (ALRO, 2020). ALRO's operation in terms of the number of allocated parcels seems successful. However, ALRO faces several operation issues and challenges. Lack of functional information system is considered one of the performance gaps (Khanmad, 2017), which is the starting point in implementing other ALRO's activities and public services such as land use examination, farmer development, and the credit service. In addition, maintaining and updating land information is necessary to present the reality in the people-to-land relationship. Moreover, capacity development, like officer training, is also essential for dealing with this issue.

At present, there is little chance of registering new parcels either in the encroached forest areas or the purchased private land due to the lack of political will in the private land purchasing and expropriation. There is an ongoing debate on whether ALRO should reduce the number of employed surveyors because there is less survey work. In addition, there is a policy attempt to downsize the government officers by introducing the technology in some work processes. Some people argue that the main activities are not mapping but only maintaining and updating the land information. In contrast, the lack of surveyors is one of the human resource problems causing ineffectiveness in other activities, such as conflict resolution and the land rights and land use examination.

ALRO has a decentralized administration up to the provincial level making land services accessible to the farmers in the rural areas. It is mandatory to perform the registration within the jurisdiction of the land. Though some districts are far from the provincial office. However, the lack of capacity and oversight can disadvantage decentralization (Burns, 2007).

Moreover, some drivers impact ALRO's performance, such as the user-oriented service policy, the good governance principles, and the Thailand 4.0 policy¹, which are promoted by the Royal Thai government. However, the demand for service from the stakeholders, especially the farmers, is not clearly described. The digitalization, collaboration, and innovation in the working environment and service are considered the key success of governmental organizations in the Government 4.0 era (Office of the Civil Service Commission, n.d.). Thus, it is a challenge to ALRO to improve public services and reduce unnecessary tasks and processes by bringing innovative tools and technology to the working environment and the service. In contrast, the government might reduce the number of employees.

¹ Thailand 4.0 (Fourth Industrial Evolution) policy is an economic model for the next step of Thailand's country development. Both the government and the sectors are encouraged to apply technology, innovation, and high-quality services in their work (Jones & Pimdee, 2017).

Though the above-mentioned challenges exist, the extent to which they affect the performance of ALRO is not well-known. Besides, there is a lack of a comprehensive framework to measure the performance of land administration organizations. A framework to measure the performance will be crucial to identify the shortcomings of ALRO. Therefore, this study intends to adopt a framework to evaluate the organization performance of ALRO from several dimensions, such as organization structure, the land information system, and the public service requirement. The study result will identify the current performance from the organization's perspective and support the organization and public service improvement. The finding will shed light on the change opportunity toward service-oriented land administration organization.

1.4. Research objectives

The main objective in this study is to evaluate the land administration organization in the case of ALRO in Thailand.

1.4.1. Research sub-objectives and questions

To achieve the main objective, the sub-objectives and the questions are described in Table 1-1.

Table 1-1: Research Sub-Objectives and Questions of this Study

Research sub-objectives	Research questions
1. To adopt the most suitable evaluation frameworks and indicators for the case of ALRO	<ul style="list-style-type: none"> i. Which are the existing land administration assessment frameworks and tools? ii. What is the most suitable assessment framework and indicators for assessing ALRO's performance?
2. To explore the current situation of ALRO according to the selected assessment framework and indicators	<ul style="list-style-type: none"> i. What are the current goals and institutional arrangements of ALRO? ii. What is the interrelation between institutional, legal, and spatial framework? iii. What is the organizational framework's current status in the dimensions according to the selected assessment framework and indicators?
3. To identify the external factors that affect ALRO's performance as a land administration organization	<ul style="list-style-type: none"> i. What are responsibilities that ALRO needs to follow according to the national policy regarding land reform and governmental organization? ii. Who are the main land administration stakeholders of ALRO? ii. What are the stakeholders' requirements for ALRO as a land administration organization?
4. To evaluate the ALRO's organizational framework and provide the recommendations based on the evaluation result	<ul style="list-style-type: none"> i. What is ALRO's current organizational framework status compare with the selected assessment framework and indicators? ii. What are the possible recommendations to improve the current organizational framework based on the evaluation result and the external factors? iii. What are the lessons learned from the selected assessment framework performed on the case of ALRO?

To answer these research questions and achieve the objectives, the research design matrix was developed (Appendix 1). The matrix explains which data are necessary to collect from which data sources and how to collect and analyze data. The research design and research methods will be further described in chapter 3.

1.5. Conceptual framework

This study aims to evaluate a land administration organization’s performance, which conducts the four land administration functions. The institutional arrangement is also vital in providing the organization’s services. The land information infrastructure plays a significant role in supporting the organization in running the activities in line with the national land policy. Nowadays, it is important to consider the stakeholders when implementing land administration activities. The organization’s evaluation plays a key role in identifying the dimensions that can be improved and whether the organization performance is competent. The study results will provide the organization performance status and some possible recommendations to improve land administration implementation.

Land administration organization evaluation is the key concept of this research. The starting step is applying the appropriate assessment framework for the case study because the evaluation’s validity highly depends on the evaluation tool. However, the literature review describes that there are several existing assessment tools. The case study has problems as described in section 1.3 and the specific context, especially the land tenure and land use functions. So, suitable assessment framework and indicators corresponding to the case study are adopted. The key concepts and the selection of the assessment framework are further elaborated in chapter 2. The research’s conceptual framework is shown in Figure 1-1 below to present the scope and the main concepts.

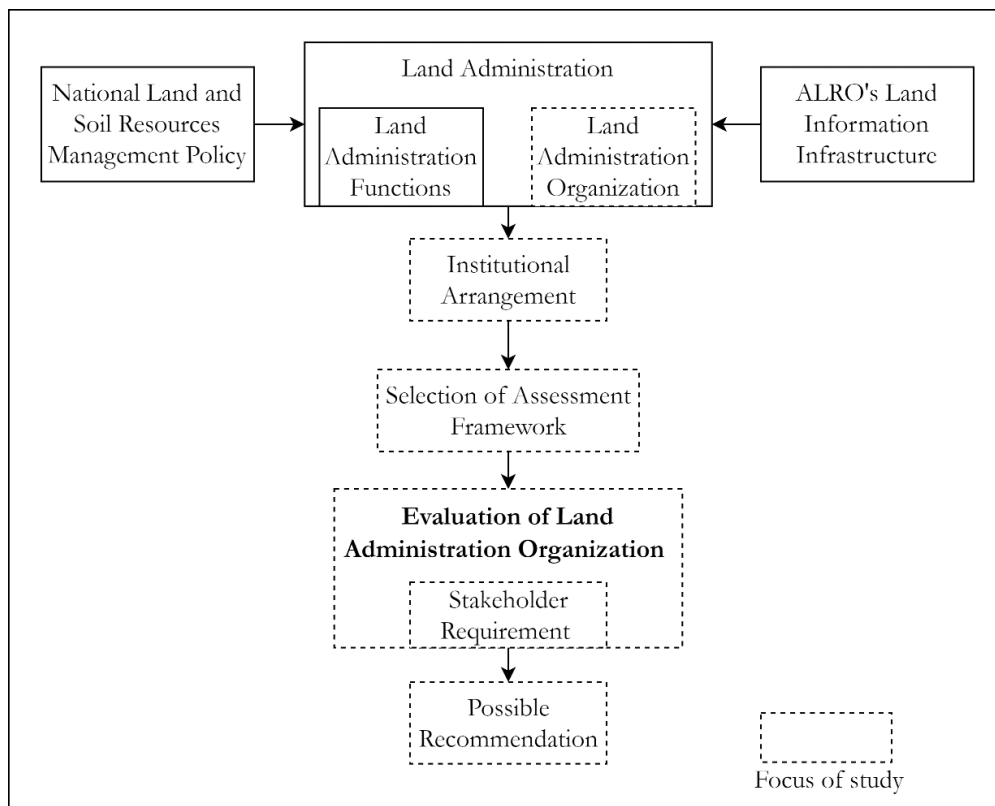


Figure 1-1: Research Conceptual Framework

1.6. Overview of Research Methodology

Based on the research objectives, the research design uses the qualitative approach to obtain detailed and in-depth information to evaluate ALRO’s performance. This research is conducted in three main phases: pre-data collection, data collection, and post-data collection. The research background, problem, and questions are identified through the literature review. Several exiting assessment frameworks are available to evaluate ALRO, so the review of the frameworks is also done using the literature review. Data required

for answering the research questions are both primary and secondary data. The primary data are collected from the online semi-structured interview with the key informants due to the COVID-19 pandemic that could not allow for the fieldwork. The collected data are transcribed and translated to be used for the data analysis. Thematic analysis method and SWOT analysis are used to analyze the data. The research methodology is further elaborated in chapter 3.

1.7. Thesis structure

The thesis is structured into six chapters as follows:

Chapter 1: Introduction

The chapter describes the general overview of this study by presenting the research background, research justification, statement of the problem, research objectives, conceptual framework and the whole thesis structure.

Chapter 2: Literature Review

The chapter presents the review of relevant literature on the key concepts in this study, comprising land administration, institution and organization, and evaluation and assessment framework. It also describes the suitable assessment framework and the justification for evaluation in the case of ALRO.

Chapter 3: Methodology

The chapter presents the research methodology by explaining the research design and methods, the case study area, data collection, sampling technique, data analysis, ethical considerations, and the research limitation.

Chapter 4: Results

The chapter presents the data collection and the analysis results, including the current situation of ALRO's performance, the external factors that affect ALRO's performance: the national policies and the stakeholder's requirements.

Chapter 5: Discussion of the results

The chapter discusses the study results in chapter 4 by comparing with the adopted assessment framework for ALRO which is presented in chapter 2, including the existing scientific literature to evaluate ALRO's organizational framework. The SWOT analysis and recommended strategies, and the lessons learned from the selected assessment framework performed on the case of ALRO are also presented in this chapter.

Chapter 6: Conclusions and Recommendations

The chapter provides the conclusion of this study according to the research objectives. The recommendation to improve ALRO's performance and some recommendations for further research are also given in this chapter.

2. LITERATURE REVIEW

This chapter presents the main concepts in this research from the review of relevant literature. The sections describe the concept of land administration, the terms institution and organization, and the review of the existing assessment frameworks used in selecting the assessment framework for the case study. The last section will present the selection of the assessment framework and justification.

2.1. Concept of land administration

2.1.1. Land administration

Land administration is defined by the United Nations Economic Commission for Europe (UNECE) as “*the processes of recording and disseminating information about the ownership, value and use of land and its associated resources*” (UNECE, 1996, p. 14). It is also defined as a process related to the land administration functions operated by either the governmental agencies or the private agencies under government control (Williamson et al., 2010). Land administration is also a process of regulating land and property, concerning land ownership, land use, and land value (Dale & McLaughlin, 1999). These processes implementing require establishing the LAS, which includes the land information infrastructure, the institutional arrangement, and the legal framework. Traditionally, land administration focuses on land tenure and land information management, but modern LAS includes four land administration functions (Enemark, 2009).

Land administration functions concept is proposed by Enemark, Williamson, and Wallace (2005), which comprise of land tenure (securing and transferring land rights), land value (valuation and taxation), land use (planning and the control of land), and land development (the infrastructure and the utility for the planning). These functions play different roles in supporting the management of the people-to-land relationship and Rights, Responsibly, and Restrictions (RRRs).

The core part dealing with the people-to-land relationship in land administration is land registration and cadaster. According to World Bank (2016), land registration is the process dealing with land rights recoding and cadaster dealing with the parcel information, including the location, boundary, use and value of land. According to Zevenbergen (2002), there are three interrelated aspects of the land registration system: organizational, technical, and legal. It is a similar structure in the FFP land administration framework.

The sound land administration has several benefits to the individuals, groups, and countries. The individual land rights are secure through the land registration, and the title or deed can be used in the mortgage and compensation. The groups, such as companies or businesses, have access to credit to invest from the land and property. The countries achieve the land policy and land management goal with the support of land administration. UNECE (1996) indicates many advantages of land administration, such as taxation supporting, state land protection, land dispute reduction, and rural land reform facilitation. However, it is hard to build and maintain a good land administration system due to the people-to-land relationship dynamic. The LAS also includes the multi-disciplines actors, such as the legal expert and surveyor. Time and cost might be the obstacle to updating LAS if the registration procedure is not well designed.

The focus on how to organize an efficient land administration has changed over time. The best practices in common from several countries worldwide were proposed to support land administration development

in developing countries. The improved areas can be based on the principles of the cadastral, institutional, spatial data infrastructure, technical and human resources development (Williamson, 2000, 2001). The Food and Agriculture Organization of the United Nations (FAO) published the good land governance principle to enhance the land tenure and administration (FAO, 2007). The concept of land administration toward sustainable development was introduced (Williamson et al., 2010). The Voluntary Guidelines for Responsible Governance of Tenure of Land, Forests, and Fisheries in the Context of National Food Security (VGGT) was developed to provide the principles and practices concerning the land governance and management. It also includes the protection of marginalized and vulnerable people (FAO, 2012b). Zevenbergen, de Vries, and Bennett (2016) suggest the concept of responsible land administration, which aligns with the change and need of the individual, government and society.

2.1.2. Institutions and Organizations

The term institution and organization are widely used in land administration subjects and sometimes are interchangeably used. Theoretically, there is a difference in meaning (Khalil, 1995). The term institution broadly means *“the prescriptions that humans use to organize all forms of repetitive and structured interactions including those within families, neighborhoods, markets, firms, sports leagues, churches, private associations, and governments at all scales”* (Ostrom, 2005, p. 3). Similarly, North (1990, p. 3) defines an institution as *“the rule of the game in a society or, formally, are the humanly devised constraints that shape human interaction”*. The term institution is another concept of organization as it is *“time-honored activity or organization that addresses what would otherwise be a persistent social problem by encouraging behavior that stabilizes society”* (Hatch, 2011, p. 4). According to North (1990), an organization is *“the group of individuals bound by some common purpose to achieve the objectives”*. The organization reaches the objective by the skills, strategy, and coordination of the team. Likewise, Lusthaus et al. (2002) define the organizations as the formalized entities that involve the people brought together for a common purpose.

Land administration organization or land administration institution means the entity carrying out the land administration activities or processes and are used interchangeably. For example, both terms are used in the land administration for sustainable development (Williamson et al., 2010) and in the FFP land administration (Enemark et al., 2016). FAO defines Land Administration Institutions as the civil service institutions which provide management services for land or real estate ownership (FAO, n.d.). Therefore, this study’s institution and organization concept will be considered an entity, such as the governmental agency and company. To be consistent, the author uses the term land administration organization and defines it as an entity responsible for land administration activities or processes.

Institution or the organization framework is a crucial element in implementing land administration. The organizational aspect, according to Zevenbergen (2002), includes organization’s internal structure and management. It can also refer to the institutional aspect. The difference between the two terms is that the institutional aspect includes the legal element. According to the FFP land administration, the institutional framework covers good land governance, policy frameworks, institutional arrangements, organizational structures, and system workflows. It also includes the coordination between the land administration organizations. The institution refers to the government and the private sector, civil society, and the customary authority (Enemark et al., 2016). UNECE (1996) indicated that the government plays the role of key actor in land administration and must consider several issues, such as intergovernmental coordination, the administrative operation, administration of cadastral data, management of land administration system, staff training, and technical assistance. Ali (2013) states that institutional arrangements are created to operate LAS and consist of land policy, legislation, organizations, and financial element. Thus, this study uses the term organizational framework afterward and refers to the organization’s structure, management, and the coordination internally and externally. In addition, there is no best organizational structure, but the best practices from several projects show the effective land

administration when the land registration and the cadaster are in the same organization (Williamson, 2001; World Bank, 2016) and all stakeholders are involved (Zevenbergen, 2002).

2.2. Evaluation and assessment frameworks

The meaning of “Evaluation” in science research is defined differently based on the subject. Evaluation refers to different actions, such as determining the program’s impact, judging the value, monitoring the organization’s quality, and comparing the choices, so there is no one definition (Clarke, 1999). Assessment is one of the actions that can refer to the evaluation and is often used as the synonym for evaluation (FAO, 2019; Lusthaus et al., 2002, p. 183). The evaluation is defined by the United Nations Evaluation Group (UNEG) as *“an assessment, conducted as systematically and impartially as possible, of an activity, project, programme, strategy, policy, topic, theme, sector, operational area or institutional performance”* (UNEG, 2016, p. 10). The organization evaluation is defined by The Organisation for Economic Co-operation and Development (OECD) as *“the systematic and objective assessment of an ongoing or completed project, program, or policy, including its design, implementation, and results. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, impact, and sustainability”* (OECD, 2002, p. 21). In general, the evaluation supports the monitoring and incrementally improvement of the organization.

The evaluation or the assessment in the land administration field is widely conducted variously. It is done by international organizations, such as the World Bank, as well as the land administration organizations themselves using the internal assessment. The evaluation can be conducted on an activity, a donor program, a LAS, and an impact evaluation. As mentioned in section 1.2, evaluation in land administration can be either comparing with the best practice from other organizations or using the indicators.

2.2.1. Land Governance Assessment Framework

Land Governance Assessment Framework (LGAF) is an international assessment framework for evaluating land administration from the good land government perspective. It can be used in benchmarking or measuring the legal framework, policy, and practices in land and its use. The assessed dimensions are grouped in five thematic areas: Legal and institutional framework, Land use planning, Management and taxation, Management of public land, Public provision of land information, and Dispute resolution and conflict management. The framework provides a clear assessed structure comprising the areas, indicators, dimensions, and scorecards. The score is rated from A as good practice to D as weak practice (Deininger et al., 2012). The LGAF is a useful and feasible tool for evaluating the land sector at a country level and the result provides the land governance best practices and the areas needed for improvement (Burns, Deininger, Selod, & Dalrymple, 2010). When evaluating, some dimensions might not be suitable to the country context, thus it can be excluded, or some dimensions can be added in the assessment framework.

2.2.2. Doing Business

Doing Business in the dimension of Registering Property measures the LAS quality and a property transfer efficiency using the three indicators: procedure (number), time (days), and cost (percentage of property value) (World Bank, 2020b). The LAS in the Doing Business covers the land registration system and the surveying and mapping system (World Bank, 2015). The quality of land administration index has five measured areas: reliability of infrastructure, transparency of information, geographic coverage, land dispute resolution, and equal access to property rights. The measuring uses a series of questions, and the assessed results present a score in different ranges., for example the transparency of information index is from 0 to 6 while the reliability of infrastructure index is from 0 to 8. The quality of land administration index is the sum of the five areas and the higher the score, the better quality of land administration (World Bank, n.d.). However, some indicators validity is criticized in ranking the countries’ ease of doing business

(McCormack, 2018). Recently, the World Bank has announced the data irregularity that affected the countries' ranking which resulted in the Doing business report being paused (World Bank, 2020a).

2.2.3. Capacity Assessment by the FIG

FIG developed a Logical Framework for Capacity Assessment in land administration that can be used to evaluate the LAS of a specific entity, a donor project, or a country as a self-assessment. The framework provides 17 dimensions, such as land policy, legal framework, institutional infrastructure, business objectives and work processes. The institutional assessed idea is about how the land administration is organized. The measured areas are the mandate, business objectives, work processes and information and communication technology (ICT) and good management. Each dimension provides the responding measuring questions used in the capacity analysis. Capacity is seen as the organization's power to perform or produce (Enemark & van der Molen, 2008). This framework is a tool for structured analysis of the capacity needed development for the developing countries.

2.2.4. Fit-For-Purpose Land Administration

FFP land administration is an unconventional approach that provides a government with an infrastructure for land administration functions in a responsible governance. FFP approach has six elements: inclusive, flexible, participatory, affordable, reliable, upgradable, and attainable (Enemark et al., 2014). As mentioned in section 1.1, FFP provides the guiding principles in implementing the FFP land administration based on the three frameworks as presented in Figure 2-1.

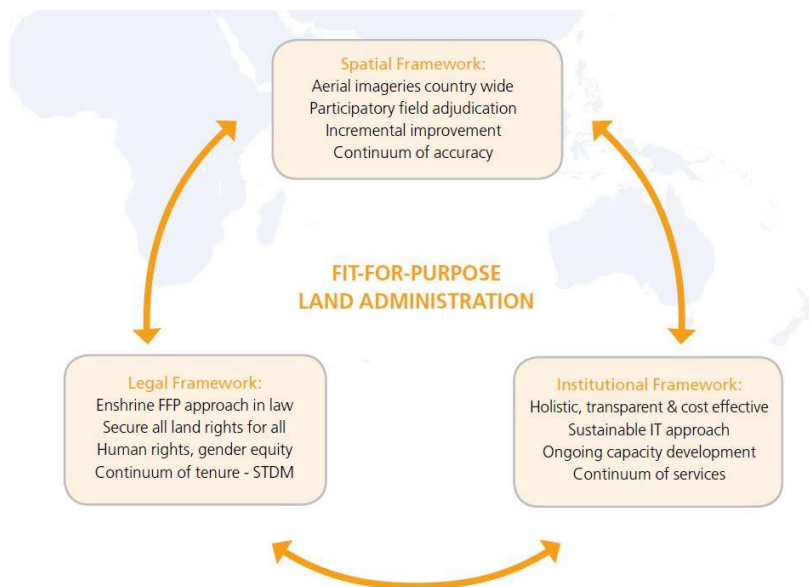


Figure 2-1: The Fit-For-Purpose Concept (Enemark et al., 2016, Figure 3.2)

The institutional framework has four principles: good land governance, the integrated institutional framework, the flexible IT approach, and transparent land information with access to all. Each principle has several expected outcomes, which can be used as indicators. For example, transparent land information components are an accountable and reliable LIS with the access to all, a privacy but open data, and serving data to all citizens (Enemark et al., 2016).

2.2.5. Framework to Assess Land Administration Efficiency and Effectiveness

The assessment framework is developed to compare the World Bank-financed land administration project's cost holistically. It provides the qualitative indicators for the customary tenure system and the quantitative indicators for formal LAS. The formal LAS can be assessed using the indicators: security,

clarity and simplicity, timeliness, fairness, accessibility, cost, and sustainability. Burns (2007) stated that these criteria were adapted to measure LAS because they cover the principles to evaluate the cadaster's success suggested by FIG (1995). However, substantial contextual data are also needed for more explanation of the system's performance (Burns, 2007). Figure 2-2 shows the assessment framework developed by FIG.

