Developing a Framework to Apply Total Quality Management Concepts to Land Administration

(The case of Islamic Republic of Pakistan)

Zahir Ali

DEVELOPING A FRAMEWORK TO APPLY TOTAL QUALITY MANAGEMENT CONCEPTS TO LAND ADMINISTRATION

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DISSERTATION

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Zahir Ali

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in Karnal Sher Killi, Khyber Pakhtunkhwa, Pakistan

This thesis is approved by
Prof.mr.dr.ir. J.A. Zevenbergen, promoter
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Dedicated to my Parents, Aunt and my Wife

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Terminology and Definitions

Term	Definition / Description
Abadi Deh	Site of a village where predominantly people live.
Agricultural Passbook	It is a document which confirms land ownership of the farmers and it is issued by the concerned official from revenue records of the Provincial/ District/City Governments.
Akhier Tasdiq Register Haqdaran Zamin	During the process of creating the new 'Haqdaran Zamin' document, the 'Tehsildar' or 'Naib-Tehsildar' creates this document to verify that all the mutations have been incorporated into the new document by 'Patwari'.
Badastur	Unaltered or Same As.
Bai	Whenever a person sells his land either completely or partially, to another person, this type of mutation is known as 'Bai' or 'Sale'. Information recorded in this case is Sale Deed No., date of Registry, and amount of Registration etc.
Banjar	Uncultivated land.
Banjar Jadeed	New fallow land which is not cultivated for continuous four harvests though it was cultivated earlier.
Banjar Qadeem	Old fallow land which is continued to be uncultivated for next four harvests.
Barani	Land which is dependent on rainfall.
Chahi	Irrigated from well.
Chahi Nehri	Irrigated partly from a well and partly from canal.
Copy of Mutation Order	Each 'Patwari' is provided with a register so that he can issue a furnish copy of 'Mutation Order' to the concerned parties.
Domicile Certificate	It is a document which proves that a person is a resident of a place since he transferred or occupied a house with a specific address.
Fak-Ur-Rehin (Redemption deed of Mortgage)	This type of mutation is reverse process of 'Rehin'. Whenever a person (who has mortgaged his land) wants to get it back after paying due to the mortgagee, the type of mutation is called 'Fak-Ur-Rehin'. It can be of two sub types. 'Verbal' (through Roznamcha) or through 'Registry'. In case of verbal type, the details include type of Mortgage, Serial No. of Roznamcha Waqiati, amount of Mortgage returned etc. In case of Registry, the Deed No. is also recorded in addition to the above information.

Term	Definition / Description
Fard	It is a true copy of the 'Record-of-Rights' of ownership of a land. It is not the title deed itself but rather than an evidence of title.
Fard Taqseem Aab	In areas where lands are irrigated by means of 'Karez' or other similar source, a statement of distribution of water 'Fard Taqseem Aab' is prepared which shows how water resources are distributed in the area.
Fard Bach	It contains the details of the demand of land revenue and taxes thereon recoverable from each land owner in a village.
Fard Badar	This is a statement for the correction of clerical mistakes made in copying the entries of 'Register Haqdaran Zamin'. It consists of a foil and counter foil.
Fard Malkiyat	This document is a copy of a page of 'Register Haqdaran Zamin'.
Field Book Mahaal	It is a part of the 'Record-of-Right' and contains for each 'Khasra', its length and breath, calculation of area, and classification of soil. It is prepared at the time of 'Settlement' and consolidation of holdings. Each entry in the book is to be signed by 'Kanungo'.
Gardawar	'Kanungo' or supervisor of 'Patwaries'.
Gardawari	A process whereby it is determined who grows what on a particular parcel of land.
Ghair Mumkin	A type of land on which existing arrangement are difficult to move.
Hiba (Gift)	Whenever a part of complete land is gifted to some person, the mutation is called 'Hiba' or 'Gift'. The details of the person to whom land has been gifted are recorded.
Index Manzoor Shudah Dakhil Kharij Mashmula	This register contains all the attested and accepted mutations. Whenever a new 'Jamabandi' is made, a copy of that register is attached with the 'Jamabandi'.
Index Radeefwar Malikan and Marthehan	This form is meant to locate the owners and mortgages in an estate through an alphabetical index and to find out their rights in various holdings (Khewats).
Index Survey/ Khasra Number	This form shows which Khasra (parcel) Number falls in which 'Khatuni Number' in a revenue estate.
Interrogatories	During the mutation process if a 'Patwari' finds that he needs to record the statement of another person, for the disposal of the case residing outside the