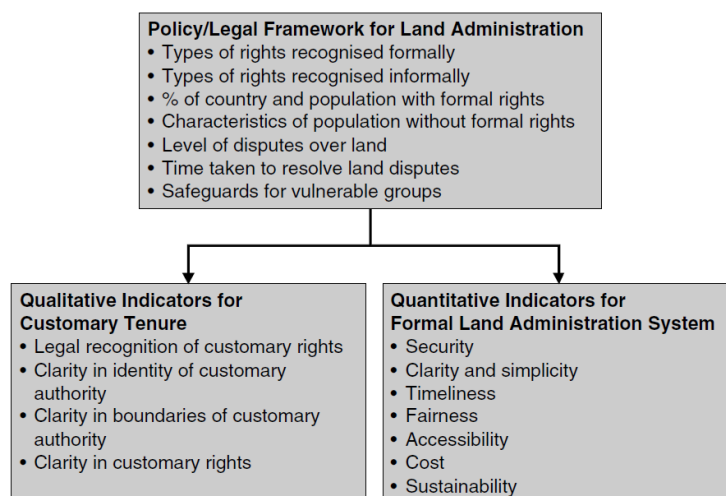


Figure 2-2: Framework to Assess Land Administration Efficiency and Effectiveness (Burns, 2007, Figure 6)

2.2.6. Framework for effective land administration

Recently, the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) has developed the Framework for effective land administration (FELA). It is a framework applicable for both the developed and developing countries, which can be used as a guideline to develop, reform, modernize, and monitor land administration. It can support the continuous strengthening of the process and technique in land administration activities. The components consist nine requirements and goals of effective land administration, such as the accountable and transparent governance, upgradable systems and approach, strengthens stakeholder collaboration, and capacity development (UN-GGIM, 2020).

2.2.7. Other related works

Apart from the above international assessment frameworks, there are some efforts to develop the land administration research field's assessment framework. The evaluation dimensions and the corresponding indicators are various. The summary of other related works is shown in Table 2-1.

Table 2-1: Summary of other related works

Reference	Research objectives/questions	Summary of Methods	Finding and contribution
(Steudler et al., 2004)	To develop the methodology for the comprehensive evaluation of LAS	Identify the evaluation elements: objectives, strategies, outcomes, and indicators. The principle is evaluating the aspects, indicators, and best practices within the different organization levels, including the external factors and the review process.	An evaluation framework for measuring or comparing the performance of the LAS in a comprehensive way

Table 2-1: Summary of other related works (Continued)

Reference	Research objectives/questions	Summary of methods	Finding and contribution
(Stuedler & Williamson, 2005)	To test the evaluation framework developed by Stuedler et al. (2004)	The evaluation of LAS has four steps: Evaluate the aspects and indicators, identify good practices and performance gaps, and summary with SWOT analysis.	The developed evaluation framework provides good results as it covers all elements in the LAS.
(Chimhamhiwa, van der Molen, Mutanga, & Rugege, 2009)	To build a holistic assessment of land administration activities by measuring the complete processes based on cross-organizational business processes	Measure the performance from the business process perspective using the case study by measuring the key measured dimensions and indicators (percentage).	A conceptual model for measuring end-to-end performance of LA based on six dimensions: cost, time, society, customer satisfaction, technological innovation and quality
(Ali, 2013)	To develop a framework for assessing the quality of an existing LAS	The research approach is a case study and collects qualitative and quantitative data by conducting the structured and semi-structured interviews, including the questionnaires among the stakeholders at different organization levels.	A quality assessment of LAS framework based on the Total Quality Management framework.

2.3. Selection of assessment framework and justification

This section will further present the approach and the selection of a suitable organizational assessment framework for the case of ALRO since the assessment frameworks are the continuation of the review of the existing literature review presented in section 2.2.

According to the literature review, it can be concluded that the existing assessment frameworks mostly support the LAS's evaluation. There is no specific tool to assess the land administration organization from the organizational perspective. Additionally, based on the author's work experience in ALRO, there is no framework that covers all ALRO's problems stated in section 1.3. Thus, the development of a suitable assessment framework and indicators for ALRO is needed. However, the literature review shows that there are various existing assessed dimensions and indicators, so there is need to build an appropriate framework in a systematic way for this research based on the existing assessment frameworks.

2.3.1. Approach for assessment framework

There are many existing organization assessment models, such as organizational performance assessment, McKinsey 7-S model, Weisbord Six Box Model (FAO, 2012a). Organizational Performance Assessment Framework is developed by Lusthaus et al. (2002) as a tool for evaluating an organization's performance. A well-performing organization should have a balance in effectiveness, efficiency, and relevance while being financially viable. Lusthaus et al. (2002) state that the organizations in developing countries are complicated, so when assessing the performance, the organization must create the framework and concept for evaluation. The organization's performance is a result of the organization's work. This framework

applies to a wide range of organizations, including governmental organizations. It is also suggested in FAO's capacity development approach to analyze the organization's performance. FAO stated that this framework is a comprehensive model that can be adapted as a baseline to evaluate any type of organization. The framework presents the reality that an organization has several elements in both the internal and external environments. These elements are linked so that the performance's quality also are influenced (FAO, 2012a). The Organizational Performance Framework is shown in Figure 2-3.



Figure 2-3: System framework to understand Organizational performance (OPA) (FAO, 2012a, P.103)

Therefore, this study's evaluation framework is built based on Lusthaus et al. (2002)'s framework. The assessed elements and the indicators are adopted from the existing assessment framework and related works, namely Capacity assessment by the FIG, FFP's institutional framework, Comprehensive evaluation of LAS (Stuedler et al., 2004) and the Total Quality Management framework (Ali, 2013). Some of the indicators are derived from the Organizational Performance Assessment Framework (Lusthaus et al. 2002). To make the evaluation meaningful in this case study's context, ALRO's background and the problems described in chapter 1 are considered when selecting the indicators.

Organizational performance, according to Lusthaus et al. (2002), means the overall performance including the individual performance, team performance and the program performance. It consists of the four elements: effectiveness, efficiency, relevance, and substantiality. It means the organization should meet its goals within the acceptable expense of resources. The organization should understand the stakeholder's requirements and have the financial viability. This research will focus on the efficiency, effectiveness, and the relevance aspects. Furthermore, the work performance will focus on the core part of land administration: land registration and cadaster because it is the functional purpose of ALRO.

2.3.2. Assessment framework for evaluating ALRO

The suitable assessment framework for evaluation the land administration organization is developed from the above-mentioned approach. The evaluation dimensions consist of three areas, which are (1) Organizational capacity, (2) Organizational motivation, and (3) External environment. Each dimension comprises of aspects and indicators. These dimensions are used in discussion of the ALRO's evaluation in chapter 5. Here is the adopted assessment framework for evaluating ALRO as presented in Table 2-2.

Table 2-2: Assessment framework for evaluating the land administration organization in the case of ALRO

Evaluation dimensions	Aspect	Indicators
Organizational capacity	Organizational structure	Organizational structure supports the core land administration functions
		Organizational structure is well designed for execution of the work processes
		The allocation of mandates reflects a well-balanced approach to decentralization
	Work process	Processes are clear, simple, and standardized
		Processes are conducted in an efficient manner
		The managerial tools in terms of planning control, accountability and liability are appropriate
		Work processes are monitored and evaluated
	ICT infrastructure	The information technology sufficient for further development and maintenance of LIS
		The internal and external information flow are clearly specified
		LIS is transparent with access for all
	Human resources	Human resource capacity is sufficient
		Organization has appropriate educational and training programs
Organizational motivation	Mission, vision, and culture	Mission and vision should be aligned with organization's goals and directions
		Culture supports the priorities of organization.
External environment	Stakeholders' environment	The mandate and policy include meeting the demands of customers and other stakeholders.
		The cooperation and communication exist between involved organizations
		The user's requirements including their roles is properly defined while developing strategic plans

Each evaluation dimension and assessed aspect are described as follows.

2.3.2.1. Organizational capacity

Capacity is defined by The United Nations Development Programme (UNDP) as “*The ability of individuals and organisations or organisational units to perform functions effectively, efficiently and sustainably*” (UNDP, 1998, p. 10). Similarly, Lusthaus et al. (2002) defines organizational capacity as including organizational and technical abilities, relationships, and values that enable countries, organizations, groups, and individuals at any level to carry out functions and achieve their development objectives over time.

Organizational structure

Organizational structure is defined as “*the ability of an organization to divide labor and assign roles and responsibilities to individuals and groups in the organization, as well as the process by which the organization attempts to coordinate its labor and groups. It is also concerned with the relative relationships between the divisions of labor*” (Lusthaus et al., 2002). The organization should have the organizational structure that supports the core land administration functions (Burns, 2007). The structure should be well designed for execution of the work processes (Ali, 2013). Enemark and van der Molen (2008) state that land administration organization

should have the allocation of mandates that reflect a well-balanced approach to the decentralization because it helps support the local demands.

Work process

Work process is the fundamental elements in organization's performance. The work processes should be clear regarding to activities, requirements, and responsibilities because land administration processes are usually complicated and bureaucratic (Enemark & van der Molen, 2008). The clarity and simplicity (Burns, 2007) and standardization (UN-GGIM, 2020) are the indicators to assess the effectiveness and efficiency of land registration processes. Moreover, the processes should be conducted in the efficient manner in terms of the timeliness and cost. The processes should be monitored to identify bottlenecks and delays. In addition, the appropriate management in terms of the planning and control plays an important role in service delivery (Enemark & van der Molen, 2008).

Infrastructure

Many activities in land administration need the large amount dataset, especially land registration and the cadaster system maintenance. The organization should have the suitable ICT to support achieving the organization's objectives (Enemark & van der Molen, 2008). The internal and external information flow are the basis of appropriate ICT infrastructure, so if the flows are clearly defined, the organization can choose the ICT tools suitable for the maintenance of LIS. Additionally, LIS should be transparent and provide the equal and easy access for all (Enemark et al., 2016).

Human resources

According to Enemark and van der Molen (2008) and Enemark et al. (2016), the human resources is regarded as the significant elements in carrying out land administration. Land administration activities involves actors in multiple fields, so the organization should have sufficient capacity and appropriate educational and training programs to achieve organization's objectives.

2.3.2.2. Organizational motivation: Mission, vision and culture

Organizational motivation is an intrinsic and moral desire to achieve a purpose (Lusthaus et al., 2002, p. 187).

Mission is an expression of how people see the organization operation. Vision is the kind of a world to which the organization wants to contribute. *"Culture is a set of values, guiding beliefs, understandings and ways of thinking that are shared by members of an organization and are taught to new members. Culture represents the unwritten, informal standard of an organization,"* according to Lusthaus et al., (2002, p. 185). An organization should have mission and vision aligned with organization's goals and directions. The organization culture should support the priority objectives because the dominant culture increase the work productivity and thus reach the organization's goals (Lusthaus et al., 2002).

2.3.2.3. External environment: Stakeholders' environment

According to (Lusthaus et al., 2002), the organization assessment should include the evaluation whether the stakeholders environment support the organization.

Stakeholder means any group within or outside the organization that has a stake in organization's performance (Lusthaus et al., 2002). There are several stakeholders involve in land administration activities. The stakeholders have different interests, so meeting the stakeholder requirements is also considered one of the organization's success. FIG suggests land administration organization carry out the business in the customer orientation way, especially the governmental organization should include the principle of meeting customer's requirement in its mandate (Enemark & van der Molen, 2008). Sound strategic plan is considered one of the indicators in evaluating the institutional framework proposed by Ali

(2013) and the organization should include the user requirements and define their roles when adopting new technologies or developing LIS. Moreover, the communication and cooperation between the organizations should be well established including different level of land administration management (Steudler et al., 2004).

2.4. Summary

This chapter described the relevant concepts in this research, including land administration, institutions, organizations, and organizational framework. The international existing assessment framework comprises different evaluating dimensions have been adopted to evaluate land administration from different perspectives. There are some attempts in the research field to develop the assessment frameworks. However, there is no specific framework for evaluating a land administration organization. The research sub-objective 1 was answered from these literature review which adopted a framework for evaluating ALRO. The indicators were derived from the existing assessment frameworks and related works. The following chapter will present the research design and methodology.

3. METHODOLOGY

This chapter presents the description of the research design and approach, case study, sampling technique, data collection methods, data analysis and limitations. The appropriate research methodology is important to achieve the research objectives and the validity of the research findings.

3.1. Research Design and Methods

This research applies the qualitative approach using the case study design. Qualitative research provides information in depth and can be used in the evaluation of goals (Patton, 1987). The researchers believe that qualitative methods can bring a deeper understanding of social phenomena than quantitative data (Silverman, 2010). In addition, it helps to understand the research issues from the respondents' perspective and experience (Silverman & Marvasti, 2008). The case study design was adopted to evaluate ALRO's performance as a land administration organization. Ali, Zevenbergen and Tuladhar (2014) state that the case study is practical when the researchers want to understand the problem in details and it provides a holistic view of the problem. Yin (2014) claimed that the case study research strategy is used when "how" and "why" questions are proposed, focusing on contemporary events. It provides the researchers with descriptive or explanatory knowledge about the individual, organizational, social, and political phenomena. For instance, Zevenbergen (2002) and Williamson (2001) used the case study to provide the best practices in land administration domain from various countries.

The research approach is separated into three main parts: the pre-data collection phase, the data collection phase, and the post data collection phase as illustrated in Figure 3-1.

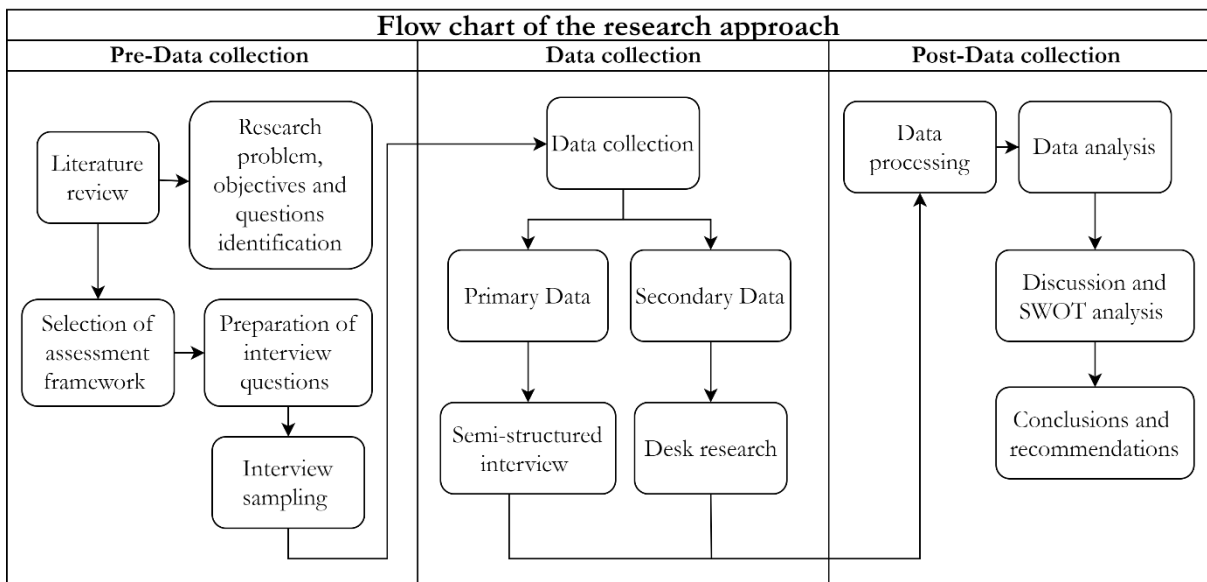


Figure 3-1: Flow chart of the research approach

First, the pre-data collection phase consisted of the collection of secondary data through reviewing literature, such as books, articles, news and online governmental documents. This was followed by the identification of the research problem, research objectives and questions, and the suitable assessment framework for this research. This phase ended by the preparation of the interview questions and identification of key informants in accordance with the research sub-objectives.

The second phase consisted of the collection of primary and secondary data. The primary data were collected from the online semi-structured interview. The secondary data were collected through the desk research method.

The post data-collection phase comprised of the processing of the collected data. The interviews were transcribed, translated and analyzed according to the research questions. Finally, the study results were summarized and discussed, and possible strategies obtained from SWOT analysis were proposed.

3.2. Case Study Area

Thailand is a country in Southeast Asia with a total area of 513,120 square kilometers. The case for this study is ALRO, which is responsible for LRAs in Thailand. The total area of the LRAs is approximately 64,000 square kilometers (40 million Rai²). Currently, LRAs include state and purchased private lands. The total granted areas are around 3.7 million parcels which account for about 57,102 square kilometers, and dispersed within 72 provinces out of the total of 77 provinces (ALRO, 2020). ALRO is chosen for this study because there is an existing operated LAS for more than 40 years. In addition, the case has quite a specific context of the people-to-land relationship and RRRs.

3.3. Data Collection Methods

Answering the research questions requires both primary and secondary data. The data collection methods used are the semi-structured interviews and literature review.

3.3.1. Primary Data

Semi-structured interviews were used to collect the primary data. The interview is one of the approaches to collect case study evidence. It benefits the researcher as it focuses directly on case study topics, provides explanation and personal views, including perceptions, attitudes, and meaning (Yin, 2014). It is useful in the exploratory and descriptive research to collect more information through the conversation around the specific topic (Mathers, Fox, & Hunn, 1998). The semi-structured interviews allow the respondents to explain the answers from their perspective, knowledge and experience. The interviews were opened-ended and closed questions. The interview questions were designed differently between the internal and the external key informants. The ALRO's governmental officers' questions were designed to obtain the data for the sub-objective 2 and 3. Furthermore, the questions were divided into three groups according to the respondents' roles: governmental officers from the implementation level, the executive level and the system developer. External key informants were interviewed to obtain data for some of sub objective 2 and sub-objective 3.

Due to the COVID-19 pandemic, the face-to-face interviews which is considered the appropriate qualitative research method was not practicable. Therefore, there was a need to find alternative ways to conduct remote data collection. Sy et al. (2020) suggest the audio recording via telephone interviews and teleconferencing technology. The researcher can choose video interviewing to observe the non-verbal responses when answering the questions. This research used the voice and video call via Line application, which is widely used in Thailand. Lobe, Morgan and Hoffman, 2020 indicated that online interview requires the basic digital skills and the internet availability. Thus, the key informants were more able to participate in the interview because they were familiar with the application. However, in the Line Application, the recording is not available. Hence, the recorder and the researcher's local computer were used to record and store the interviews. The interviews were conducted in Thai language to get

² Rai is a land measurement unit used in cadaster and land registration in Thailand. One rai is equal to 0.0016 square kilometers ("Area Conversion (Online Units Converter)," 2020).

comprehensive information. The semi-structured interview questions for the internal key informants are shown in Appendix 2 and the questions for the external key informants is in Appendix 3, respectively.

3.3.2. Secondary Data

Data concerning the existing assessment frameworks were collected using desk research from the existing literature: journal articles, the master theses, books, online government documents and websites to answer the sub-objective 1. In order to address the sub-objective 2, information about the current goals, the institutional arrangement of ALRO and other government documents such as Acts, regulations, procedure manuals and reports were relevant to answer the sub-objective. The national policies were key in addressing sub-objectives 3.

3.4. Sampling Technique

The interview sampling technique used purposive sampling because it is the most effective method to get the right person for qualitative research objectives. The most important factor is the respondent's knowledge about the subject, followed by personal characteristics and location when choosing the interview method (Kolb, 2014). The respondents are the potential key informants of the internal and external actors in the land reform program: ALRO's officers, other governmental officers, the farmers, the village head and the banker. They were selected from the people who have knowledge related to the research questions. Silverman (2010) states that the validity of findings from qualitative research should go beyond the assumption that official statistics or the random sampling of populations are the only valid or generalizable social reality. The required officers' work experience was at least at the professional level, which means a minimum of five years' experience. They included people who work in the land registration and cadaster to provide information on the dimensions to be evaluated. In addition, the banker provided the data about the agricultural credit for farmers. The key informants' details are illustrated in Table 3-1.

Table 3-1: Key informants for the semi-structured interview

Actor roles	Key informants	No. of respondents
Internal		
	Surveyor Officer	3
	Legal Officer	2
	Land Reform Technical Officer	3
	Computer Engineering Officer	1
	Director	3
	Inspector General	1
	Deputy Secretary General	1
External		
	Farmer	10
	Village Head	1
	Local Administrator	1
	DOL Officer	1
	Treasury Officer	1
	Banker (Bank for Agriculture and Agricultural Cooperatives)	1
Total		29

3.5. Data Analysis Methods

After the data collection was conducted, the recorded semi-structured interview data were transcribed from the original language (Thai language) to English. The interviews were translated and structured in

Microsoft Excel into 4 categories. The collected data were then analyzed using thematic analysis. Braun and Clarke (2006) argue that the thematic analysis is a commonly used qualitative research method, and it is a flexible approach. They define thematic analysis as a method for identifying analysis and reporting patterns (themes) within data. They suggest six steps to analyze the qualitative data: (1) familiarizing with data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report.

ALRO's land allocation processes were generated in the form of the Unified Modelling Language (UML) use case diagram and activities diagram using the Enterprise Architect software. The main stakeholders in ALRO's land administration were modelled using the Actors mapping technique (Falisse, 2008). The stakeholders mapping can provide an overview of actors involved in land administration activities. Furthermore, data collected from the literature review about the existing assessment frameworks and related works were analyzed using content analysis (Hsieh & Shannon, 2005). Snyder (2019) states that the review seeks to identify and understand all potentially relevant research in the topic of interest. Content analysis can be used to extract the state of knowledge and provide an overview of a specific topic. This was used to synthesize the information obtained to address questions in the sub-objective 1.

SWOT analysis was applied to formulate the possible recommendations from the results of evaluation of ALRO's organizational framework, external factors and stakeholders' requirements. SWOT analysis is a prevalent tool used in evaluating or assessing purpose (Todorovski & Lemmen, 2007). Data in each dimension in the assessment framework for ALRO provided the information from both the internal (ALRO's officers) and external stakeholders (farmer, village head, governmental officer and banker). Williamson et al. (2010) state that SWOT analysis can help to understand the existing LAS, including the organizational framework and diagnose the deficiency. It has been applied in evaluation studies in land administration. For example, Steudler and Williamson (2005) formulated the summary of evaluation results of Switzerland case study in SWOT matrix, and Showaiter (2018) also presented results and suggested strategies in organization's evaluation in SWOT matrix. Additionally, the internal and external respondents' answers can be compared and help to formulate the users' requirements for developing the strategies (Todorovski & Lemmen, 2007).

3.6. Ethical Considerations

The research required the primary data from the key informants: governmental organizations and citizens. The respondents were volunteers (University of Twente, 2019). The respondents were assured that the information collected is for the research purpose only. They were informed about the relevant information such as the research objectives, the data storage and data anonymization. The interviewed recordings were done only with the respondents' permission. The answers given by the ALRO's officers were cross-checked by other officers in the same position.

3.7. Limitation of the research

Due to the Covid-19 pandemic, the primary data were obtained only from the interview approach. Focus group discussions were difficult to conduct because of the non-availability of the respondents due to the time and schedule differences. Some external key informants were not willing to do online interview. Moreover, due to the time limitation, some possible indicators were excluded such as organization's history, financial resources, and sociocultural context. Some interview questions were excluded in the interviews as requested by the key informants due to their availability.

3.8. Summary

This chapter outlined the methodology used to achieve the answers for the research questions. Qualitative approach was chosen to obtain detailed information needed in this research. Data were collected from the semi-structured interview with the internal key informants including ALRO's officers and the external key informants. Due to the Covid-19 pandemic, the interviews were conducted online. The next chapter will present the research findings from data collection.

4. RESULTS

This chapter presents the results from the research approaches described in chapter 3 to answer the research sub-objective 2 and 3 (section 1.4). The findings are presented according to the research sub-objectives and questions. Section 4.1 presents the current situation of land administration in ALRO. Section 4.2 shows results about the external environment affecting ALRO's performance and finally, section 4.3 gives the summary of the results.

4.1. Current land administration in ALRO

The current situation of land administration situation in ALRO is presented regarding the ALRO's institutional arrangement and goals, the interrelations between legal, spatial and organizational frameworks, and the evaluation of ALRO's organizational framework according to the adopted assessment framework as shown in the Table 2-2.

4.1.1. Institutional arrangements and goals

ALRO is an organization under the Ministry of Agriculture and Cooperatives which plays a role and duty to implement agricultural land reform under Agricultural Land Reform Act B.E. 2518 (1975), and (No.2) amendment in B.E. 2519 (1978), and (No.3) amendment in B.E. 2532 (1989). ALRO is equivalent to a Department with the Secretary-General being its head. According to the Royal Decree, the administration is divided into central administration and regional administration. ALRO's institutional arrangement is shown in Figure 4-1 below.

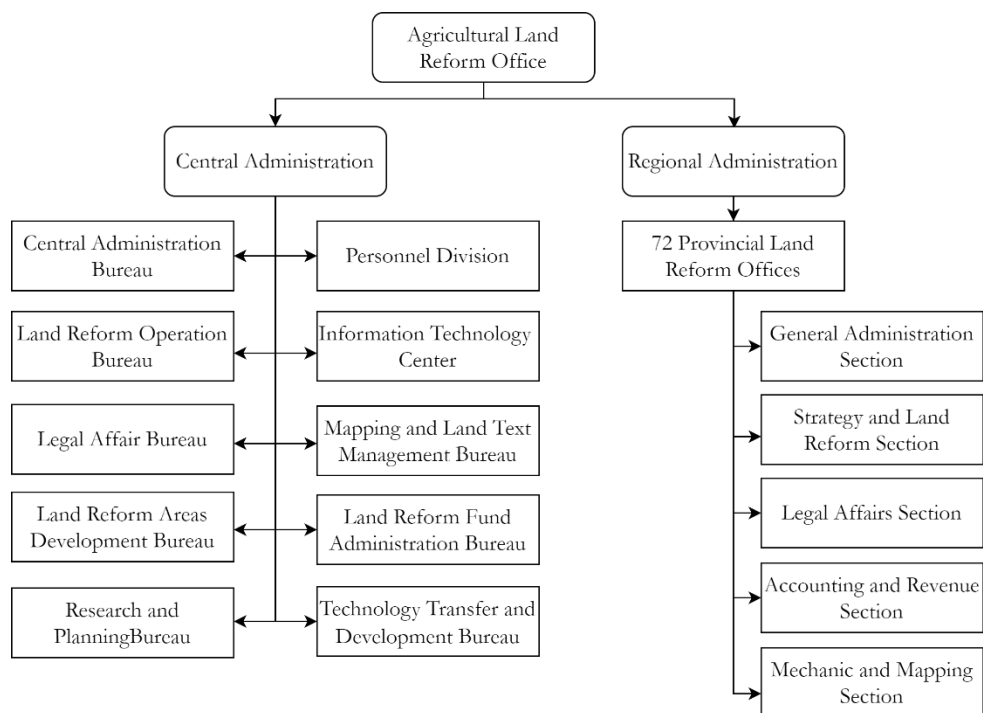


Figure 4-1: ALRO's institutional arrangement (Source: Adopted from ALRO's website)

ALRO's current vision is "An administrative organization for land reform areas, increase the potential of agricultural areas, improve the farmers' welfare". The current goals are: (1) to efficiently manage LRAs, (2)

to maximize the potential in the LRAs, (3) to develop farmers' welfare towards stability and sustainability, (4) to increase the use of the Agricultural Land Reform Fund, (5) to develop the organizational performance and effectively support the provision of services to farmers (Author's translation from ALRO's websites).

4.1.2. The interrelation between frameworks

In this section, the focus is on how the legal and spatial framework supports ALRO's work processes in land registration.

4.1.2.1. ALRO's Legal framework

ALRO's land allocation authority is exercised under the Agricultural Land Reform Act B.E. 2518 (*Agricultural Land Reform Act B.E. 2518, 1975*), rules, and regulations. The authority in land allocation is in the regional administration under the PLRC. In the regions, the PLRC has the authority to approve and license ALRO's activities. According to the ALRO's Licensing Manual for the Public B.E. 2563 (2020) and the interview with the officers, there are four types of authority in licensing and approval of requests: NLRC, Secretary-General, PLRC, and Director of provincial office. Moreover, the NLRC committee's resolution is the working reference in case the regulations are missing.

There are three land right types documented by ALRO. Land use rights are registered in the Land use certificate of agricultural land areas. It is normally known in Thai as Sor Por Kor 4-01 (SPK 4-01). Lease and hire-purchase land rights are documented in the form of tenancy or hire-purchase agreements. The Agricultural Land Reform Act provides for the incremental upgrading of the land rights from hire to hire-purchase and freehold in private land but there is still a restriction of the transfer. The documented person can be both individual farmers and the farmer's institution. According to Agricultural Land Reform Act, "farmer" means a person whose principal occupation is agriculture and includes those who are poor or who have graduated in the agricultural field or who are children of farmers, that have not owned land or wish to carry on an agricultural occupation. The land allocation to the farmer cannot exceed eight hectares per family also one of the restrictions of land registration (*Agricultural Land Reform Act B.E. 2518, 1975*).

Most of the respondents from ALRO stated that the law is not up to date. There are two aspects: agricultural occupation and farmer's qualification. Thailand's economy and society are rapidly changing. At present, agricultural lands are converted to the community. Many non-agricultural businesses, such as resorts and tourist attractions in LRAs, are increasing but these are illegal. The word "farmer" requires that a person takes most of the time to do farming, which might not necessarily be the case at present. However, few key informants argued that the Agricultural Land Reform Act is modern law. The problem is that there are some missing regulations which are causing difficulty in practices. However, according to most ALRO's officers, ALRO is revising the Agricultural Land Reform Acts and land allocation regulations in response to the Twelfth National Economic and Social Development Plan (2017-2021) (Office of the National Economic and Social Development Board, 2017)

4.1.2.2. ALRO's spatial framework

According to ALRO's officers at the implementation level, ALRO's land information sources are the digital map, ALRO Land Online system and the land registration envelope (Sor Por Kor 4-06 or SPK-06). The ALRO Land Online system contains only the land registration information in text format. Some respondents stated that there is inconsistency between the three information sources because these three elements should contain identical information. According to a developer, they have successfully linked the digital map and ALRO Land system. The resulting linked system is called ALROLIS. Hence, it would reduce inconsistency. A director also argued that ALRO has made an effort to the make three information elements identical.

ALRO survey techniques has been upgraded from using the tape and the total station to Real-time Kinematic (RTK) GNSS Network. Due to the internet connections in some remote areas, the total station is still being used together with RTK. ALRO is sporadically upgrading the whole country's LRAs. A surveyor responded in the interview that in 2019, ALRO started to update the survey standard following the adoption of the national survey standard.

Survey work is uploaded to the central office database via the web application called songsuk.alro.go.th. ALRO uses the specific software called ALROGISMAT. Within this system, the survey officer can create the ALRO's related survey forms. A system developer stated that the plans are affordable and can be updated when the users report issues. It is not necessary to work with the costly commercial GIS software. This system was recently developed, and the provincial offices do not need to send the results in paper form to the central office. The tools being used in ALRO's survey work are presented in Figure 4-2.

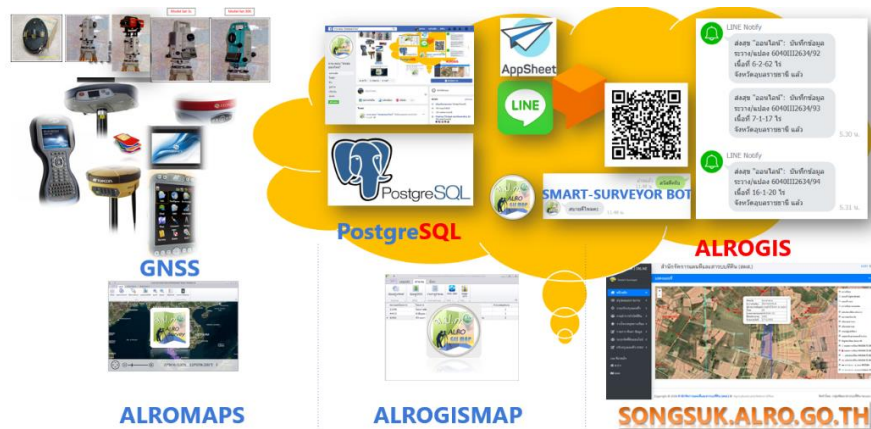


Figure 4-2: Tools being using in ALRO's survey work (Source: ALRO's presentation slides from a key informant)

According to the surveyors, updating the parcel requires the approval of the Director of Provincial Office of ALRO, and after that, ALRO submits the report of the change information to the PLRC. The revision of the legal framework is slower than the spatial framework. When updating the parcel area, it requires the update in the land document SPK 4-01. The third update would be problematic because there is not enough space to write the document's new parcel areas. Moreover, as some internal respondents stated, ALRO's governmental budget is decreasing. Surveyors also stated that ALRO's allocated budget per parcel registration is below the required amount.

4.1.2.3. Land registration process

The approval authority of land registration is under the PLRC except the transfer or inheritance for the whole parcel which is under the authority of the Director of Provincial Office. Moreover, the initial land registration process slightly differs from the transfer and inheritance processes. According to the Licensing Manual for the Public, the process starts when the farmers submit the land allocation request to the Strategy and Land Reform Section (Land Reform Section), the surveyor will go to the field and survey the boundary as indicated by the farmers. However, in practice according to some implementation level officers, the process also can start from the boundary survey in the village. Then the surveyor creates the parcel-ID and survey form. The land reform officer then records the information in the ALRO Land Online system. The SPK 4-06 and documents are submitted to the Legal Section. The legal officer will process the request to the farmers to participate in the qualification investigation. After the investigation, the legal officers submit all documents and the list of farmers to the Land Reform Section.

The land reform officer will record the updated process' status in the ALRO Land Online system. The District Land Reform Committee (DLRC) meeting is held to consider and approve the farmer and parcel

lists. After the approval, the process status will be recorded in the system again. The next step is the approval by PLRC and the updated recording. Then ALRO will announce the farmers' name-list that passes the committee's resolution within 30 days. If anyone objects to the land allocation, the appeal will be reviewed pending further investigation. If there is no objection, the land reform officer will submit the SPK 4-01 certificate to ALRO's Direct of Provincial Office and inform the farmers that they can receive the land certificate. The initial land registration process in LRAs is presented in Figure 4-3. The Figure 4-3 also shows the actors involved in the process and will be further described in section 4.2.2.

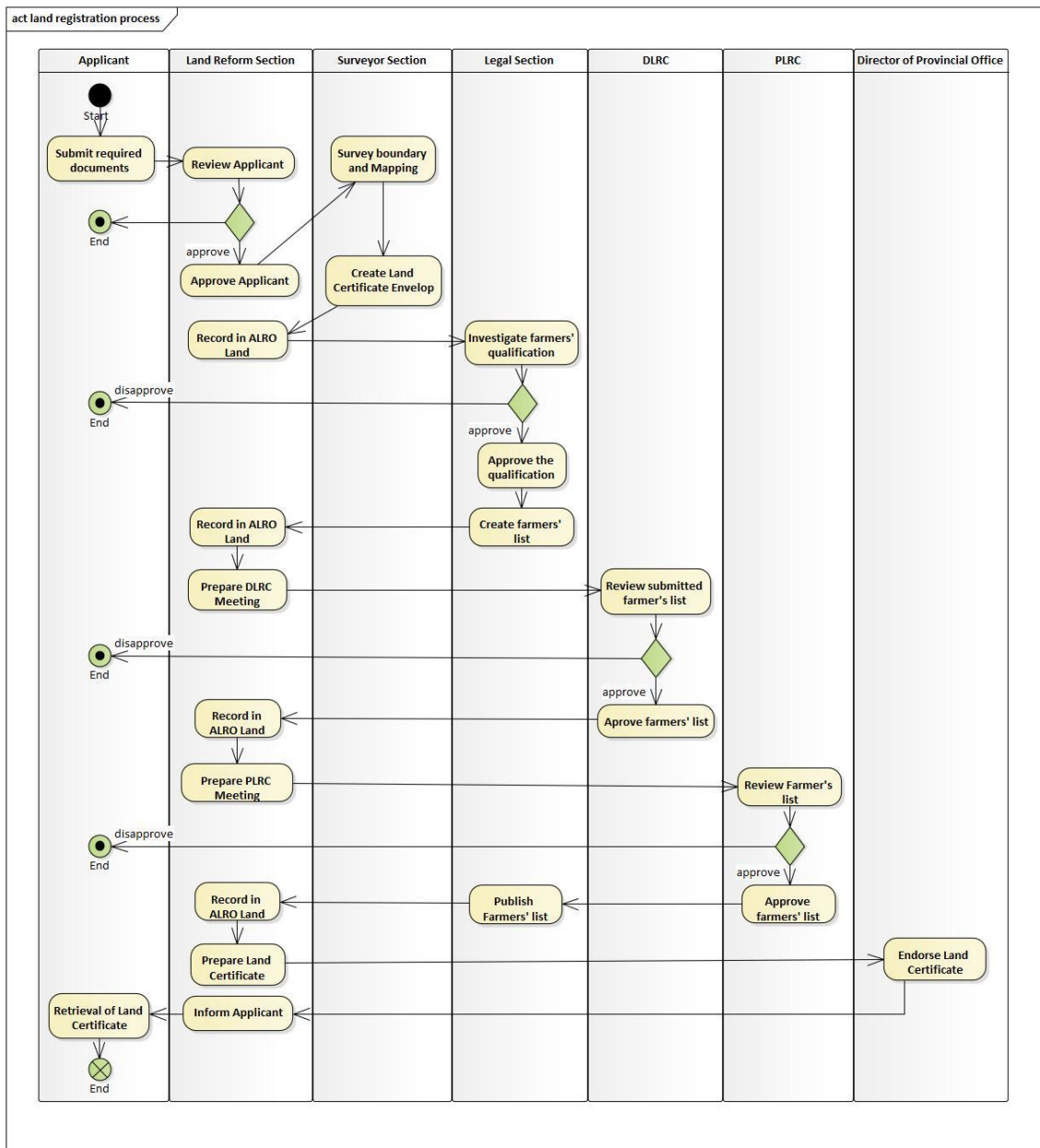


Figure 4-3: Land allocation process (Source: Author created based on the interviews and ALRO's regulations)

In case of transfer and inheritance, the land registration updating processes are slightly different from the first registration process. According to the implementation level officers, the investigation of farmers' qualification will be the first step instead of boundary demarcation. The maintenance of existing registration information could be problematic in case there is an informal transaction such as the old farmers transferring their land to others because of not having any heirs. The same applies if they are no longer interested in agricultural occupation because there is no compensation if they return land rights.

4.1.3. ALRO's organizational frameworks

ALRO's organizational framework status is presented in the dimensions and elements according to the adopted assessment framework and indicators as elaborated in section 2.3.2.

4.1.3.1. Organizational capacity

Four assessed elements in the organization capacity dimensions: organizational structure, work process, infrastructure, and human resources are described below.

Organizational structure

Land administration support: Most respondents from the executive level indicated that the central and provincial office's current organizational structure supports ALRO's responsibilities. An Inspector General claimed that land tenure related tasks are mainly the responsibility of the Land Reform Operation Bureau and Legal Affair Bureau. Land Reform Fund Administration Bureau is responsible for land valuation. Land use is the responsibility of the Technology Transfer and Development Bureau and land area development is under Land Reform Area Development Bureau. In addition, another respondent at executive level indicated that they would improve the organizational structure to support the inclusion of the land valuation function.

Regarding the distribution of duties, most of the executive level officers (4 of 5) stated that the tasks allocation between departments are clearly defined. However, there are some overlapping task allocations indicated by two directors. For example, land allocation-related tasks, such as complaint resolution could be overlapping between the Land Reform Operation Bureau and Legal Affair Bureau. Additionally, the distribution of duties could be accumulated to some bureaus or some individual officers.

Design for the execution of the work processes: Most internal respondents stated that ALRO's organizational structure is well designed to execute the work processes. The distribution of power to execute the processes is structured at a hierarchy level. For example, in the central province, the power is distributed to the Deputy Secretary General, Director of Bureau and Director of Provincial Office. In the provincial office, the director of the section has the power to supervise the officers. Even though most officers at the implementation level agreed that the allocation of power and responsibilities are well structured, some of them argued that the allocations of tasks could depend on the higher-level officer's preference.

Reflection of mandates to decentralization: The allocation of authority is clearly defined between the central and regional administrations. Some officers (4 of 11) argued that the decentralization system is not an obstacle for ALRO. The benefits of decentralization systems are such as the work's efficiency and transparency. A director indicated that the decentralization system has both benefits and drawbacks. Working under the committee structure sometimes could delay the problem resolution actions. Further, respondents at the implementation level (6 of 11) said that decentralization structure could have some obstacles, such as lack of unity in service delivery, unclear practice guidelines, and diversity of tasks at the provincial level which could lead to the complaints from the applicants due to the lack of standard in licensing or approval of work. In addition, majority of respondents at executive and implementation level said that ALRO's annual work plan is successful because the plan is set based on the collaboration between the central and provincial offices. However, some issues can impede the performance of duties, such as the work overload, diversity of tasks and additional tasks from fast-tracked policies.

Work process

Clarity, simplicity and standardization: ALRO's processes are based on the laws, rules, regulations, and practice guidelines, as stated by most respondents from the implementation level. There are also other external source references used in different professional fields such as the Administrative Procedure Act and the national survey standard regulations.

Most key informants responded that the ALRO's processes related to land allocation are clear and understandable. Some farmers (5 out of 10) indicated that they understand the processes clearly because ALRO's officers explained to them. In contrast, some ALRO officers indicated some unclear processes, such as the communal land allocation according to the national policy and the priority of the second and third level of heirs in the land transfer and inheritance processes. However, two ALRO officers argued that ALRO's processes are not simple to understand by the general citizens. *"It is not simple to understand by the citizens because ALRO's law is a special law. The LRAs is the state's possession. They cannot transfer to anybody, but it needs to be their heirs under ALRO's law..."*, said one legal officer. The perception of ALRO's processes related to land allocation is presented in Figure 4-4.

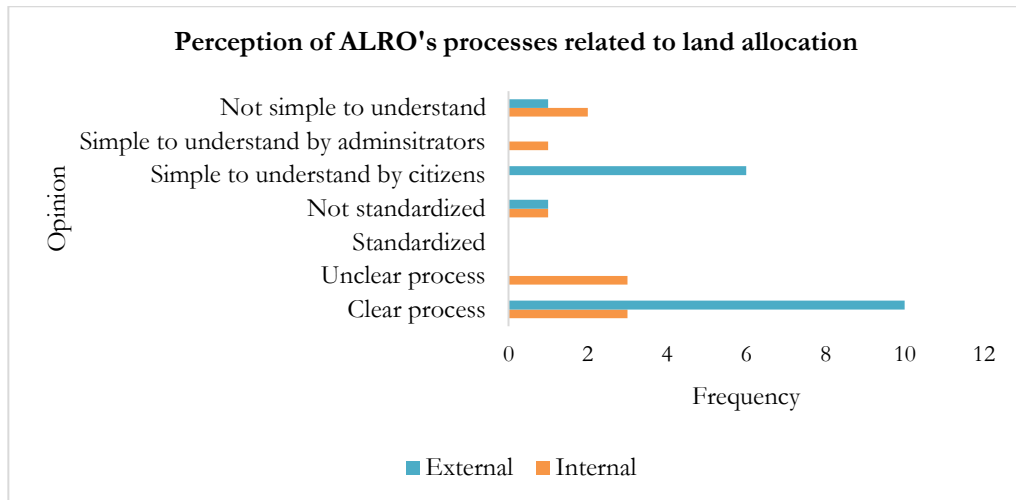


Figure 4-4: Perception of ALRO's processes related to land allocation

Efficiency of processes: All officers at the implementation level and a director stated that the service delivery could be slow. Some officers indicated that the execution of applications could be prolonged due to the officers' work overload and the long governmental work processes. *"...the processes in land transfer and inheritance are functional but slow. This is because of budget issues, survey issues, and few PLRC approval meetings per year. Sometimes the entitling could take 4-5 years,"* said a director. Regarding the cost, two officers stated that the work processes are not in a cost-effective manner. Sometimes the budget was all spent, but the land allocation result is only half of the plan. However, some respondents stated that the work processes are of good quality to the satisfaction of farmers.

Five farmers were asked about their experiences in land registration or transfer processes. Most farmers stated that the subdivision transfer could be an issue. Two farmers said that they had trouble subdividing the parcel because the new parcel is considered too small according to ALRO's regulation. One farmer stated that he could foresee this problem due to the land fragmentation. *"In the past, our parents held a big plot. Then it has been subdivided over a generation. In my case, I have 10 Rai of the parcel, but I have five children. If I subdivide equally, they will get two Rai each, but it is considered insufficient for carrying on agricultural occupation according to ALRO's regulations. So, I might have to transfer to only one child, but it might cause problems in the family,"* said the farmer. Additionally, another farmer and a village head stated that land transfer requests could be prolonged because there are many steps, and it is required the presentation of all heirs.