Term	Definition / Description
	limits of the tehsil. Then the 'Patwari' issues an interrogatory letters to the concerned person.
Intiqal	It is a mutation which is used to record transactions of land. This may include sale of land, gift of land, inheritance etc.
Kanungo	A 'Kanungo' is either a revenue officer or a junior revenue officer. A junior revenue officer is called 'Gardawar'. A 'Kanungo' is in charge of one 'Kanungo Circle'. He is responsible for overseeing the Patwari's land records and for crop and tenancy assessments. The latter function is traditionally carried out by a 'Gardawar' but in practice, the two roles are carried out by one person. He officially reports to 'Naib-Tehsildar'.
Kanungo Circle	An area within a district allocated to be supervised by a 'Kanungo'. One 'Kanungo Circle' consists of 2-10 'Patwar Circles'.
Karam	It is the unit of length to measure land. It varies from tehsil to tehsil and district to district.
Kharif	Autumn harvest
Khasra Number	It is a plot number given to a specific piece of land in a village. This land parcel ID is unique for each parcel in each particular estate. One or more 'Khasra' form a 'Khatuni'. The 'Khasra Numbers' in a village are created at the time of 'Settlement'.
Khatuni Number	It refers to a set of cultivators. 'Khatuni Number' is given to the cultivators in the 'Khewat' and runs sequentially in the village starting from 1 to N. Each 'Khewat' have at least one 'Khatuni' or more 'Khatunies' but appear in a sequence within the 'Khewat' and in the village. One 'Khatuni' may contain more than one land parcels.
Khewat Number	A 'Khewat Number' is the account number given to owner(s) which form a set of co-sharers who own the land in same or different proportions. It is also a serial number of the landowner(s) in the 'Register Haqdaran Zamin'. Each owner(s) has a unique 'Khewat Number'. One 'Khewat' may contain more than one 'Khatuni'.
Khud Kasht	Land cultivated by the owner himself.
Lal Kitab (Village Note Book)	This book prepared at the time of 'Settlement'. It has details about the statistics of a village lands e.g. total area, area sown, assessment of land revenue, number of entered and attested mutations, notes

Term	Definition / Description
	about changes in cultivation, and ownership for the last four years. It also shows the population of a village and approximate number of livestock. It is the statistical book of a village.
Lambardar or Headman	A 'Lambardar' is a person in the village who is appointed by 'District Collector' under the Land Revenue Act 1967. His duties are the collection of land taxes of a 'Revenue Estate'.
Land	'Land' means land which is not occupied by the site of a town, village, factory or industrial establishment, and is occupied or has been or can be let for agricultural purpose allied or subservient to agriculture and includes the sites of buildings and other structures on such land.
Memoranda Invoice	Along with every mutation, a memorandum is sent in the form of an invoice.
Musavi	It is the map of a revenue village which is prepared at the time of 'Settlement'. It shows all the fields, duly measured and numbered in a village. Its updated version is called 'Shajra Kistwar'
Naib-Tehsildar	He is a revenue officer in charge of at least one 'Kanungo Circle'. He reports to 'Tehsildar'.
Naqsha Haqooq Chahaat-o-Nul Chahaat	A statement of rights in wells and tube wells that contains information on the location, type, size, and ownership of Well and tube wells in the area.
Nehri	Irrigated from canal.
Parat Patwar	Patwari's copy of the new settlement record.
Parat Sarkar	Government's copy of the new settlement record.
Parcha Khatuni	Whenever a new 'Jamabandi' is prepared then a copy of 'Parcha Khatuni' is given to all land owners for verification.
Patwar Circle	An area within a 'Kanungo Circle' allocated to a particular 'Patwari' who possess the original land records of that area. Each 'Patwar Circle' covers between 2-8 'Revenue Estates'. A 'Revenue Estate' may be a single large village or 2 to 3 smaller villages.
Patwari	A 'Patwari' is an official of revenue department and is the custodian of revenue record. He is the lowest ranking but the most powerful member of the revenue hierarchy. He also carries out crop assessment (twice a year for levying government taxes) and tenancy survey.
Rabi	Spring harvest