There are some efforts to convert the process from the manual to digital form. However, it is only in some parts of the work processes while the land registration is still in the manual and paper-based system. An Inspector General stated that ALRO has set up the Committee of Digital Service Development to bring ALRO's service toward the e-government system. However, a system developer indicated that legal aspects are the main challenge to digitalization. *"...Legally, the registration form requires manual writing and signature. Our system is ready but lacks legal backing. It is about the accountability of the information in the system. The*

main issue in converting to digital form is the legal framework. Although the information is reliable, the law states that only the writing is guaranteed. So, if we want to develop the system, the legal aspect should be adjusted too,” said the system developer.

Managerial tools in terms of planning, control, accountability and liability: According to the implementation level officers, the quality and accuracy of the work processes are ensured through several mechanisms: following the practice guidelines, the existing laws, rules, regulations, orders, the official correspondences. Some implementation level officers (3 of 5) indicated that the higher-level supervision is also the quality control. A legal officer stated that they follow the Licensing Facilitation Act and Licensing Manual to ensure they provide the services to the public within the timeframe. Moreover, the executive level officers indicated the planning, control, accountability and liability are managed through various tools like the internal audit, risk control, action plan, authority and power distribution.

Monitoring and evaluation: The internal monitoring is carried out by the Internal Audit Unit, ALRO’s Inspector, the Ministry’s Inspector, the Administration Development Unit, the Monitoring and Evaluation Sub-Bureau, and the expert in specific works. Some officers stated that ALRO’s main tasks are real-time monitored in the PARA online system. The external monitoring is executed by many independent organizations, such as the State Audit Office of the Kingdom of Thailand, Office of Public Sector Anti-Corruption Commission, Office of the National Anti-Corruption Commission and the Office of the Ombudsman. However, another implementation level officer argued that the internal monitoring seems to be overlapping.

Infrastructure

Information technology: Regarding the ICT applications and technologies, most ALRO officers at the implementation level claimed that the existing technologies and applications support the work processes and the business objectives, as shown in Figure 4-5.

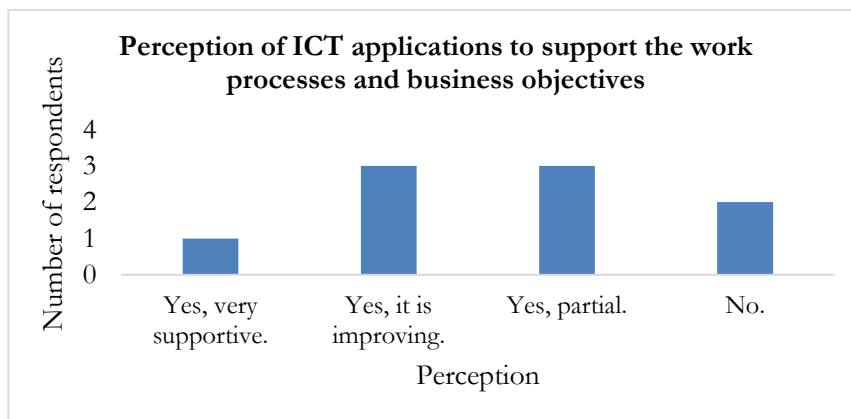


Figure 4-5: Perception of ICT applications to support the work processes and business objectives

The main supportive tools mentioned by ALRO’s officers are the ALRO Land Online system and ALROLIS. Land information is retrieved from the ALRO Land Online system to be used to investigate the farmer’s qualification and extract the supporting documents in the complaint resolutions process. ALROLIS is developed for supporting the fieldwork so that the officers can access LIS to navigate the parcel in the field. According to system developers, ALROLIS is a web application, and they are working on developing the mobile application (see Appendix 4). In addition, there is a GIS portal that includes many data layers such as the hot spot, land use and suitable agricultural areas. It can be exported in a spatial file for use in farmer’s occupation development.

However, ALRO officers at the implementation level indicated that ICT system development focuses on annual plan’s reporting and not the digital processing. They still have to fill in the repeated information in

the paper form in land allocation processes. Moreover, few officers (2 of 9) argued that the ICT application is insufficient in supporting their works because data analysis is not applicable and the land information in different databases is inconsistent. A system developer indicated that ALRO's land registration processes are different from the DOL's land registration processes because ALRO's transfer and inheritance require the approval of the PLRC. This could be an issue for developing an online system for land registration. According to another system developer, there should be some improvements as he stated "... Currently, the system is only a low level of big data. It cannot be used in prediction. It can only be used as supportive information in current work. But in the future, our information should be used to predict ALRO's future work change and the trending of farmers. So, we set our work plan in 5 or 10 years, not only just next year. We really miss the prediction function".

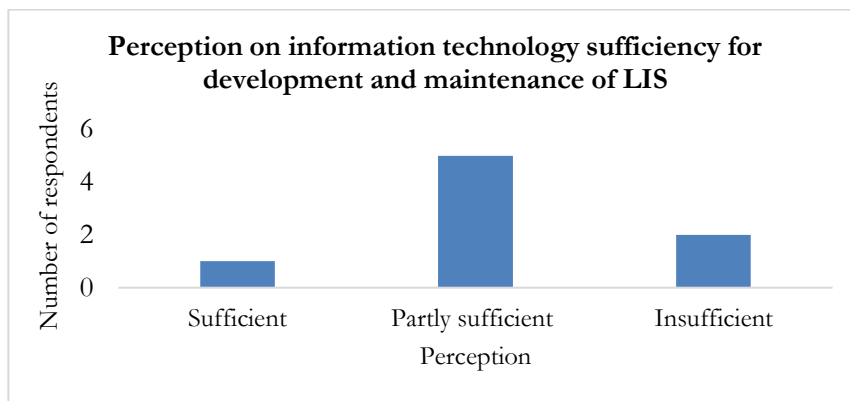


Figure 4-6: Perception on information technology sufficiency for development and maintenance of LIS

Figure 4-6 shows that most implementation level officers considered that the existing technologies, hardware and software are partly sufficient for further development and maintenance of LIS. Some ALRO officers at the implementation level (3 of 9) said the hardware are scarce in the provincial offices, while some ALRO officers (4 of 9) argued that the existing hardware is sufficient to carry out the work. In contrast, some ALRO officers said that the current computer supply is not sufficient because some officers require the personal computers. Further, the ALRO's officers from the system development positions argued that the existing information technology is still insufficient. It requires a lot of improvement in terms of database integration.

In addition, all key informants from ALRO considered that there would be positive effects to internal works, and almost all of them stated that it would benefit the service primarily for farmers. The summary of respondents' s answer is illustrated in Table 4-1.

Table 4-1: Effects of the technology adoption on work performance identified by internal key informants

Respondents	Key informants			
	Land Reform Officer	Legal Officer	Surveyor	Developer
Officers can work more efficient (faster and easier)	✓	✓	✓	✓
Support internal works in general	✓			
Reduce works' mistakes	✓	✓		
Reduce farmers' visiting ALRO		✓		
Reduce farmer' waiting time		✓		
Farmers are less inconvenienced				✓
Direct communication with farmers			✓	
Not benefit farmers	✓			

Information flow: Most implementation level officers stated that the internal information flow is clearly defined. The information and requested supporting documents in land registration processes are clear to the practitioners. The external information flow is unclear when the external organization requests for ALRO's information. However, land information in the registration process is transferred to another section in the provincial office in a paper-based system using the land registration envelope SPK 4-06. Most respondents claimed that internally, they could retrieve land information for their works promptly.

There was not much information from the interview regarding the ICT tools or protocols used for land information transfer. Some officers mentioned that they transfer land information internally via the File Transfer Protocol (FTP) system and email. Survey and mapping data are transferred from the provincial offices to the central system via the Songsuk system. However, a system developer argued that currently, the FTP system is rarely used. This system is kept for transferring of unimportant data and for use by the old generations because they are still familiar with this system.

Transparency and accessibility of LIS: Most ALRO officers stated that they have access to the ALRO Land Online with the username and password. They also have access to the ALROLIS system for parcel navigation. A system developer indicated that *"ALROLIS system is only accessible to the internal users. We require a log-in with the officer's personal ID. They need to register before access. The users have access to any information in the system"*. On the other hand, the external users, such as farmers and a village head, stated that they have never known or used ALRO's LIS. However, ALRO's officers said that the land information is partially disclosed to the public, and external users can make the request for information at the provincial office which will be provided in hard copy.

According to ALRO's officers, the ALRO Land Online and the ALROLIS systems are not accessible by the external users. The external users can access some land information, Parcel ID, and the land holder's information via the Searching for Land Registration online system. The officers mentioned that privacy of information limits what information can be offered to the public. An officer stated that *"People can request the land information, but it needs to be according to the Official Information Act because they can make requests only if they are considered as stakeholders of that parcel. They cannot make a request unless it is doable by law. For example, the judgment creditor indeed has the right to request land information to enforce the judgment"*.

Most of the officers stated that making LIS transparent would improve the transparency of ALRO in land allocation. A land reform officer stated that *"It is good to make LIS transparent to all. It generates transparency in all processes, the confidence, trust, and faith in ALRO. The public can observe the disclosed information, so when there is something wrong, we can fix or complete the LIS. However, the more disclosures we have, the more we are examined to perfect the data. It is better than keeping it closed"*. Moreover, the transparent land information can reduce land dispute, help the validation of land registration and reduce the illegal land sale by the public. However, some officers also indicated that personal information under the Official Information Act, B.E. 2540. (1997) and sensitive information such as farmer's debt information should not be disclosed. The perception of internal key informants of making LIS transparent to all is presented in Table 4-2.

Table 4-2: Perception of internal key informants of making LIS transparent to all

Perception	Key informants			
	Land Reform Officer	Legal Officer	Surveyor	Developer
Improves transparency	✓	✓		✓
Useful		✓	✓	
Makes some information accessible	✓	✓		
Unnecessary for farmers			✓	
Not a good idea			✓	
Not important	✓			

Human Resources

Human resources capacity: Regarding ALRO's capacity building plan, ALRO officers at the executive level stated that ALRO has the capacity building plan for the short, intermediate and long-term level. There are many internal and external trainings and education activities provided to the officers. Officers also are supported to pursue higher education and scholarship. Some missing skills include interdisciplinary skills, land reform knowledge and economics knowledge for staff in the Fund Administration Sub-Bureau.

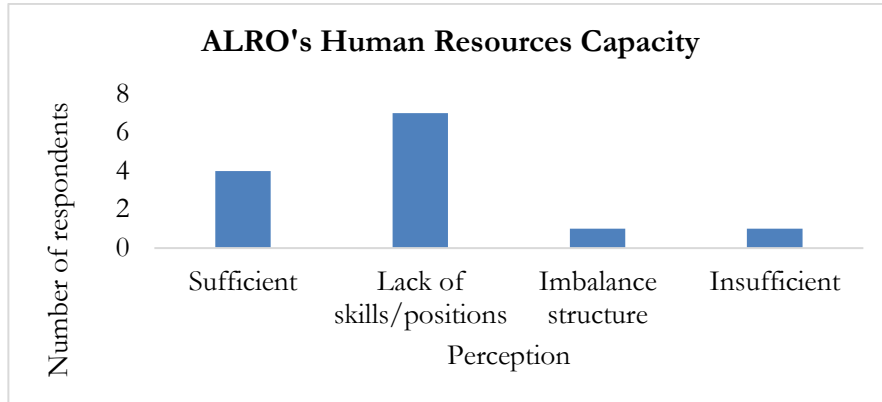


Figure 4-7: ALRO's human resources capacity

Figure 4-7 shows the summary of interview responses on ALRO's human resources capacity. Most ALRO officers at the implementation level stated that the human resources capacity still lacks technological skills and agricultural knowledge. On the other hand, according to a system developer, only a few computer officers understand land reform and land allocation processes. Some officers indicated that the surveyor and the legal officer are few. ALRO deals with the missing positions by "... *insufficient surveyors are a big problem because the college cancelled the survey program. So, currently, ALRO's solution is hiring the surveyor assistance. This employee is not necessary a graduate in surveying. ALRO provides training after recruitment. If they pass the training, they will be hired as an employee, not an officer. Another lacking position is that of legal officer. It is mainly because most people who graduate in law aim to be prosecutors and judges, said an executive level officer. ALRO recruits the legal officers and surveyors frequently*".³

Regarding the adoption of new technologies, some ALRO officers said that they are ready to learn and use new technologies. According to the system developers, ALRO provides the education and training to officers. As ALRO officers consist of people from both young and old generations, there is the resistance to change, but they finally would like to use new systems or technologies. The summary of interview responses is shown in Figure 4-8.

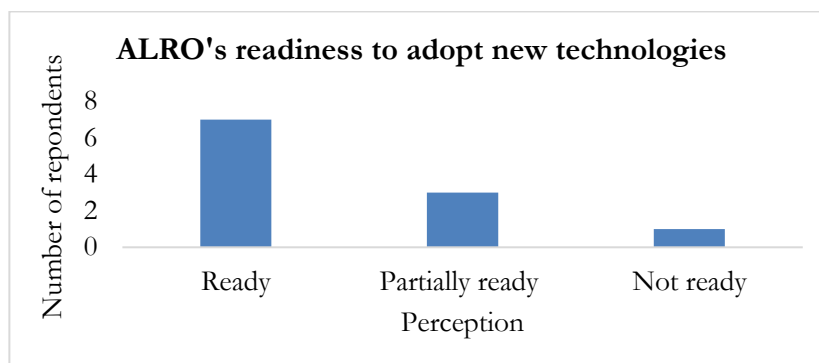


Figure 4-8: ALRO's readiness to adopt new technologies

³ According to the Royal Thai Government, not all employees are officers. An officer is pensionable while an employee is contracted.

Educational and training programs: Most executive level officers explained that ALRO has sufficient training programs and some collaborations with educational institutions and other governmental organizations. There is training for newly recruited officers and some specific short course training, such as administrative law and land valuation. However, some directors indicated that ALRO has human resources training challenges such as, few IT experts and educator, and the limited budget. Training during the working hours would affect the officer's working time and it is considered to be an obstacle of capacity building. A respondent said that *"Sometimes our officers have work to finish within a given timeframe. They would have difficulty going for training. Because some provinces only have 1-2 land technical reform officers. It will be a problem if all officers go for training at the same time"*.

Few ALRO officers (2 of 9) claimed that the training for officers is sufficient. Some ALRO officers (4 out of 9) stated that IT tools and survey-related training are insufficient. *"We should increase the training related to technology tools. Normally training is about English, budget allocation and unit school. I think the governmental organization should improve as fast as the business world and introduce the innovation and technology to help our works. Some officers said that technology is not applicable for ALRO, but this is not the case. I think the officer should have an opportunity to train in technology,"* responded a land reform officer. A system developer stated that the surveyors still need additional training in the provincial office, but it is impossible to visit all offices. A surveyor also stated that they have 3-day RTK survey training and learn other tasks by themselves as shown in Figure 4-9.



Figure 4-9: Survey using RTK GNSS Network training in the field (Source: Key Informant)

4.1.3.2. Organizational motivation: Mission, Vision and Culture

Mission, vision and culture aspects were selected to evaluate the organizational motivation dimension.

Organization's mission and vision: According to most ALRO officers (8 of 12), their tasks and responsibilities align with ALRO's goals. Specifically, the legal officers and surveyors stated that their main responsibilities are about land allocation processes which are ALRO's main mission. A land reform technical officer also said that his responsibility in land right and land use examination is one of ALRO's goals to protect the farmers from losing their land. However, two officers stated that their tasks are not aligned with the land allocation mission in private land.

Regarding ALRO's future directions, internal respondents indicated that the mission would include their so-called the second round-land allocation, land valuation, land renting out, community area zoning, an increase of private land purchasing, and upgrading of survey and mapping. There will be continuous land transfer and inheritance, and ALRO's land administration position would remain stable. However, the farmer's occupation missions are questionable to be the main tasks in the future because some directors stated that supporting farmer's occupation would be a focus while land reform officers who are responsible for the implementation of this task stated that they do not have agricultural expertise.

Organizational culture: Some ALRO officers mentioned that ALRO's organization culture principle is called ALRO SMART (see Appendix 5). The principles that ALRO encourages officers to practice in working

such as the service mind, responsibility and teamwork. However, according to the interview, a director argued that ALRO's organizational culture is considered a weak point compared to organizational structure. Some officers (4 of 10) addressed that ALRO lacks organization's unity. Unlike the DOL or the RFD, ALRO officers have many different opinions and do not have the same value of the organization's priority goals. Officers do not understand the task for other professions. However, almost half of the officers think that the culture is at a good level. Two officers argued that ALRO's main goal is to improve farmer's quality of life, and they claimed that officers have a service mind and look forward to helping farmers. The Figure 4-10 below shows the perception of internal key informants on organization culture that supports the priority goals.

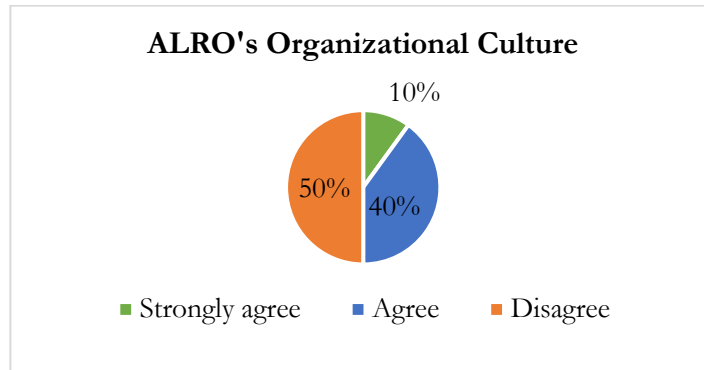


Figure 4-10: Perception of internal key informants on organization culture that supports the priority goals

Regarding the attitude towards change, most respondents claimed a positive attitude if there are any new technology developments or new policies, mainly because it will improve work performance and benefit service delivery to farmers. Some officers stated that most people could adapt to change fast, such as the young generation, while others resist change. It could be because they are almost retired. A system developer said that *"In the beginning, people would think negatively about the new system, but shortly after they can see it work, they would believe in that development. We have to prove to them, so even the senior officers also like the new system"*.

4.1.3.3. External environment: Stakeholders' environment

Stakeholders' environment aspect was chosen to evaluate the external environment dimension in the assessment framework. The details of the stakeholders involved in ALRO's land allocation and their requirements are further described in sections 4.2.2 and 4.2.3 respectively.

Demand of customers and other stakeholders in the mandate and policy: Most officers from the executive level (3 of 4) stated that Agricultural Land Reform Laws and regulations are specific provisions to meet the customers' demand. Customers include farmers, farmer's institutions and those who are granted utilization land rights. A director indicated that land allocation processes involve the stakeholder's participation at a high level. The farmer's heirs also have the legal right to be acknowledged in the farmer's transfer or inheritance. However, a director argued that the legislation of existing Agricultural Land Reform Law and regulations in the past did not involve the public hearing, leading to difficulty in law enforcement. The legislation of any laws in Thailand has been mandatory to include the public hearing recently. Currently, the public can provide the opinions on the revision of the Agricultural Land Reform Act on ALRO's official websites.

Cooperation and communication between involved organizations: Interview revealed that the main communication method is the official correspondence. ALRO also has other communication methods, such as conferences, official websites, Line Applications and informal communication. There are various external communication channels with the stakeholders. Based on the responses from external key informants who are the PLRC's members, the communication is via official correspondence, meetings and phone calls.

Most farmers stated that they are communicated to via Line application, phone call, and ALRO's officers also visit the village to deliver services and communicate with them.

Regarding the data exchange and sharing, land information is sent via the official correspondences in paper format and sometimes in digital format if requested. Data exchange and sharing between governmental organizations are implemented under the Memorandum of Understanding (MOU) and Linkage Center of the Department of Provincial Administration. According to a system developer, data are sent via web map service to Subdistrict Administrative Organization (SAO) for land taxation. Another case is the data exchange with the Bank for Agriculture and Agricultural Cooperatives (BAAC) to retrieve the registration of farmers' occupation from BAAC. However, the current system with BAAC is not yet finished.

The user's requirements in the strategic plans: According to two system developers, an internal system is developed based on the users and their requirements. The new system, such as the Songsuk system, considers the simplicity and officers' needs. A system developer said that they collect the requirements from ALRO's officers when developing a system. This is verified by a director in the provincial office who mentioned that the officers could use the Songsuk system. Additionally, the digital development plan is based on the national plan and policy in Digital Development for Economics and Society Policy 2018-2037, Ministry of Agricultural Cooperative's digital action plan 2020-2022, and the Bill of Thailand's digital action plan 2020-2022.

4.2. External factors affecting ALRO's performance as a land administration organization

This section presents external factors that could affect ALRO's performance including the policies, implementing activities, stakeholders and their requirements. The results in this section are obtained from the interviews with key informants and the secondary data sources.

4.2.1. ALRO's implementing activities and projects

The key informants were interviewed about the activities and projects that are implemented by ALRO including the related land and governance policies. This is to explore whether there are challenges in the execution of ALRO's routine works.

4.2.1.1. Overview of related land and governance policies

According to the literature review, Thailand's national land policy is governed by the National Land Policy Committee (NTC) under the National Land Policy Committee Act B.E. 2562 (2019). One objective is to promote the equity by distributing land to the landless. This policy is in accordance with the Thailand's National Strategy (2018-2037). The national strategies related to the national land policy and agricultural land reform include the National Strategy on Competitiveness Enhancement. It aims to increase farmer's incomes and the efficient management of natural resources. Another strategy is the National Strategy on Social Cohesion and Equity which has development goals to reduce the inequality in both social and economic aspects for all. In addition, the National Strategy on Public Sector Rebalancing and Development aims at the good governance and public interest-oriented principle (Office of the National Economic and Social Development Board, 2019). The draft National Land and Soil Resources Management Policy (2017-2036) is set up in response to the National Strategy and the government policy. It includes four strategies: 1) Biodiversity maintenance and conservation of the land and soil resources, 2) Maximization of the land and soil resources utilization, 3) allocation of land to the poor citizens, and 4) land and resources management. According to an Inspector General and a land reform technical officer, ALRO has the communal land allocation under the national policy project in response to the National Land Policy Committee Act B.E. 2562 (2019). The interview with two farmers who are granted in this project found that they perceived the project could improve their quality of life.

Moreover, the agricultural development plan according to MOAC's Twenty-year Agriculture and Cooperatives Strategy (2017-2036) consists of the strategies on agricultural land management. The government organizations under MOAC should promote the agricultural land consolidation, protect agricultural land areas and manage agricultural land utilization. It also includes the objectives under the Agricultural land reform program to allocate land to the landless farmers and protect the farmer's land rights (Ministry of Agriculture and Cooperatives, 2017)

Furthermore, the Thailand 4.0 policy (as described in section 1.3) is also stated in the Thailand's National Strategy (2018-2037). Thai government promotes the technology and innovation tools to support the key national policy and strategies goals. According to two ALRO officers, ALRO has many ICT projects in response to Thailand 4.0 policy including the Songsuk online system, ALROLIS, and complaint and some services requests online. Also, there is an initiation of the big data system to link ALRO's data with other governmental organizations.

In addition, the government promotes the open government data policy in order to enhance the accountability and transparency. It will enable the citizens to have access to government's public data (Srimuang, Cooharajanane, Tanlamai, & Chandrachai, 2017). Based on the interview with ALRO's officers, not all ALRO's information can be published as citizens have the right to access the official information with an exception to protect the personal data. For example, land information can be opened only to those who are farmer's stakeholders. The government data are disclosed under the Official Information Act, B.E. 2540 (1997).

4.2.1.2. Overview of current activities and projects

ALRO has the three main responsibilities which include the land allocation, land area development and farmer's development (Agricultural Land Reform Office, n.d.). Both internal and external key informants were asked to list the activities, services, products, online services and the types of land information they request. The activities and projects being implemented by ALRO are summarized as follows.

Land allocation: Most ALRO Officers answered that land allocation is one of ALRO's main responsibilities to solve the landless problem through the land acquisition in private land and state land. It is the regular work in the annual plan, said an ALRO officer. A director indicated that *"Most Thai people have been involved in the agricultural occupation for a long time and have expertise in many areas of agriculture. However, the problem is most land is possessed by the rich and capitalists. There are many landless agricultural workers, those who do not have sufficient land, and those who want to carry on agricultural occupation. So ALRO's main responsibility is the land acquisition through private land purchasing and state lands, such as encroached state land and wasteland"*. Some ALRO officers said that the land allocation is the regularization of existing land rights rather than allocating the landless in state land. Some farmers responded that the land use right documentation could ensure their land right security. But a farmer revealed that the land use right is insecure because the parcel is not his property. In addition, the land right and land use examination project is aimed to protect the agricultural land areas and the farmers from losing their land.

Farmer's occupation development: Farmer's development activity was stated by several ALRO officers and farmers. An officer claimed that presently this task is ALRO's focus. Farmer's development includes agricultural training and the support of production resources development. This project is aimed at supporting the farmer's living so that they can permanently carry on with the agricultural occupation and reduce the farmer's poverty.

Capital supports: ALRO supports farmers to access the credit in two ways: ALRO's Agricultural Land Reform Fund and the BAAC. Many farmers indicated that they can use the SPK 4-01 certificate as collateral. Some of them have accessed credit for their farming investment using the SPK 4-01 certificate.

A banker stated that the credit is only limited to agricultural purposes. In addition, the bank provides less credit amount for the SPK 4-01 certificate compared to the Title Deed certificate.

Land valuation: According to an executive level officer, ALRO has recently initiated the land valuation in LRAs. Currently, land valuation activity is the responsibility of the Land Evaluation Committee. Land price in LRAs uses the Treasury Department's land value as reference to estimate the approximate land price.

Complaint resolution: According to an implementation level officer, there are various issues regarding the allocated land since the land reform program has been implemented for 45 years. Some ALRO officers stated that there are many complaints to resolve, but there is no specific budget allocated.

Mobile Unit projects: Mobile Unit projects (Mobile Public Service Center) is a project that ALRO officers use to deliver services to the village so that services are more accessible to the farmers. Some external respondents including farmers and government officers presented the satisfaction in this project during the interviews.

Land areas development: Land areas development is one of the main responsibilities according to some officers. ALRO provides the basic infrastructure for the agriculture including road construction and agricultural water resource supply. However, some officers stated there are very few activities related to the area development at present.

4.2.1.3. Products, Services, and Information provided by ALRO

The interview results showed that key informants regarded the services and products as similar to the activities described above. In particular, ALRO provides several services to farmers, such as land right transfer and inheritance, agricultural credit, agricultural occupation training, land registration information, Mobile Units service, request for justice and complaint, information about rules and regulations, and hotspot and agricultural suitable areas information. Many farmers indicated that they have access to ALRO's services. For example, a farmer said that *"ALRO's credit has the advantage of low interest. We can request additional credit after we request from BAAC if we could not get enough money. We do not need to borrow the informal loan"*.

Moreover, land information is the service provided to the farmers, citizens, the private sector and other governmental organizations. ALRO's officers said that farmers usually request for the parcel boundary and shape, and their land registration process status. A village head claimed that LRAs' boundary is usually asked by the farmers because the boundary may sometimes overlap with the private land area. Farmer's registration information, the boundary of LRAs map and digital map in the shapefile format are sought by the citizens and private sector. Furthermore, the government organizations also request for the farmer's land right information and the boundary of LRAs. A DOL officer indicated that the private land titling requires the adjacent boundary confirmation from ALRO. A Local Administrator stated that the District Office needs the farmer's land registration information for the complaint resolution. The confirmation of SPK 4-01 certificate is required in the farmer's credit process. A BACC banker stated that *"All mortgages with the land certificate, either Title Deed or SPK 4-01 certificate, require verification from the DOL and ALRO. The bank needs to ensure that the land certificate can be used as collateral."*

Regarding online services and products, ALRO's officers claimed that Songsuk system for survey works and ALROLIS for parcel navigation are the internal online services. According to many ALRO officers, the Farmers' list searching web application is the main online service. However, there is only a farmer (1 of 10) who has ever used this web application. Another service is the online request web application for general request, survey request, dispute resolution request and request for a copy of SPK 4-01 certificate. A system developer indicated that this system is developed to support the farmers during the Covid-19

pandemic. The interview with external key informants reveals that ALRO's online services are not well-known by them. A local administrator stated that "*Sometimes we receive the complaint about the request for land allocation in LRAs. So, we request ALRO to check the map and inform the parcel location and including farmer's qualification. I hope there will be an online website to make requests...*".

4.2.2. Stakeholders in land administration in the case of ALRO

Information about stakeholders involved in ALRO's land allocation is obtained from the interview with the key informants. The responses showed that key informants have a slightly different viewpoint about who is considered as stakeholders. In summary, key stakeholders in land registration or ALRO's so-called land allocation at the regional level are described below. Actors involved in the land registration process and their functionality are presented in the UML use case diagram (see Appendix 6).

Firstly, the main actors are ALRO's officers including the Director of provincial offices, land reform technical officers, legal officers, and surveyors. The surveyors are responsible for parcel demarcation, parcel subdivision, the creation of the digital map and the SPK 4-06 envelop. The legal officers are responsible for the investigation of farmers' qualifications, creation and publication of the approved farmers' list. The land reform officers' responsibilities include receiving the request for registration, record the registration status in the ALRO Land Online system, prepare DLRC and PLRC meetings and generate the land certificate SPK 4-01. The endorsement of SPK 4-01 and approval of whole parcel transfer and inheritance to the first and second level of heirs (spouse and children of farmers) are in the authority of ALRO's Director of Provincial Office.

Secondly, most of the respondents stated that the farmers are the key stakeholder in land allocation. Most farmers are the state land occupants. It is voluntary to make request for the first land registration. Farmers participate in the boundary demarcation and investigation of farmers' qualifications.

Thirdly, PLRC and DLRC are also the main actors. According to the Agricultural Land Reform Act (*Agricultural Land Reform Act B.E. 2518, 1975*), the PLRC has the Provincial Governor as the Chairman and comprises of several governmental officers such as, Chief of Provincial Forest Office, Provincial Land Officer (DOL), District Officer, representative of the BAAC and four farmers' representatives in that province. The external informants who are members of the PLRC and DLRC responded in the interviews that they are involved in the consideration of farmers' qualifications whether farmers can be granted land.

Moreover, the village heads were considered to be the main actor by several internal and external informants. The village head is one of the members of DLRC and PLRC. However, village heads play an important role in the investigation of farmers' qualifications. The village heads have duties to guarantee the applicants in terms of occupancy, utilization and occupation.

Since ALRO's land registration involves many stakeholders, mapping the interests and power/influence could help understand the possible impacts on ALRO's performance and future development. Most respondents said that farmers are the ones who benefit the most from the land allocation project. Some officers argued that farmers have little or no power in decision-making on the land registration application, while some officers stated that when they are registered, they might be powerful, and they have the right to appeal. The village head is the most powerful actor because he/she can guarantee the ground truth. In addition, some farmers who play a role as representatives in the NLRC, PLRC and DLRC committee consider themselves as having high participation in decision making.

The PLRC and DLRC committees are powerful because the final decision-making in land allocation approval rests on them. An external informant stated that DLRC is a very important actor in the first step of approval before the PLRC. All internal respondents also explained that PLRC is more powerful than ALRO and can decide independently. ALRO is the committees' secretary and has the duties of preparing

documents and collecting sufficient evidence for decision making. Finally, the village heads' role was viewed by most of the key informants to be important because they provide the ground truth information to ALRO and the PLRC and DLRC committees.

Regarding interest among different stakeholders, most of the key informants stated that farmers are key in the land allocation. ALRO has the interests in the implementation of land registration than the committee. At the same time, the committees have interests in protecting the state land for agricultural purposes by considering farmers' qualifications. According to some external respondents, the village head's interest is to protect the local areas and the villagers. The stakeholders mapping in land allocation in the case of ALRO is presented in Figure 4-11.

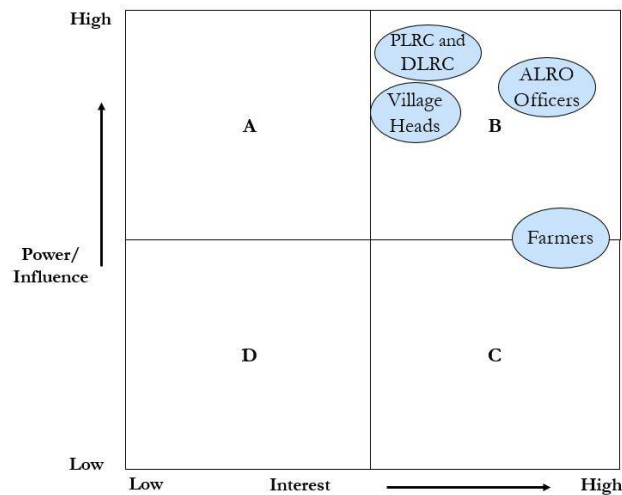


Figure 4-11: Stakeholders mapping in land allocation in the case of ALRO

4.2.3. Stakeholders' requirements in the case of ALRO

The stakeholders' requirements information is obtained from the interview with all key informants and the information about the future opportunities and challenges is collected from ALRO's officers.

4.2.3.1. Stakeholders' requirements and suggestions for further development

In this research, the key informants can be considered as the stakeholder as described in section 4.2.2. The interviews show several recommendations and suggestions proposed by the key informants

Few recommendations about the organization structure to improve the work processes were proposed. Some ALRO's officers suggested increasing the number of officers in the provincial offices to improve the public services because the organization structure links with the human resources structure. The land reform technical officers proposed the adjustment of the structure and clarification of the overlapping responsibility of the Land Reform Operation Bureau and the Land Reform Fund Administration Bureau.

ALRO's officers proposed some recommendations to improve work processes. First, the use of technologies in routine works would fasten the processes so that the officers could be more productive. Bringing more digitalization processes would improve ALRO's internal works. Second, revision of the law and regulations is suggested by a legal officer and a director because it is the obstacle in work practices. There is need to revise the definition of farmer's qualification and the farming occupation according to the society's perspective. Third, a legal officer and a director pointed out step reduction in processes such as, the land transfer and inheritance. However, there was no information about the specific process. Fourth, the transfer of authority from the PLRC to the Director of provincial office was suggested. This could reduce the work steps and fasten the land registration. A system developer also argued that transfer of

authority would fasten the land registration so that the farmers can have access to credit faster. Finally, the executive level officers suggested to improve the “how-to” in work processes. In addition, a local administrator also suggested that the land allocation process should be shortened.

The recommendations regarding the ICT infrastructure are obtained from both internal and external stakeholders. Most ALRO officers suggested improving the existing LIS. The land information should be complete and updated. The different land-related information stored in different Bureaus should be integrated or linked. A system developer stated the software and system should support the data analysis. Moreover, many informants including ALRO’s officers, a village head, a banker, and some farmers indicated that LIS should be more accessible to the farmers and public. A director said that *“ICT Bureau should provide more open access to land information, especially for farmers, because sometimes farmers need to travel for more than 100 kilometers to the ALRO’s office to check the digital map only”*. Another director also suggested that ALRO should provide a digital system to search for the parcel to be the same as DOL.

ALRO officers proposed some recommendations regarding the human resources aspects. The training about technology and the missing skills would improve officers’ capability. More surveyors and officers in the provincial offices are needed. An officer suggested that the surveyor should have a higher payment. In addition, to improve the organization’s culture, an officer stated that ALRO’s officers should be more open-minded and work toward the same goal.

Moreover, the farmers suggested providing more credit to the farmers, educating of law and regulations, continuing farmer’s occupation development, revising the law and regulations, and converting the SPK 4-01 certificate to the Title Deed to increase land tenure security. Some external government officers proposed adopting technology in the public service, reducing the use of paper in the meeting, reducing the land allocation time, and increasing the PLRC meeting.

4.2.3.2. Future opportunities and challenges

ALRO’s officers indicated several opportunities and challenges that might affect ALRO’s works. The revision of regulations would help reduce ALRO’s practical problems in land allocation. This will enable the state land leasing, so ALRO will be able to collect revenue. The adoption of technology and government policy would help improve work performance. Farmers are also interested and ready to use technology. The transfer and inheritance of land rights are increasing. In addition, there are 300,000-400,000 registered landless waiting for the land allocation. Even though some officers stated that they believed that ALRO’s organization status would remain the same stable, some officers revealed the challenges related to the farmers, society change and information technology. An ALRO’s officer stated that increasing land dispute, community expansion and the smaller landholding will be key implementation issues. Some officers indicated that the social perception is also challenging because it is known that LRAs are the land for agricultural purposes. In fact, the farmers can also do business related to agriculture. Further, an officer stated that technology is rapidly changing, and there are some cyber-attacks. Future opportunities and challenges for ALRO’s performance are shown in Appendix 7.

4.3. Summary of the results

The chapter showed that ALRO is a land reform organization that plays an important role in Thailand’s land administration with the goals to management LRAs and improve farmers’ quality of life. The institutional arrangements, goals, the legal and spatial frameworks were presented. ALRO’s organizational framework status was presented in three dimensions according to the assessment organizational framework for ALRO. Moreover, the possible external factors that could affect ALRO’s performance were explored. The next chapter will analyze each aspect in line with the indicators as presented in section 2.3.2 and the lessons learned from the evaluation of ALRO using the adopted assessment framework.

5. DISCUSSION OF THE RESULTS

In section 2.3, the assessment framework for ALRO was developed to address the research sub-objective 1. This chapter continues with the discussion focus on the results of sub-objective 2 comparing to the adopted assessment framework for ALRO. Section 5.2 will present the SWOT analysis and section 5.3 will analyze the possible strategies for performance improvement. Finally, the lessons learned from applying the adopted assessment framework for evaluating ALRO are discussed in section 5.4.

5.1. Evaluation of ALRO's current organizational framework

The evaluation results are discussed against the literature in each indicator under the three evaluation dimensions: organizational capacity, organizational motivation, and external environment based on the assessment framework for ALRO (see section 2.3.2).

5.1.1. Organizational capacity

5.1.1.1. Organizational structure

Land administration support: The result presented in the section 4.1.3.1 indicates that ALRO has the hierarchical structure to perform the organizational functions. This aligns with Burns (2007) that the organizational structure should support the core land administration functions. The land administration functions proposed by Enemark et al. (2005) are covered in ALRO's organizational structure both in the central and the provincial offices. However, the land valuation, land use, and land development functions are not clearly supported in the provincial offices. This may require the restructuring of the organization to ensure the missing functions are included to meet ALRO's goals.

Designed for the execution of the work processes: ALRO's hierarchical structure reflects the allocation of power more than the execution of the work processes, which contradicts with Ali (2013), who suggested that the organizational structure should be well designed to execute the land administration processes. This may cause the tasks allocation preferences by the superiors, especially the tasks related to land allocation processes, and slowing the work processes. It also might lead to the work overloads in some Bureaus, such as Land Reform Operation Bureaus in the central office and the Strategy and Land Reform Section in the provincial offices.

Reflection of mandates to decentralization: The decentralization of ALRO's administration has both positive and negative effects, as captured in section 4.1.3.1. According to Enemark and van der Molen (2008), organizational structure should have a well allocation of tasks in each management level, especially the local level, so that the organization could deliver the services more efficiently and effectively. As for the case of ALRO, there is a need to elaborate on the decentralization of processes to be more effective and efficient.

5.1.1.2. Work process

Clarity, simplicity, and standardization: The results show that the land allocation's work processes are clear to some internal stakeholders because there are several processes references. This could mean that the work references could help clarify the work processes. However, it is noticeable that Agricultural Land Reform Act and regulations are not easy to understand for the citizens. It could be because of the complicated processes in land transfer and inheritance and the restriction in land use which are different from the

private land law. Hence, the publicizing of land reform information might be needed, such as posters in ALRO’s office and the villages. It is revealed that ALRO’s survey work follows Thailand’s national survey standard. This could make land information integration with other governmental organizations easier, like including the land registration and topographic mapping into the national spatial data infrastructure (Williamson et al., 2010). Thailand’s National Spatial Data Infrastructure (NSDI) was established to promote the integration and sharing of data (Chuentragun & Panklin, 2016) though currently, the ALRO’s land information is not integrated into the NSDI.

Efficiency of processes: Although there is evidence of farmer’s satisfaction in ALRO’s performance, the land allocation processes are found to be inefficient in terms of time and cost. This is against the indicators suggested by Enemark and van der Molen (2008), as captured in section 2.3.2. The land allocation process showed in Figure 4-3 reveals that the farmers’ qualification approval is crucial as it can terminate the land allocation process. As a result, this process would require a highly accurate investigation. In addition, there is a constraint of the approval timeframe as indicated in section 4.1.3.1. Thus, the land allocation by ALRO that requires the committees’ approval is dependent on the committees’ availability. Compared to the land allocation under the Director of provincial office in Figure 5-1, the process workflow is shorter. This could take less time to register land rights. Thus, the transfer of approval authority would improve the efficiency of processes in terms of time and cost.

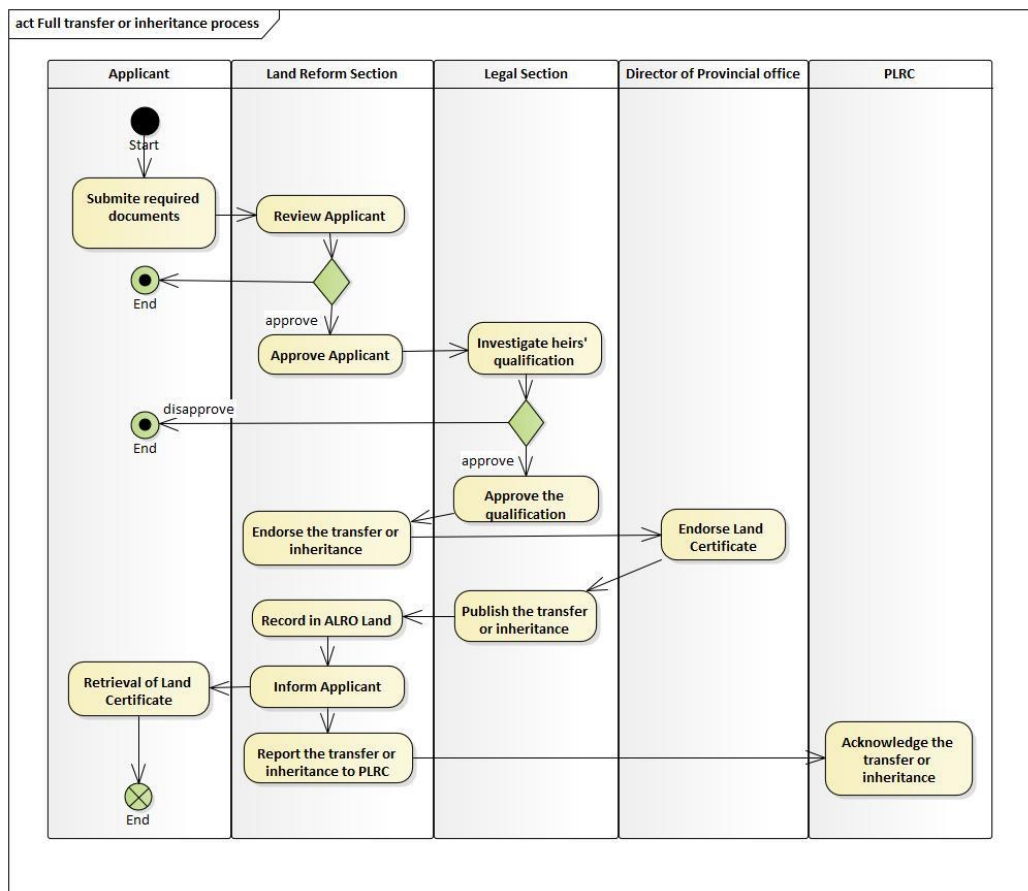


Figure 5-1: Transfer or inheritance for the whole parcel to the first or second level of heirs (Source: Authors created based on the interviews and ALRO’s regulations.)

Managerial tools in terms of planning, control, accountability, and liability: The study found that the managerial tools to support the work processes are in line with Enemark and van der Molen (2008). In ALRO’s case, the tools are mainly used to follow up the work plan and ensure the public services are delivered in the timeframe. However, this study only identified the existence of the tools and not the quality of the tools.

Monitoring and evaluation: According to Enemark and van der Molen (2008), the monitoring and evaluation of processes are a control of an organization's performance. It is found that ALRO's work performance is monitored both internally and externally on a regular basis, which aligns with the indicator. It is notable that ALRO monitors each process in land allocation via an online system. This could help in identifying the performance at each step.

5.1.1.3. Infrastructure

Information technology: The results in section 4.1.3.1 revealed that ALRO's information technology is partially aligned with the indicator. The existing systems do not support the data analysis and scenario prediction. In addition, the development of ALROLIS has been recently used to support the parcel navigation in the fieldwork but there is no evidence for other uses. However, this result shows that ALRO has been improving land information technologies over time compared to the findings in the previous study by Khanmad (2017). The responses from internal key informants also indicated that the officers have a positive attitude toward bringing the technologies to ALRO's work process.

Information flow: ALRO has a clearly defined internal information flow for land allocation processes because the procedures and the required documents are clearly written in the regulations. Thus, the development of internal ICT applications for land allocation would not be difficult in terms of the information flow as stated by (Enemark & van der Molen, 2008) but the ICT application for external communication would need more exploration of the information flow. However, each section involved in the processes, as shown in section 4.1.2.3 in Figure 4-3, submit the required documents in a paper-based form then the Land Reform Section record the land registration in the system. This process requires manual typing, so it might cause some discrepancies in land information between the three land information sources. This explains the inaccurate land information in the ALRO Land system as discovered by Khanmad (2017). The use of paper and digital-based registration in parallel to transfer land information between ALRO's sections can bring inconsistencies in land information.

Transparency and accessibility of LIS: Transparent land right and land information in relation to privacy is fundamental for accountability, openness and the citizen's trust (Enemark et al., 2016). It should be visible how the government manages and controls state land under LRAs. The result shows that the LIS is only accessible to the ALRO's officers. Another important finding is that the external stakeholders do not know about the LIS and the web application provided for searching for land allocation status. The perception of ALRO's officers at the implementation level on transparent LIS to all are diverse. The information privacy issue is the main concern of some officers to make LIS transparent. In contrast, others believed that transparent LIS would be beneficial in terms of providing accountability and more useful information to the farmers.

5.1.1.4. Human resources

Human resources capacity: Human resources capacity is one of the crucial aspects to assess a land administration organization as proposed by FIG in the Logical Framework for Capacity Assessment. The organization should understand the gap between the needed capacity and the existing human resources capacity to implement the land administration activities (Enemark & van der Molen, 2008). ALRO has dealt with the scarcity of surveyors and legal officers by frequently recruiting and hiring survey assistants. Thus, this study confirms the problems stated in section 1.3. Downsizing the organization might not be applicable under this circumstance since the surveyors and legal officers are the main actors in ALRO's land allocation.

Educational and training programs: A land administration organization should understand the current educational and training programs needed for its land administration (Enemark & van der Molen, 2008). Although the results show that ALRO provides various training programs, including land administration's

required skills and supplementary skills such as English language, it is evident that there are requirements for IT-related training. This result confirms that land administration requires multi-skilled officers, as indicated in the FFP land administration (Enemark et al., 2016). Notably, the internal training could be in a short period because it will affect the officer's working hours. Thus, this would be a constraint for ALRO to promote the training programs.

5.1.2. Organizational motivation: Mission, Vision and Culture

Organization's mission and vision: According to the results in section 4.1.3.2, individual officers' responsibilities in ALRO are not clearly reflected in the organization's goals. Moreover, ALRO's goals, as presented in section 4.1.1, is about the LRAs management, so the private land allocation might not be the organization's present focus. In addition, the business objectives should be clear and specific, as described by Enemark and van der Molen (2008) and Showaiter (2018). In ALRO's case, the goals seem not specifically targeted to the four land administration functions. ALRO is pushing the revision of the law and new land allocation regulations. It seems possible that the future direction of ALRO could change, but the land allocation tasks would remain the same.

Organizational culture: The findings provide some evidence that ALRO's culture in practice still could not support the organization's priority goals even if it has clear written organizational culture principles. The problems are that there is a lack of unity, a lack of understanding of other professionals' works, and various organizational goals are valued differently. When ALRO brings new technologies or implements new policies, the lack of unity could hinder ALRO's performance in general. However, the respondents in this study showed positive attitudes toward changes in new policies and technologies. Notably, Lusthaus et al. (2002) indicated that an organization's culture data is usually difficult to obtain because the individual could have a varied perception of culture.

5.1.3. External environment: Stakeholders' environment

Demands of customers and other stakeholders in the mandate and policy: Based on the information from the executive level officers, it is evident that ALRO's mandate, Agricultural Land Reform Act and regulations related to land allocation include meeting the farmers' demands. However, this finding is limited to the perception of the organization's customer or stakeholder because the key informants indicated that the beneficiaries, according to Agricultural Land Reform Act, are only farmers. In addition, the result has no evidence regarding the customer orientation policy as indicated by Enemark and van der Molen (2008).

Cooperation and communication between involved organizations: Cooperation and communication should be well-established (Stuedler et al., 2004). This indicator is crucial for ALRO as there are many governmental organizations and citizens involved in the land allocation processes. The results show that internal communication is clearly defined. The external key informants showed their understandings of the communication with ALRO via the channels described in section 4.1.3.3. Regarding data sharing and exchange, it is evident from the interview with internal key informants that most data sharing is executed as requested from either the farmers, internal or external bodies. The spatial data seems to be shared under the governmental organization's MOU or national projects. Therefore, the national policy might be needed for land information integration or linkage between organizations.

The user's requirements in the strategic plans: Based on the responses from officers at the director level and the system developers, it is found that ALRO's technologies development plan adopts the user orientation principle. ALRO's LIS development includes the principles of user requirements and the simplicity to the users. This is in alignment with the indicator stated by Ali (2013). However, there is no evidence of adopting external stakeholders' requirements in ALRO's digital development plan. This is because the digital system and LIS still target internal users.

5.1.4. Summary of evaluation of ALRO's current organizational framework

Based on the discussion of the evaluation of ALRO's organizational framework above, the evaluation results will be further analyzed and classified using the qualitative assessment criteria into three categories: Yes, Partial and No. If the current situation follows the indicators, the results will be assigned as "Yes". If the results found some areas do not align with the indicators or most responses indicated some requirements, the results are assigned as "Partial". Finally, if the results show that the current situation does not follow the indicator, the results are "No".

Table 5-1: Summary of evaluation of ALRO's current organizational framework

Evaluation dimensions	Aspects	Indicators	Alignment of results with indicators
Organizational capacity	Organizational structure	Organizational structure supports the core land administration functions	Yes
		Organizational structure is well design for execution of the work processes	Yes
		The allocation of mandates reflects a well-balanced approach to decentralization	Partial
	Work process	Processes are clear, simple, and standardized	Partial
		Processes are conducted in an efficient manner	Partial
		The managerial tools in terms of planning control, accountability and liability are appropriate	Yes
		Work processes are monitored and evaluated	Partial
	ICT infrastructure	The information technology sufficient for further development and maintenance of LIS	Partial
		The internal and external information flow are clearly specified	Partial
		LIS is Transparent with access for all	No
	Human resources	Human resource capacity is sufficient	Partial
		Organization has appropriate educational and training programs	Partial
	Organizational motivation	Mission, vision, and culture	Mission vision should be aligned with organization's goal and direction
Culture supports the priorities of organization.			No
External environment	Stakeholders' environment	The mandate and policy include meeting the demands of customers and other stakeholders.	Partial
		The involved organizations have well cooperation and communicate each other	Yes
		The user's requirements including their role is properly analyzed while developing strategic plans	Partial

Table 5-1 shows the summary of the evaluation of ALRO's current organizational framework. It indicates that most aspects are partially implemented, which would affect ALRO's work performance. It can be seen the organizational structure is relatively in line with the indicators compared to other elements. So, these results are furthered analyzed the rest elements to identify the areas that need focus. The evaluation aims at improving the organization's work performance and enhances public services. Obviously, the ICT infrastructure and human resources are the areas needed improvement. However, the culture change would take a long time, and the missions would need to follow the government's policies. To be tangible,

the work process should be another area that can be strengthened. Therefore, three elements are in the dimension of the organizational capacity, which are the key elements to carry out the organization's function (Lusthaus et al., 2002). Moreover, based on the stakeholders' analysis and requirements (section 4.2.2 and 4.2.3), ALRO's officers and farmers are key actors. Most of the suggestions and recommendations from the key informants were related to the work processes and ICT infrastructure.

5.2. SWOT analysis

The discussion and analysis in section 5.1 reveal the assessed elements in the organizational framework which were recommended to be improved. The evaluation results can be further analyzed to identify possible recommendations in a systematic approach. SWOT analysis is a strategic planning tool that can help to identify the organization's internal status (Strength and Weakness) and the external situations (Opportunities and Threats) that affect the organization in a positive and negative way, respectively (Gürel & Tat, 2017). Therefore, SWOT analysis is chosen to support the evaluation that was done within this research (see section 3.5).

Table 5-2: SWOT analysis matrix in evaluating ALRO's performance

Strengths	Weaknesses
Central organizational structure supports the core land administration functions.	Lacks some regulations and practice guidelines.
Decentralized administration.	ALRO's law and regulations are not easy to understand by the citizen.
Having quite sufficient work references.	Lengthy and complicated subdivision land transfer and inheritance processes.
Survey and mapping are standardized.	Paper and digital-based land registration in parallel.
The Annual plan is clear and usually successful.	Legal framework does not fully support the digitalization.
Sufficient internal and external monitoring and evaluation.	Digital system focuses on the work's output report.
Having the development of LIS overtime.	Inconsistency in land information between three data sources.
Internal information flow is clear.	Fragmented land-related information system.
Having easy access to the LIS internally.	LIS lacks the analysis and prediction function.
Officers have a positive attitude on the adoption of technologies on the work processes and new technologies.	Insufficient hardware to support works.
Sufficient training programs.	Unclear external information flow.
Officers have a positive attitude towards changes.	Online services are little known by the external stakeholders.
Stable position in land allocation responsibility.	Lack of human resources capacity building on the missing skills.
ALRO is responsible for the land registration and survey.	Lack of surveyors, legal officers and land valuation professional.
Participatory land registration is mandated in Agricultural Land Reform Acts.	Inconsistency in organization's priority goals.
ALRO's law and regulations are being revised.	Imbalance human resources in the provincial offices.
	Limitation on the land certificate as collateral use.
	Farmers' qualification and the land use restrictions.

Table 5-2: SWOT analysis matrix in evaluating ALRO's performance (Continued)

Opportunities	Threats
Having government and national policies support.	Increasing land fragmentation in transfer and inheritance of land rights.
Land information and related information are requested from various customers.	Land information privacy under the Personal Data Protection Act B.E. 2562 (2019) is unclear regarding what can be disclosed.
Rapid information technology development.	Other governmental organizations are more attractive to the legal and surveyor officers.
Further upgrading LIS is required from the users.	Urban expansion into LRAs.
High participation of several stakeholders in land allocation processes.	Decreasing allocated budget.
Existence of cooperation with other organizations.	Existence of the fast-tracked policies and unplanned works.
Development of the web application for farmers is required.	Debatable land tenure security.
Existence of information and public service-related laws.	The external users' technological skill is unclearly defined.
Governmental pushing to the e-government environment.	
Existing registered landless are waiting for land allocation.	

Table 5-2 shows the SWOT analysis results. The internal analysis (Gürel & Tat, 2017) includes identifying the existing strengths and weaknesses. So, they were derived from the evaluation of ALRO's current organizational framework (Table 5-1). The results of "Yes" were considered as ALRO's strength points; "Partial" and "No" were considered as the weaknesses. Further, the external analysis (Gürel & Tat, 2017) was conducted using the information about the external factors affecting ALRO's performance (section 4.2). Since it was collected from several stakeholders' perspectives, it is believed that the opportunities and threats they mentioned high possibly affect ALRO's work performance. Additionally, some of the information in the matrix were analyzed from the results presented in chapter 4.

5.3. Possible strategies to improve the work performance

The SWOT analysis results can be further analyzed to provide a set of alternative strategies for ALRO. The alternative strategies can be derived from the identified internal and external factors and formulated into four types of the strategy named S-O, S-T, W-O, and W-T (Dyson, 2004). The strategy formulation can be based on the different goals. In this study, the strategies will be based on the organization's problems described in section 1.3 and the organization's goal orientation. The SWOT matrix shows the possibility to improve ALRO's organizational framework, especially the ICT and the public service delivery aspects. This is in alignment with ALRO's current vision (section 4.1.1). Therefore, possible recommendations to improve ALRO's performance suggested in this study will be the ICT strategy and business strategy.

5.3.1. ICT strategy

ALRO's officers play a key role in land allocation (section 4.2.2). The studies found feasibility in developing the ICT strategy. This is because the human resources capacity and ICT infrastructure were found to be partially in line with the indicators. Moreover, ALRO's officers have a positive attitude toward

the adoption of technology, and most of them believed that it would help improve the work processes and enhance the public service delivery.

Table 5-3: Alternative ICT strategies for ALRO's performance improvement

S-O Strategy	W-O Strategy
Promote and enhance the use of LIS and ICT tools.	Develop an integrated land information-related database.
Digitalize the internal land allocation processes.	Increase technologies related training programs.
Include internal user requirements when developing a new system.	Training the system developers in land allocation processes.
Introduce the use of GIS and EO in supporting the analysis of the agricultural occupation tasks.	Provide sufficient hardware and software.
Continuous improvement of the existing Songsuk system, ALROGIS and the ARLO Land online system.	Update land information in the system on a daily or weekly basis.
	Introduce the use of spatial data and the GIS software to officers.
S-T Strategy	W-T Strategy
Update the legal framework to support the digitalization.	Develop the digital system to be available for the data analysis.
Use the existing monitoring Para system to collect the unplanned works information.	Standardize the practice in the open data policy.
Include supportive data in the existing system, such as the land right and land use examination results.	Complete the land information and related document in the ALRO Land online system.
	Survey the internal users' requirements to improve the ICT infrastructure.

Table 5-3 presents the alternative ICT strategies. Selection criteria to choose the recommended strategies focused on the requirements from the internal and external stakeholders and the weak points in the organizational aspects. The recommended strategies are W-O strategies. Focusing on the improvement of the ICT infrastructure, the human resources skills, and sufficient hardware and software is believed to improve ALRO's work performance. In addition, the improvement of the land information and database will support the implementation of other activities except the land registration.

5.3.2. Business strategy

Based on the SWOT analysis, it appears that there is the possibility of adopting the customer-oriented approach to deliver public services. This addresses the anticipated findings as presented in section 1.3. It was found that ALRO's land administration involves several stakeholders, and ALRO provides various services to the farmers and citizens. However, the organization's priority services are beyond this research's scope. The main reason for choosing the business strategy is to strengthen the current public services.

Table 5-4: Alternative business strategies for ALRO's performance improvement

S-O Strategy	W-O Strategy
Maintain the services that satisfy the stakeholders.	Train the farmer's representatives and the farmer volunteers for online service.
Develop more online services such as the LIS for farmers.	Improve the service based on the stakeholders' involvement in decision-making process.
Create the web application to share data with the PLRC and DLRC.	Develop the digital system for land information request.
Optimize the existing human resources capacity to deliver public services.	Develop the digital system for business with the DOL and the BAAC.
	Promote the use of online services via the village heads.
	Create the action plan for the customer-oriented business.
S-T Strategy	W-T Strategy
Further investigate the stakeholders and their requirements to develop the services, products, and online services.	Publicize the land transfer and inheritance processes.
Clarify the land information privacy regulations.	Revise the parcel subdivision regulations.
Consider the administrative fee for some services, such as the survey and complaint to collect the revenue.	Fasten the service delivery without compromising on the accuracy.
Increase the Mobile Unit services frequency.	Provide more credit to farmers.
Create the digital system for monitoring the complaint resolution tasks.	Balance the human resources capacity in the provincial offices.
	Purchase more private land and reclaim illegally occupied land in the LRAs.

Table 5-4 shows the alternative business strategies. Selection criteria to choose the suggested strategies focus on the current products, services, and information (section 4.2.3), the stakeholders' analysis and their requirements. The suggested business strategies are the W-O strategies. It is recommended that ALRO could take the opportunity on the drive of stakeholders' requirement and government's policies which were found in this study to improve the internal weaknesses and eventually benefit the services.

5.4. Lessons learned from the selected assessment framework performed on the case of ALRO

This research aims at evaluating a land administration organization using the case of ALRO. There are some lessons learned from conducting the evaluation, which are as follows.

Evaluation approach: Evaluation is a necessary process for an organization's improvement (section 2.2). It was found that the key target and objective in the evaluation study should be clearly determined at the first step. This is because there are many subjects that can be assessed, such as a land titling project and a LAS in a country. The evaluation in land administration can be done from different perspectives, such as land governance and the efficiency of land registration.

Selection of the suitable assessment framework is a key step in the conceptual framework in this research (Figure 1-1). The challenge in this study was that there was no specific organizational assessment framework. So, there was a need to determine whether there is an appropriate assessment framework that can be applied to this case study. In this step, the existing assessment frameworks needed to be

systematically reviewed. It is important to understand the application and the measurement of the frameworks. For example, the LGAF framework uses the scorecard (ABCD) to show the evaluation result, while the FFP framework provides the principal guidelines to follow (section 2.2).

Based on the systematic literature reviews, it was believed that the evaluation would be more efficient by developing a specific framework. However, it was challenging to build the organizational framework because there were no clear-cut elements that should be included in the framework. Also, it was not straightforward to select the indicators from the existing assessment frameworks. Thus, the existing organization theoretical model (Figure 2-3) was brought to determine the assessed dimensions and elements. This approach to developing the new assessment framework (section 2.3.1) is different from the existing related works (section 2.2.7).

In summary, the evaluation processes conducted in this study introduces the approach to evaluate a land organization as presented in Figure 5-2.

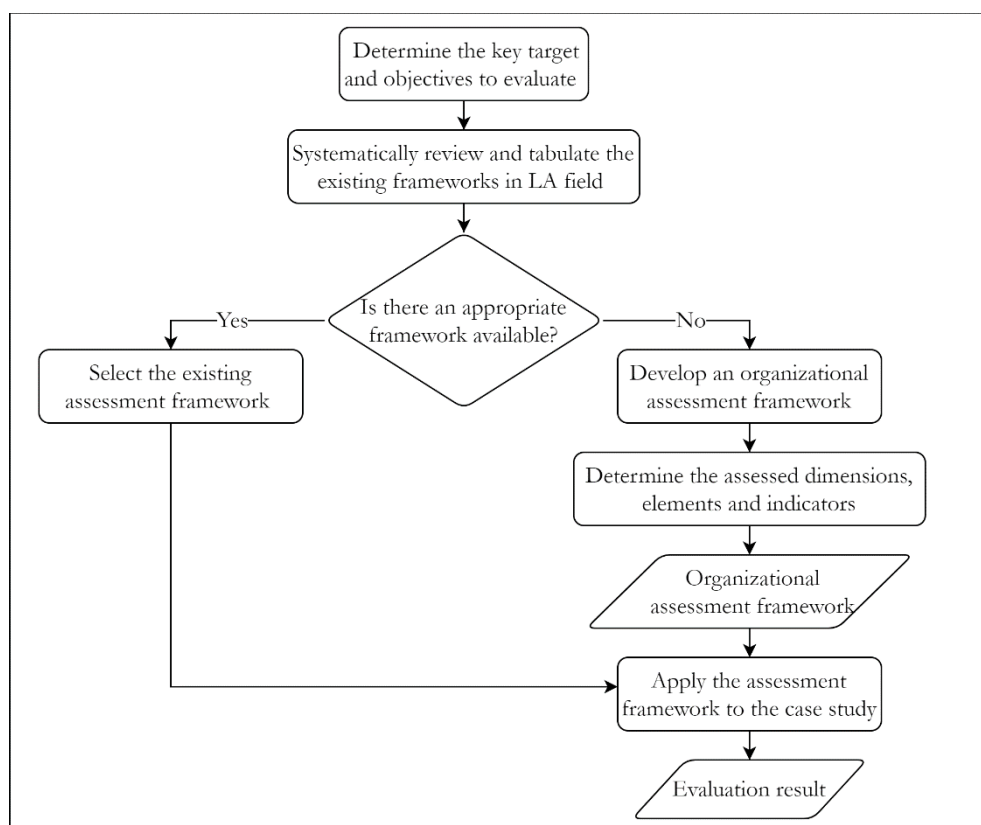


Figure 5-2: The approach of evaluating a land administration organization

Assessment framework for evaluating ALRO: The case of ALRO demonstrated that applying the adopted assessment framework (Table 2-2) is found to be successful. It provides detailed information from the organizational perspectives that could affect ALRO's work performance (section 5.1). The findings highlight the priority areas to improve ALRO's weaknesses and could be used to formulate the strategies for improvement (section 5.3). Moreover, based on the summary of the evaluation (section 5.1.4), this study provides the insights that three elements that can be included in the organization assessment in future works are the work processes, ICT infrastructure and human resources. This is because the three elements are unlikely to be in alignment with the indicators in the assessment framework for ALRO.

Stakeholders' requirements: The innovation of this study is that the stakeholder requirement was included in the evaluation of the organization as presented in the conceptual framework (Figure 1-1). The

stakeholder's involvement in the data collection phase enhanced the evaluation results. First, stakeholders' requirements from both internal and external informants were essential to analyze the priority areas that needed improvement and the alternative strategies. Second, they can provide the information to validate the results in evaluating the work process and ICT infrastructure elements. Thus, the evaluation of the organization would be more inclusive and efficient.

Lessons learned from the evaluation of ALRO: Firstly, the data collecting from the semi-structured interviews with the stakeholders from different professionals and the farmers was challenging. It required the researcher's basic understanding of different terms used to communicate with the key informants. Secondly, the evaluation results were summarized using the simplified criteria: Yes, Partial and No. It is suggested for future research to identify the criteria for each indicator during the development of the assessment framework. In addition, it was observed that the assessed elements in the organizational capacity dimension were interrelated.

Limitation of the evaluation of organization: It was not straightforward to select suitable indicators for each dimension. For example, this study includes the ICT infrastructure in the organizational aspect, while in the FFP land administration framework, it is in the spatial aspect. Human capacity building is seen as an external factor in the evaluating LAS, according to Steudler et al. (2004), but it is under the organizational aspect for this study. It was difficult to distinguish the three aspects, especially the organizational and spatial aspects which agrees with the findings of Ali (2013). The reason could be that the existing land administration indicators have no clear boundary between the spatial, legal and organizational aspects since they are interrelated (Zevenbergen, 2002).

5.5. Summary of the discussion

The chapter discussed and analyzed ALRO's current organizational framework based on the adopted indicators. The discussions and analyses highlighted the priority improvement areas and provided more understanding of ALRO's work performance from the organizational perspective. The discussion revealed that the priority areas needing improvement are the work processes, ICT infrastructure and the human resources elements. Strategies for future improvement were proposed based on the SWOT analysis. The collected stakeholder's requirements, challenges and opportunities from the key informant's perspective were integrated into the strategies formulation in order to value their opinions and bring public service satisfaction. Moreover, five lessons learned from the evaluation framework and its application to the case study were discussed. The next chapter will present the thesis' conclusions and recommendations for further study.

6. CONCLUSIONS AND RECOMMENDATIONS

The main objective to evaluate a land administration organization was achieved through the adoption of the most suitable evaluation framework for ALRO and the comparison between the current situation and indicators from the evaluation framework. The evaluation results were combined with the stakeholders' requirements to propose possible strategies for ALRO. This chapter presents the study's conclusion according to the research sub-objectives and questions, and the recommendations for further research.

6.1. Conclusions

6.1.1. Sub-Objective 1: To adopt the most suitable evaluation frameworks and indicators for the case of ALRO

The existing land administration assessment frameworks and tools were investigated using the literature review. There are also some related works (see Table 2-1) under the evaluation which also provide the assessment frameworks including the approach to develop the new frameworks. The analysis concluded that it will be more efficient to build a new evaluation framework and indicators for ALRO. This is because the existing frameworks do not have the specific purpose to assess the organizational aspect and cover ALRO's performance problems (section 1.3).

The assessment framework for this research was built based on the Organizational Performance Assessment Framework (Figure 2-3) to systematically select the organizational dimensions and elements. The evaluation dimensions include organizational capacity, organizational motivation, and the external environment. Each dimension consists of elements and indicators (Table 2-2). This assessment framework was applied to the evaluation of ALRO from the organizational perspective.

6.1.2. Sub-Objective 2: To explore the current situation of ALRO according to the selected assessment framework and indicators

ALRO's institutional arrangement (Figure 4-1) consists of the central administration and the regional administration. The current goals include land area management, the increase of the potential use of the LRAs, improve farmer's quality of life, increase of the use of the Agricultural Land Reform Fund, and develop the organization toward effective public service. ALRO's function covers more than the four land administration functions as in the land administration paradigm.

ALRO's land administration implementation is under the Agricultural Land Reform Act, rules and regulations. There is continuous improvement of the spatial framework, such as the development of the ALROLIS system and the survey method upgrading using the RTK GNSS Network. Land registration processes were explored to present the interrelation between the legal, spatial, and organization frameworks. It appears that the legal framework is the obstacle in updating the land information and the digitalization of work processes.

The current status of ALRO's organizational framework was presented in section 4.1.3 according to the assessed elements. The primary finding is that the present situation of all elements would affect ALRO's performance and there is a need for improvement in different levels.

6.1.3. Sub-Objective 3: To identify the external factors that affect ALRO's performance as a land administration organization

The external factors that have effects on ALRO's performance in this study include the national policy related to land reform and governance, the stakeholders and their requirements, and the future opportunities and challenges from the stakeholder's perspective. Due to the limitation of literature about the land policy in Thailand, it is concluded that ALRO's current activities follow the national land policy, Thailand 4.0 policy and the open government policy.

In the case of ALRO, there are different viewpoints about who can be considered as stakeholders. However, this study attempts to identify the stakeholders in land allocation processes. The stakeholders include ALRO's officers, farmers, the village heads, the PLRC and DLRC (Figure 4-11).

Currently, ALRO provides services, products, and online services to farmers, citizens, private sectors, and governmental organizations. The stakeholders' requirements include several dimensions and are mostly related to the work processes and the ICT infrastructure elements. These requirements were used in the formulation of possible strategies for performance improvement.

6.1.4. Sub-Objective 4: To evaluate the ALRO's organizational framework and provide the recommendations based on the evaluation result

The situation of ALRO's organizational framework (section 4.1.3) was discussed by comparison with the adopted assessment framework for ALRO. The discussed results were classified based on the alignment with the indicators into three types: Yes, Partial and No. These evaluation results show that all assessed dimensions partially align with the indicators (Table 5-1). It reveals that the work processes, ICT infrastructure and human resources are the priority areas for improvement. The results of the evaluation of ALRO's organizational framework and the external factors, including the stakeholders' requirements (section 4.2) were analyzed using the SWOT analysis approach. The analysis results were further supported with possible strategies. The ICT strategy (Table 5-3) and the Business strategy (Table 5-4) were recommended to be implemented using the W-O strategy. Finally, five lessons learned from the evaluation in this study were presented. This study contributes to the evaluation study by introducing the evaluation approach, the suggested elements in the organizational assessment framework, and the stakeholders' involvement in the evaluation.

6.2. Recommendations

6.2.1. Recommendations regarding the evaluation in the case of ALRO

Evaluation of a land administration organization is beneficial since it can help identify its performance situation. The results of the evaluation of ALRO increase the understanding of ALRO's organizational aspects. Therefore, it is recommended for ALRO to focus on the three priority areas for improvement (section 5.1.4). The possible W-O strategies (section 5.3) regarding the ICT and business strategies could be implemented. In addition, ALRO might use this assessment framework to evaluate the future organizational aspects and add more external stakeholders or collect statistical data. The general recommendations to be implemented are as follows.

Organizational aspects: Bringing automation in the internal workflow would reduce the time used in transferring the information between the sections, bureaus, central office and provincial offices. There should be the monitoring of the human resource capacity, including the number of officers and the required skills, especially in the provincial offices, to be appropriate with the current tasks. Further, it is recommended to maximize the use of the existing the ALROLIS system to support ALRO's other works

apart from the parcel navigation. In addition, the land information should be linked or integrated and developed to perform the data analysis, planning and forecasting function.

Legal aspects: It is advisable to revise the regulations regarding land allocation to enable digitalization in work processes. The revision of the transfer and inheritance regulations is also recommended to consider since it will allow the land allocation to be more flexible and fit the social changes. In addition, it is suggested to clarify regulations related to the public services and publicize Agricultural Land Reform Act and regulations to the farmers, citizens and society.

Customer-oriented services: First, it is recommended to improve the delivery of the core business: land transfer and inheritance, land information services, and farmers' occupation development. Second, there should be the continuous maintenance of the stakeholders' satisfaction based on stakeholder analyses done in this study. Third, bringing the technology would help the business deliver and reduce unnecessary processes and required documents. Fourth, building the options to make the request is suggested so that the customers can have access from the channels that they prefer. Finally, providing the automation of online products, services, and information requests is recommended.

6.2.2. Recommendations for further research

This study filled the gap on the evaluation of land administration from the organization framework perspective. The result provided the evaluation framework for assessing a land administration organization built for a specific case. Moreover, applying the evaluation framework will help organizations to identify the internal factors that could affect work performance. This information could be used in the SWOT analysis in combination with external factors such as the national policy and the stakeholders' requirements. The analysis results would help the organization in formulating the strategies.

Further research on the evaluation of organizational framework could be conducted in two ways. First, the new approach to the suitable organizational framework (Figure 5-2) is suggested to be based on different organizational assessment models (section 2.3.1). It might help to reduce the overlaps between the assessed elements. Second, the adopted assessment framework for ALRO can be tested in evaluating the different land administration organization's contexts. It can also be used to evaluate and compare different organizations.

At the same time, this research presents a deeper understanding of the evaluation of the land administration in the LRAs in Thailand. This research could be a basis for further study about land administration in LRAs since there is limited research on it.

LIST OF REFERENCES

- Agricultural Land Reform Act B.E. 2518* (pp. 1–21). (1975). Retrieved from http://web.krisdika.go.th/data//document/ext825/825518_0001.pdf
- Agricultural Land Reform Office. (n.d.). Introduction of alro Responsibilities. Retrieved June 2, 2021, from https://www.alro.go.th/alro_en/ewt_news.php?nid=37&filename=index
- Ali, Z. (2013). *Developing a framework to apply Total Quality Management concepts to land administration : the case of Islamic Republic of Pakistan* (University of Twente). Retrieved from http://www.itc.nl/library/papers_2013/phd/zali.pdf
- Ali, Z., Zevenbergen, J. A., & Tuladhar, A. (2014). Assessing the Quality Land Administration System in Pakistan Using Systematic Approach of Case Study Methodology. *American Journal of Rural Development*, 2, 40–45. <https://doi.org/10.12691/ajrd-2-3-1>
- ALRO. (2006). *National Report On Agrarian Reform and Rural Development in Thailand*. Retrieved from <https://www.oicrf.org/-/national-report-on-agrarian-reform-and-rural-development-in-thailand>
- ALRO. (2020). Summary of land allocation activities of the Agricultural Land Reform Office. Retrieved June 30, 2020, from <https://alro.go.th/alro/internet/Land-Three/all.htm>
- Area Conversion (Online Units Converter). (2020). Retrieved October 8, 2020, from <https://www.convert-me.com/en/convert/area/?u=thairai&v=1>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brits, A.-M., Grant, C., & Burns, T. (2002). *Comparative Study of Land Administration Systems With special reference to Thailand, Indonesia and Karnataka (India)*. Retrieved from https://www.researchgate.net/publication/238731108_LAND_TITLING_EXPERIENCE_IN_ASIA
- Burns, A. (2004). Thailand's 20 year program to title rural land. *Background Paper Prepared for the World Development Report 2005*, pp. 1–9. Washington D.C.: World Bank.
- Burns, T. (2007). Land Administration Reform: Indicators of Success and Future Challenges. *Agricultural and Rural Development Discussion Paper*, Vol. 37, p. 228. Washington, D.C.: World Bank.
- Burns, T., Deininger, K., Selod, H., & Dalrymple, K. (2010). Implementing the Land Governance Assessment Framework. *FIG Congress 2010 Facing the Challenges - Building the Capacity*, 21. Retrieved from http://fig.net/resources/proceedings/fig_proceedings/fig2010/papers/ts03a/ts03a_burns_deininger_et_al_4640.pdf
- Chimhamhiwa, D., van der Molen, P., Mutanga, O., & Rugege, D. (2009). Towards a framework for measuring end to end performance of land administration business processes - A case study. *Computers, Environment and Urban Systems*, 33(4), 293–301. <https://doi.org/10.1016/j.compenvurbsys.2009.04.001>
- Chuentragun, T., & Panklin, C. (2016). Status of Thailand's Geospatial Data Infrastructure and Systems. Retrieved from https://fig.net/resources/proceedings/2016/2016_10_AP_CDN/1.7_Thailand_GISTDA.pdf
- Clarke, A. (1999). *Evaluation Research: An Introduction to Principles, Methods and Practice: Understanding Evaluation*. <https://doi.org/10.4135/9781849209113>
- Dale, P., & McLaughlin, J. (1999). *Land Administration*. Oxford: Oxford University Press.
- Deininger, K., Selod, H., & Burns, A. (2012). The Land Governance Assessment Framework: Identifying and Monitoring Good Practice in the Land Sector. In *The World Bank*. <https://doi.org/10.1596/978-0-8213-8758-0>
- Dyson, R. G. (2004). Strategic development and SWOT analysis at the University of Warwick. *European Journal of Operational Research*, 152(3), 631–640. [https://doi.org/10.1016/S0377-2217\(03\)00062-6](https://doi.org/10.1016/S0377-2217(03)00062-6)
- Enemark, S. (2006). Understanding the land management paradigm: Need for establishing sustainable national concepts. *GIM International - Global Magazine for Geomatics*, 20(1), 12–15.
- Enemark, S. (2009). Managing Rights, Restrictions and Responsibilities in Land. *GSDI 11 World Conference*. Rotterdam, the Netherlands.
- Enemark, S., Bell, K. C., Lemmen, C., & McLaren, R. (2014). Fit-For-Purpose Land Administration : open access e-book. In *FIG-Publication* (Vol. 60). Copenhagen: International Federation of Surveyors (FIG).
- Enemark, S., & McLaren, R. (2017). Fit-for-Purpose Land Administration: Developing Country Specific

- Strategies for Implementation. *2017 World Bank Conference on Land and Poverty*, 1–18. Washington, D.C.: World Bank.
- Enemark, S., McLaren, R., & Lemmen, C. (2016). *Fit-for-purpose land administration guiding principles for country implementation*. Nairobi: UN Habitat.
- Enemark, S., & van der Molen, P. (2008). Capacity assessment in land administration. *FIG Publication*, Vol. 41, p. 37. International Federation of Surveyors (FIG).
- Enemark, S., Williamson, I. P., & Wallace, J. (2005). Building Modern Land Administration Systems in Developed Economies. *Spatial Science*, 50(2), 51–68.
<https://doi.org/10.1080/14498596.2005.9635049>
- Falisse, M. (2008). *Methodological Guide for Implementing a Mapping of Civil Society Actors in Latin American*. Retrieved from <https://silo.tips/download/methodological-guide-for-implementing-a-mapping-of-civil-society-actors-in-latin>
- FAO. (n.d.). Glossary. Retrieved October 15, 2020, from <http://www.fao.org/in-action/herramienta-administracion-tierras/glossary/1/en/>
- FAO. (2007). Good governance in land administration and land tenure. In *FAO Land Tenure Studies 9*. Rome: Food and Agriculture Organization of the United Nations.
- FAO. (2012a). *Organization analysis and development* (pp. 1–183). pp. 1–183. Retrieved from <http://www.fao.org/3/a-i3538e.pdf>
- FAO. (2012b). *Voluntary Guidelines on the Responsible Governance on Tenure of Land, Fisheries and Forests in the Context of National Food Security*. Rome: Food and Agriculture Organization of the United Nations.
- FAO. (2019). *OED project evaluation manual for decentralized offices – Planning and conducting project evaluations under Budget Holder’s responsibility*. Rome: FAO.
- FIG. (1995). Statement on the Cadastre. *Fig Publication No. 11*, (11), 18. Retrieved from [https://www.fig.net/resources/publications/figpub/pub11/FIG Statement on the Cadastre.pdf](https://www.fig.net/resources/publications/figpub/pub11/FIG%20Statement%20on%20the%20Cadastre.pdf)
- Giné, X. (2005). Cultivate or rent out? Land security in rural Thailand. *Policy Research Working Paper; No. 3734*. Washington, D.C.: World Bank.
- Gürel, E., & Tat, M. (2017). SWOT analysis: A theoretical review. *The Journal of International Social Research*, 10(51), 994–1006. <https://doi.org/10.17719/jisr.2017.1832>
- Hatch, M. J. (2011). *Organizations - A Very Short Introduction*. Oxford: Oxford University Press.
- Hsieh, H. F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>
- Jones, C., & Pimdee, P. (2017). Innovative ideas: Thailand 4.0 and the fourth industrial revolution. *Asian International Journal of Social Sciences*, 17(1), 4–32.
<https://doi.org/https://doi.org/10.29139/aijss.20170101>
- Khalil, E. L. (1995). Organizations Versus Institutions. *Journal of Institutional and Theoretical Economics*, 151(3), 445–466. Retrieved from <https://www.jstor.org/stable/40751821>
- Khanmad, N. (2017). *Assessment of agricultural land reform in thailand by using the land governance assessment framework (Masters’ thesis)* (University of Twente). Retrieved from <https://ezproxy.utwente.nl:2315/library/2017/msc/la/khanmad.pdf>
- Kolb, B. (2014). *Marketing Research - A Practical Approach: Choosing Participants for Qualitative Research*. <https://doi.org/10.4135/9780857028013.n7>
- Lusthaus, C., Adrien, M., Anderson, G., Carden, F., & Montalvan, P. (2002). *Organizational assessment : a framework for improving performance*. Ottawa, Washington D.C.: International Development Research Centre and Inter-American Development Bank.
- Mathers, N., Fox, N., & Hunn, A. (1998). Trent Focus for Research and Development in Primary Health Care: Using Interviews in a Research Project. *Trent Focus*. Retrieved from <http://web.simmons.edu/~tang2/courses/CUAcourses/lsc745/sp06/Interviews.pdf>
- McCormack, G. (2018). Why “Doing Business” with the World Bank May Be Bad for You. *European Business Organization Law Review*, 19(3), 649–676. <https://doi.org/10.1007/s40804-018-0116-4>
- Ministry of Agriculture and Cooperatives. (2017). *The Twenty-year Agriculture and Cooperatives Strategy (2017-2036)*. Retrieved from <https://www.moac.go.th/moaceng-magazine-files-422991791792>
- Nabangchang-Srisawalak, O. (2006). Thailand Land Tenure Data and Southeast Asia. *Shaping the Change XXIII FIG Congress*, 13. Munich, Germany.
- North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- OECD. (2002). *Glossary of Key Terms in Evaluation and Results Based Management*. Paris: OECD Publication.
- Office of the Civil Service Commission. (n.d.). *Thai bureaucracy in Thailand 4.0*. Retrieved from

- https://www.ocsc.go.th/sites/default/files/attachment/article/4._rabbraachkaaraithyainbribthaihyaelnd-4-0.pdf
- Office of the National Economic and Social Development Board. (2017). *The Twelfth National Economic and Social Development Plan (2017-2021)*. 268. Retrieved from http://www.nesdb.go.th/nesdb_en/ewt_dl_link.php?nid=4345
- Office of the National Economic and Social Development Board. (2019). *National Strategy (2018-2037)*. Retrieved from <http://nscr.nesdb.go.th/wp-content/uploads/2019/10/National-Strategy-Eng-Final-25-OCT-2019.pdf>
- Ostrom, E. (2005). *Understanding institutional diversity*. Princeton: Princeton University Press.
- Patton, M. Q. (1987). *How to use qualitative methods in evaluation*. Thousand Oaks, California: SAGE Publications.
- Showaiter, A. (2018). *Assessment of a Land Administration System: a Case Study of the Survey and Land Registration Bureau in Babrain (Masters' thesis)* (University of Twente). Retrieved from https://webapps.itc.utwente.nl/librarywww/papers_2018/msc/la/showaiter.pdf
- Silverman, D. (2010). *Doing qualitative research: A practical handbook (3rd ed.)*. London; Thousand Oaks, California: SAGE Publications.
- Silverman, D., & Marvasti, A. (2008). *Doing Qualitative Research: A Comprehensive Guide*. Los Angeles: SAGE Publications.
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104(August), 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Srimuang, C., Cooharajanone, N., Tanlamai, U., & Chandrachai, A. (2017). Open government data assessment model: An indicator development in Thailand. *International Conference on Advanced Communication Technology, ICACT*, 341–347. <https://doi.org/10.23919/ICACT.2017.7890110>
- Stuedler, D., Rajabifard, A., & Williamson, I. P. (2004). Evaluation of land administration systems. *Land Use Policy*, 21(4), 371–380. <https://doi.org/10.1016/j.landusepol.2003.05.001>
- Stuedler, D., & Williamson, I. P. (2005). Evaluation of national land administration system in Switzerland - Case study based on a management model. *Survey Review*, 38(298), 317–330. <https://doi.org/10.1179/sre.2005.38.298.317>
- Sy, M., O'Leary, N., Nagraj, S., El-Awaisi, A., O'Carroll, V., & Xyrichis, A. (2020). Doing interprofessional research in the COVID-19 era: a discussion paper. *Journal of Interprofessional Care*, 34(5), 600–606. <https://doi.org/10.1080/13561820.2020.1791808>
- Todorovski, D., & Lemmen, C. (2007). Analyses of User Requirements – The First Step towards Strategic Integration of Surveying and Cadastral Services. *FIG Working Week 2007: Strategic Integration of Surveying Services, Hong Kong SAR, China*, (May 2007), 20. Retrieved from https://www.fig.net/resources/proceedings/fig_proceedings/fig2007/papers/ts_7g/ts07g_01_todorovski_lemmen_1202.pdf
- UN-GGIM. (2020). Framework for Effective Land Administration. Retrieved from https://ggim.un.org/meetings/GGIM-committee/9th-Session/documents/E_C.20_2020_10_Add_1_LAM_background.pdf
- UNDP. (1998). Capacity Assessment and Development in a Systems and Strategic Management Context. *Technical Advisory Paper No. 3*. Retrieved from [https://www.cbd.int/doc/pa/tools/Capacity assessment and development.pdf](https://www.cbd.int/doc/pa/tools/Capacity%20assessment%20and%20development.pdf)
- UNECE. (1996). *Land administration guidelines: With special reference to countries in transition*. New York and Geneva: United Nations.
- UNEG. (2016). *Norms and Standards for Evaluation*. New York: United Nations Evaluation Group.
- University of Twente. (2019). Research Ethics Policy. Retrieved October 22, 2020, from <https://www.utwente.nl/en/organisation/about/integrity/codes-of-conduct/research-ethics-policy-university-of-twente.pdf>
- Williamson, I. P. (2000). Best practices for land administration systems in developing countries. *In Proceedings of International Conference on Land Policy Reform ,Jakarta*. <https://doi.org/10.1177/095042228900300313>
- Williamson, I. P. (2001). Land administration “best practice” providing the infrastructure for land policy implementation. *Land Use Policy*, 18(4), 297–307. [https://doi.org/10.1016/S0264-8377\(01\)00021-7](https://doi.org/10.1016/S0264-8377(01)00021-7)
- Williamson, I. P., Enemark, S., Wallace, J., & Rajabifard, A. (2010). *Land Administration for Sustainable Development*. Redlands, California: Esri Press.
- World Bank. (n.d.). Methodology for Registering Property. Retrieved October 14, 2020, from <https://www.doingbusiness.org/en/methodology/registering-property>

- World Bank. (2015). *Registering property Measuring the quality of land administration systems*. Retrieved from <https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB15-Chapters/DB15-CaseStudy-Registering-Property.pdf>
- World Bank. (2016). *Lessons from Land Administration Projects: A Review of Project Performance Assessments*. <https://doi.org/10.1596/IEG104988>
- World Bank. (2020a). Doing Business – Data Irregularities Statement. Retrieved November 27, 2020, from <https://www.worldbank.org/en/news/statement/2020/08/27/doing-business---data-irregularities-statement>
- World Bank. (2020b). Doing Business 2020 : Comparing Business Regulation in 190 Economies. In *World Bank Group* (Vol. 6). <https://doi.org/10.7256/1812-8688.2014.6.12196>
- Yin, R. K. (2014). *Case Study Research Design and Methods (5th ed.)*. Thousand Oaks, California: SAGE Publications.
- Zevenbergen, J. A. (2002). *Systems of land registration : aspects and effects : also as e-book*. Delft: Netherlands Geodetic Commission (NCG).
- Zevenbergen, J. A., de Vries, W., & Bennett, R. (2016). *Advances in responsible land administration*. <https://doi.org/10.1080/14498596.2016.1145619>

APPENDICES

Appendix 1: Research design matrix

Research Question	Data Required	Source of data	Data Collection Method	Analysis Method	Respondents	Anticipated Results
Sub-objective 1. To adopt the most suitable evaluation frameworks and indicators for the case of ALRO						
i. Which are the existing land administration assessment frameworks and tools?	Data about the existing land administration assessments	Existing literatures (Journal articles, books,)	Literature review	Content analysis	-	List of land administration assessment frameworks and indicators
ii. What is the most suitable assessment framework and indicators for assessing ALRO's performance?	List of land administration assessment frameworks and indicators	The results in the research question i.	-	Content analysis	-	Suitable assessment framework and indicators for ALRO

Research Question	Data Required	Source of data	Data Collection Method	Analysis Method	Respondents	Anticipated Results
Sub-objective 2. To explore the current situation of ALRO according to the selected assessment framework and indicators						
i. What are the current goals and institutional arrangements of ALRO?	Data about vision, mission, purpose, responsibility, strategy, policy Data about the organization arrangement	Existing literatures (Journal articles, books, policy document) ALRO	Literature review Semi-structured interview	Content analysis	-	Description of ALRO's current goals ALRO's organizational chart
ii. What is the interrelation between institutional, legal, and spatial framework?	Data about the land registration process and information sharing within bureaus in ALRO	ALRO	Semi-structured interview	Thematic analysis	ALRO Officers (Surveyor, Legal, and Land reform officer)	Models represent the land registration workflow
iii. What is the organizational framework's current status in the dimensions according to the selected assessment framework and indicators?	Data about the assessed elements	ALRO	Semi-structured Interview	Thematic analysis	ALRO Officers (Surveyor officer, Legal officer, and Land reform officer)	Description of the current performance situation in the selected dimensions

Research Question	Data Required	Source of data	Data Collection Method	Analysis Method	Respondents	Anticipated Results
Sub-objective 3. To identify the external factors that affect ALRO's performance as a land administration organization						
i. What are responsibilities that ALRO needs to follow according to the national policy regarding land reform and governmental organization?	Data about the regular tasks and additional tasks and Data about the role of ALRO at the national level	Existing literatures (Journal articles, books, policy document) ALRO	Literature review Semi-structured Interview	Thematic analysis	ALRO Officers	List of main activities and additional activities or projects Description of the related land policy and governance policy
ii. Who are the main land administration stakeholders of ALRO?	Data about the stakeholders in ALRO's land administration activities	ALRO	Semi-structured Interview	Thematic analysis	ALRO Officers Stakeholders	Model represents the stakeholders
iii. What are the stakeholders' requirements for ALRO as a land administration organization?	Data about stakeholder's requirements	ALRO	Semi-structured Interview	Thematic analysis	ALRO Officers (Surveyor, Legal, and Land reform officer) External Stakeholders (Governmental Officers, Famers, village head, banker)	List and description of products, services, and information Description of stakeholder's requirements

Research Question	Data Required	Source of data	Data Collection Method	Analysis Method	Respondents	Anticipated Results
Sub-objective 4. To evaluate the ALRO's organizational framework and provide the recommendations based on the evaluation result						
i. What is ALRO's current organizational framework status compare with the selected assessment framework and indicators?	Selected assessment framework Data about the current performance situation	Data in the sub-objective 1 and 2	-	Thematic analysis	-	Description of the comparison of the ALRO's current organizational framework with the selected assessment framework
ii. What are the possible recommendations to improve the current organizational framework based on the evaluation result and the external factors?	Data about the evaluation results and the external factors	Data in the sub-objective 3 and 4 Existing literatures (Journal articles, books, policy document)	-	SWOT analysis	-	Possible recommendations
iii. What are the lessons learned from the selected assessment framework performed on the case of ALRO?	Data about best practice Data about the data collection and evaluation result	Data in the sub-objective 4 Existing literatures (Journal articles, books, policy document)	-	Content analysis	-	Description of the lessons learned from the evaluation

*Appendix 2: Structure of semi-structured interview questions for internal informants***A. Sub-objective 2. To explore the current situation of ALRO according to the selected assessment framework and indicators**

*ALRO officer includes the surveyor, legal officer, and land reform technical officer.

* Other ALRO Officers includes the Director and the Deputy secretary general.

i. What are the current goals and institutional arrangements of ALRO?

Anticipated Results	Questions	Internal key informants			Literature review
		ALRO Officer	Computer technical Officer	Other ALRO Officer	
Description of ALRO's current goals, ALRO's organizational chart	How is the organization structured? (Organization's structured type, lists of institutional arrangement in ALRO and their responsibility.				/

ii. What is the interrelation between institutional, legal, and spatial framework?

Anticipated Results	Questions	Internal key informants			Literature review
		ALRO Officer	Computer technical Officer	Other ALRO Officer	
Models represent the land registration workflow	Do you know about the main processes of land registration and information sharing? If yes, please explain the workflow and who involves in the process.	/			
	What are the main steps to record and update land registration? /Who is responsible for each step?	/			/
	Do the legal and spatial aspects support ALRO's organizational aspects? Please explain.	/	/	/	/
Number of questions		3	1	1	

iii. What is the organizational framework's current status in the dimensions according to the selected assessment framework and indicators?

Indicators	Questions	Internal key informants		
		ALRO Officer	Computer Officer	Other ALRO Officer
Organizational structure supports the core land administration function	Does the organization structured support the core land administration functions?			/
	Is there any overlapping between departments? / Is the distribution of duties and departments within organization adequate?			/
Organizational structure is well design for execution of the work processes	Is the allocation of tasks and responsibilities to managers appropriate and do they have the necessary power of execution?	/	/	/
	What would be your recommendations to the organization structure to improve the work processes?	/	/	/
The allocation of mandates reflects a well-balanced approach to decentralization	Is there any obstacles work in decentralization system?	/	/	/
	Can the provincial office perform its duties rightly due to workload?	/		/
Processes are clear, simple, and standardized	What is the reference for the processes and regulations in the organization?	/		
	In your opinion, is the process clear, standardized, and simple to understand by general citizens and administrators?	/		
Processes are conducted in an efficient manner	How do you rate ALRO' process efficiency in terms of time, cost, and quality?	/		/
	Is there any effort to convert the present manual register to digital form?		/	/
The managerial tools in terms of planning control, accountability and liability are appropriate	How do you ensure the quality and accuracy of the processes?	/	/	/
	Are the managerial tools in terms of planning control, accountability and liability are appropriate?			/

Indicators	Questions	Internal key informants		
		ALRO Officer	Computer Officer	Other ALRO Officer
Work processes are monitored and evaluated	How do you monitor and evaluate the process? / Is the performance of land agency is monitored both internally and externally on regular basis?	/	/	/
	What would be your recommendations to the organization to improve the work processes?	/	/	/
The information technology sufficient for further development and maintenance of LIS	Are the ICT applications well designed to support the work processes and the business objectives?	/	/	
	Is the information technology/ hardware sufficient for further development and maintenance of LIS?	/	/	
	To what extent do technology resources affect the performance? / Does technology adoption will help improve quality of data or service? If yes, then which aspect will be improved?	/	/	
The internal and external information flow are clearly specified	What ICT tools do you use to transfer land information? / Do you have any protocols and automated processes for data exchange?	/	/	
	Does ALRO provide information needed in time?	/	/	
	Are the internal and external information flow clearly specified?	/	/	
LIS is Transparent with access for all	How does ALRO provide access to LIS to the internal and external user?	/	/	
	Does the user have easy access to LIS? / What types of information contain in the LIS and what are offered to the public?	/	/	
	What is your suggestion about making LIS transparent to all?	/	/	
Human resource capacity is sufficient	What is your capacity building plan? / How do you deal with the missing skills?			/
	Is the existing human resources capacity enough?	/	/	/
	Does the organization have sufficient staff to adopt new technologies?	/	/	/

Indicators	Questions	Internal key informants		
		ALRO Officer	Computer Officer	Other ALRO Officer
Organization has appropriate educational and training programs	How does the organization provide the education and training programs?			/
	How would you rate the training programs in the organization?	/	/	
	Does ALRO have any collaboration with educational and research organization?			/
Mission and vision should be aligned with organization's goals and directions	Are your tasks and responsibilities align with ALRO's goal?	/	/	/
	What are the next steps for ALRO's mission?	/	/	/
Culture supports the priorities of organization	Does the organization culture support ALRO's priority goals?	/	/	/
	Is there a positive attitude toward change?	/	/	/
The mandate and policy include meeting the demands of customers and other stakeholders	Does the mandate include meeting the demands of customers and other stakeholders? If yes, is it clearly defined?			/
The cooperation and communication exist between involved organizations	Are the linkages between the mandated organizations well defined to ensure good communication?			/
	How does the organization communicate/share data internally and externally?	/	/	
The user's requirements including their role is properly analyzed while developing strategic plans	On what basis do you develop strategic plan? /Are the user's requirements including their role is properly analyzed? (User driven design?)		/	/
	How ALRO ensure the user-orientation in the work process?		/	/
Number of Questions		27	26	25

B. Sub-objective 3. To identify the external factors that affect ALRO's performance as a land administration organization

i. What are responsibilities that ALRO needs to follow according to the national policy regarding land reform and governmental organization?

Anticipated Results	Questions	Internal key informants			Literature review
		ALRO Officer	Computer technical Officer	Other ALRO Officer	
List of main activities and additional activities or projects Description of the related land policy and governance policy	Please list activities and projects being implemented by ALRO.	/	/	/	/
	Does ALRO follow the open government and Thailand 4.0 policy? If yes, which activities do ALRO implement?		/	/	
	Do the stakeholders benefit from these policies? If yes, how? If not, why?			/	
	How do you monitor the implementation of Thailand 4.0 policy and the user satisfaction?		/	/	
	What would be the coming opportunities and challenges for ALRO as a land organization?	/	/	/	
Number of questions		2	4	5	

ii. Who are the main land administration stakeholders in ALRO's land administration?

Anticipated Results	Questions	Internal key informants		
		ALRO Officer	Computer technical Officer	Other ALRO Officer
Models represent the stakeholders	Who are the stakeholders in land registration process and what is their role?	/		
	How important (power and interest) is the involvement of these stakeholders?	/		
	Is there any association of users? Please shortly explain.	/	/	
Number of questions		3	1	

iii. What are the stakeholders' requirements for ALRO as a land administration organization?

Anticipated Results	Questions	Internal key informants		
		ALRO Officer	Computer technical Officer	Other ALRO Officer
List and description of products, services, and information	Please list products, services, and information provided by ALRO.	/	/	/
Description of stakeholders' requirements	Please explain briefly about ALRO's online products and services.	/	/	
	Which types of land related information that the stakeholders request?	/	/	
	What can be done to improve the service for ALRO's internal user?	/	/	/
Number of questions		4	4	2

*Appendix 3: Structure of semi-structured interview questions for external informants***A. Sub-objective 2. To explore the current situation of ALRO according to the selected assessment framework and indicators**

* *Government officers are from the governmental authorities: DOL, the Treasury Department and local administrative office.*

iii. What is the organizational framework's current status in the dimensions according to the selected assessment framework and indicators?

Indicators	Questions	External key informants			
		Farmer	Officer	Village head	Banker
Processes are clear, simple, and standardized	In your opinion, is the process clear and simple to understand by general citizens and administrators?	/	/	/	/
Processes are conducted in an efficient manner	Can you discuss about your experience with ALRO as a landowner/DOL officer/header/banker regarding to work process?	/	/	/	/
	What are the problems you face when you register or transfer you land?	/			
LIS is Transparent with access for all	How does ALRO provide access to LIS to you?	/	/	/	/
The cooperation and communication exist between involved organizations	How does the organization communicate/share data with you?	/	/	/	/
Number of Questions		5	4	4	4

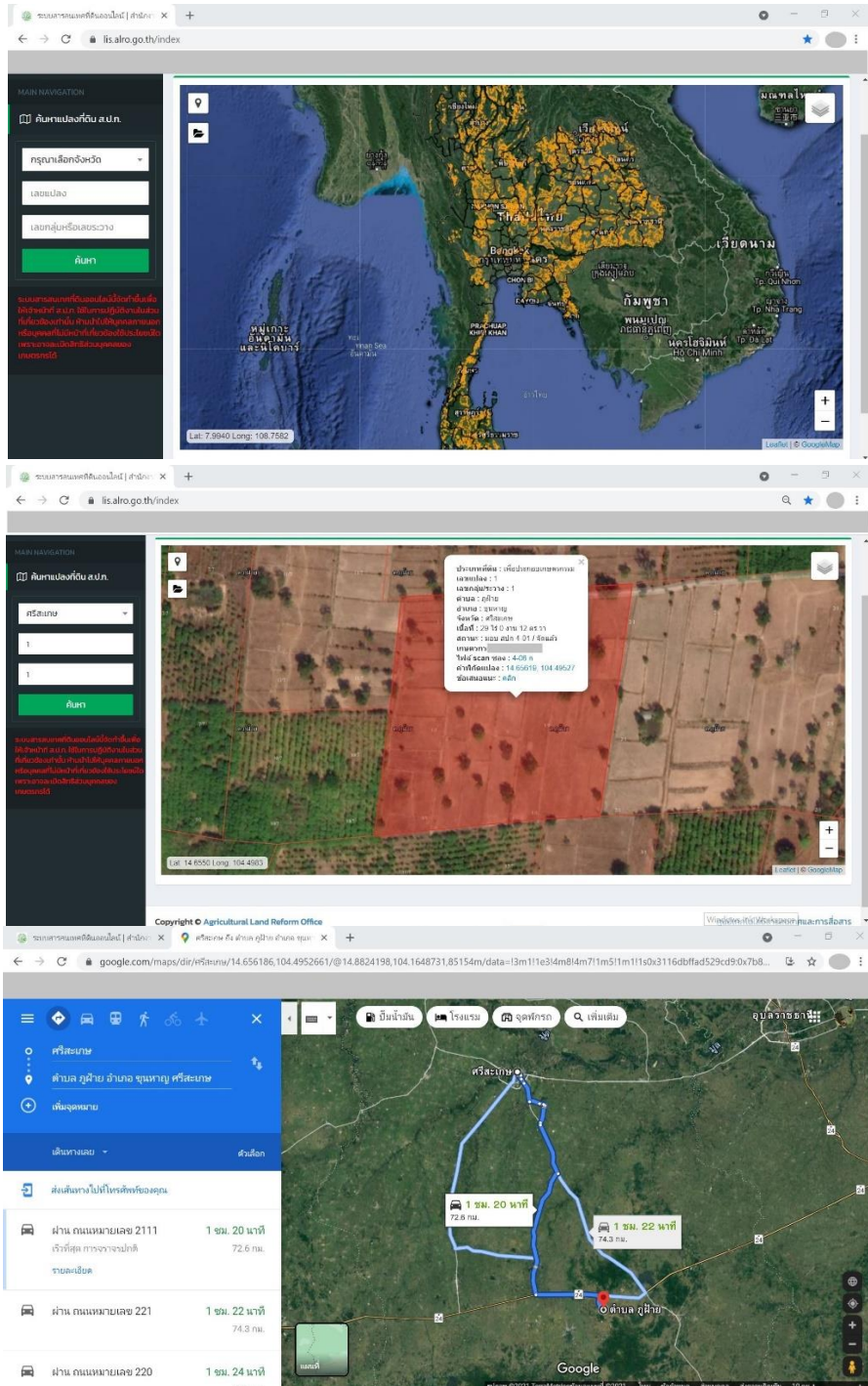
B. Sub-objective 3. To identify the external factors that affect ALRO's performance as a land administration organization**ii. Who are the main land administration stakeholders in ALRO's land administration?**

Anticipated Results	Questions	External key informants			
		Farmer	Officer	Village head	Banker
Model represents the stakeholders	Do you involve in land registration process? If yes, which step?	/	/	/	/
	Do you have any involvement in decision making? Can you rate your participation in the land registration	/	/	/	/
	What other stakeholders you can suggest for this research?	/	/	/	/
Number of questions		3	3	3	3

iii. What are the stakeholders' requirements for ALRO as a land administration organization?

Anticipated Results	Questions	External key informants			
		Farmer	Officer	Village head	Banker
<ul style="list-style-type: none"> - List and description of products, services, and information - Description of stakeholder's requirements 	Please list products and services provided by ALRO.	/	/	/	/
	Which types of land related information that you request?	/	/	/	/
	How do you contact/make request with ALRO?	/	/	/	/
	Have you ever used any online service or product?	/	/	/	/
	What is your perception of digital database/register application instead of paper base?	/	/	/	
	Would you rather use paper or digital products and service? Why?	/	/	/	/
	In your opinion, do you find ALRO has fulfilled your requirement?	/	/	/	/
	What are the requirements do you like to see change in ALRO as a land administration organization?	/	/	/	/
	What can you suggest ALRO to improve to deliver better service?	/	/	/	/
Number of questions		9	9	9	8

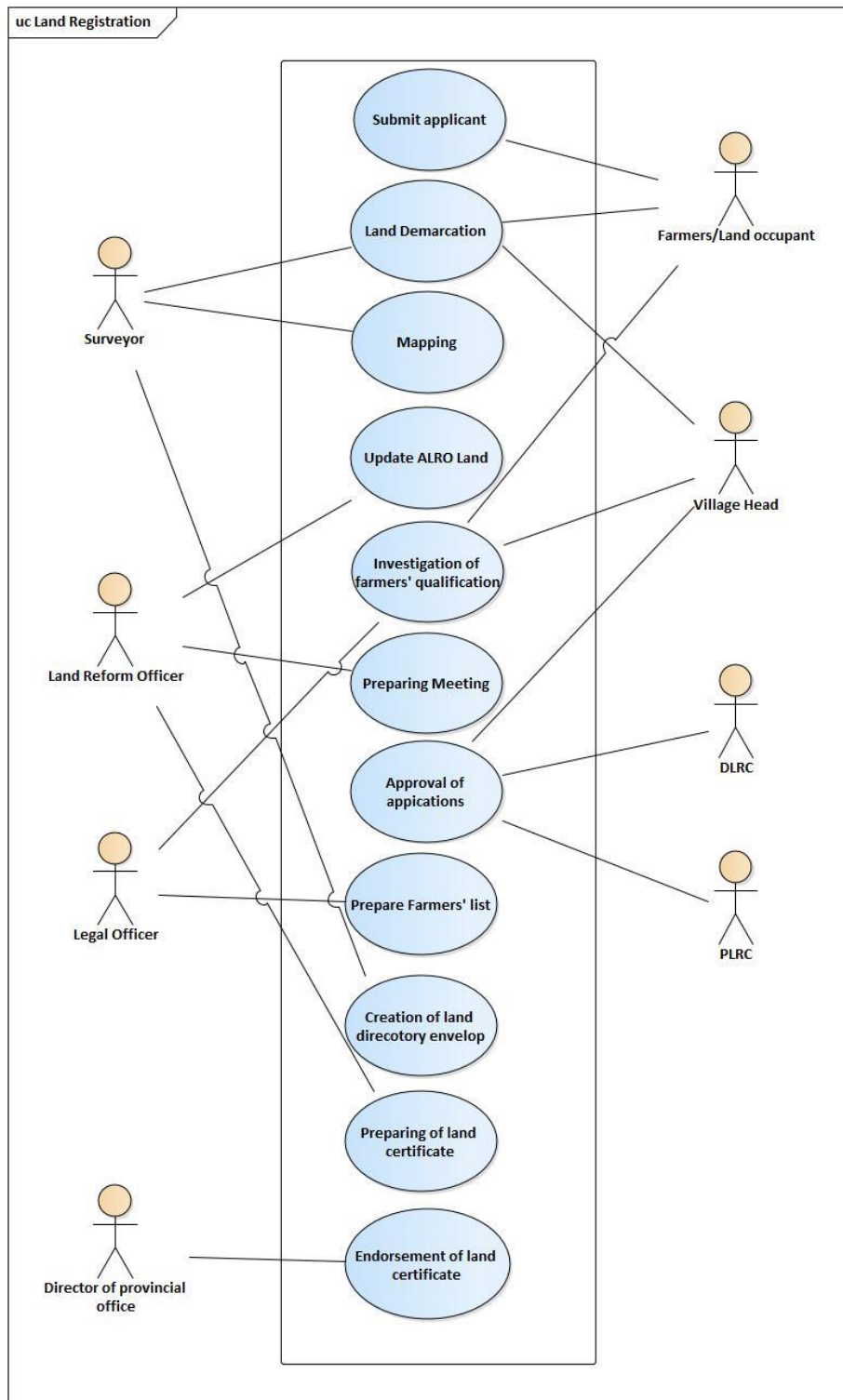
Appendix 4: ALRO's ALROLIS system for the parcel navigation (Source: Fieldwork assistant)



Appendix 5: ALRO's organization culture (Source: Author adopted from ALRO's website)

ALRO SMART: A trustworthy organization		
	Principle	Practice
A	Area management	Land management and protection of agricultural land
L	Learning and Development	Regularly learning and development
R	Responsibility	Responsibility, transparent and accountability
O	Organization Commitment	Organization Commitment
S	Service Mind	Service Mind
M	Moral	Virtue, morals, and ethics
A	Ability	Knowledge and ability to perform the tasks
R	Respect	Respect for each other
T	Teamwork	Teamwork

Appendix 6: Use case diagram of land allocation processes in the case of ALRO



Appendix 7: Summary of future opportunities and challenges for ALRO based on the interview

Opportunities	Challenges
Law and regulations are being revised.	Land uses change especially increasing community expansion.
Leasing state land allows business activities. So, there is a chance to collect more revenue from the Agricultural land Reform Fund and more land acquisition budget.	Farmers' lack of knowledge in using technology.
There are increasing cases of transfer and inheritance.	There are 300,000-400,000 registered landless waiting for the land allocation.
Some farmers are ready and are interested in using technology.	Governmental budget allocation is reducing.
Government values the adoption of digital technology in organization administration and public services.	Society perception of land reform areas is only for farming instead of the agriculture-related business such as the processing plants
The government places importance on geospatial information in the administration and planning of the country.	The rapid change in information technology results in officers not being able to keep up with the changes.
There are many innovations in information technologies that ALRO can choose to fit our organization.	Attacks on information systems via the network are increasing, so causing the need to develop a system with more protection.