Term	Definition / Description
Receipt of Mutation Fee	In case of collection of mutation fees in advance, the corresponding person pays the mutation fee to the revenue officer and he issues a receipt to the concerned person.
Register Dakhil Kharij	It is also known as 'Mutation Register' which keeps track of every mutation (Intiqal). This register consists of foil and counter foil. The counter foil is kept by the 'Patwari' for his records while the foil copy is forwarded to tehsil office.
Register Haqdaran Nakhlistan	In certain areas, the ownership of date trees is considered to assess revenue. This register details the complete information regarding number, type, and ownership of date trees.
Register Haqdaran Zamin (Misal Miyadi)	This register shows the right holders of land including; details on owner, cultivator, land, soil, rent etc. it is prepared at the time of 'Settlement' and is updated every four years for incorporating recent mutations.
Register Jinswar	As soon as the field inspection of a harvest is finished in any village, the 'Patwari' completes the crop abstract (Jinswar) before commencing work in the second village. When the field 'Kanungo' checks the abstract and signs it as correct, the 'Patwari' enters a copy in his 'Jinswar' register and dispatches the abstract to the office 'Kanungo'.
Register Khasra Gardawari	This register contains the details of the inspection of crop grown in each field in each harvest and all changes of ownership and tenancy. It is a register of harvest inspections unlike 'Jamabandi', which is Khewat-wise, the 'Gardawari' is Khasra-wise. The 'Patwari' conducts a field-to-field harvest inspection every six months in the month of October and April. He records the plot-wise details regarding crop grown, land description and status of the cultivator. It is a track record of the possession of a particular patch of land which helps to resolve issues relating to ownership of that patch.
Register of Mutations	It contains particulars of all transactions which are entered by a 'Patwari' and decided by a revenue officer. The 'Patwari' enters the mutations on the basis of document/verbal information presented by the concerned parties for changes in title/interest on land.
Rehin (Mortgage	Whenever a land is mortgaged, completely or

Term	Definition / Description
Deed)	partially, to another person or party, mutation is of 'Rehin' type. The deal can be either 'Verbal' or through 'Registry'. In this case information like Date of Mortgage, Amount and Registry No. (or Roznamcha No. in case the deal is verbal) are entered. The land can be mortgaged with or without possession.
Roznamcha Waqiati	All happenings about the land affairs are recorded in this diary. In this register, a 'Patwari' maintains any incident occurred along with the date, method, and the source by which the event came into his notice. For instance, hailstorm, severe rains, the reports of all transactions of land, encroachments on State land, tours conducted by various revenue officers, and all other matters connected with land are entered in it.
Shajra Nasab	It is an inheritance or genealogical tree drawn pictorially. It is prepared in every estate at the time of 'Settlement' and it forms a part of 'Record-of-Rights'. It is a pedigree table showing succession to ownership rights occurring from time-to-time in an estate. It is revised after every five years along with 'Jamabandi'. Any change in the inheritance or genealogical tree is made by a 'Patwari'. It consists of two parts.
Shajra Nasab (Part A)	This register contains basic information about the manner of revenue collection in the particular 'Revenue Estate' and an index to understand the symbols in the genealogical tress prepared in Part B.
Shajra Nasab (Part B)	This part of the form includes the actual 'Shajra Nasab' of the landowning families in a 'Revenue Estate'.
Shajra Kistwar or Shajra Parcha	This is a mosaic reflection of all the 'Musavies' of a particular village on a big cotton cloth (Lattha) for day-to-day use by a 'Patwari'.
Shameelat Deh	It is additional land of a village which is in common ownership of the land owners of that village. Ownership in 'Shameelat Deh' is proportionate to the extent of ownership of the owners in the 'Revenue Estate'.
Summary of Attested Mutations	A 'Patwari' prepares the lists containing all the attested mutations including all the approved and unapproved mutations. These lists are prepared

Term	Definition / Description
	from 'Parat Patwar'. After checking it with the 'Register Dakhil Kharij', it is forwarded to tehsil office.
Taqseem	Whenever there is a division of land in a joint holding, the mutation is known as 'Taqseem' or mutation of partition. The partition can be verbal among the landowners or when court directs the partition.
Tatimma Field Book	The permanent changes (in case of mutation) in the partition of land are maintained in this register after re-measurement of land.
Tatimma Field Book Murabba Bandi	This register contains all the records in which the partition of land is made according to murabba bandi (square measurement).
Tatimma Field Book Mustateel Bandi	This register contains all the records in which the partition of land is made according to mustateel bandi (rectangular measurement).
Tatimma Shajra	It is a supplementary map.
Tehsil	It is a sub-district. It is a basic municipal administrative unit.
Tehsildar	He is the administrative head of revenue machinery at tehsil level.
Waris	Successor.
Zamindar	Landowner.

Acronyms

ADBP	Agricultural Development Bank of Pakistan
BOR	Board of Revenue
CSM	Case Study Methodology
DBMS	Database Management System
DLR	Director Land Records
ETD	Excise and Taxation Department
FIG	International Federation of Surveyors
Geo-ICT	Geo-information Communication Technology
GIS	Geographic Information System
GML	Geography Mark-up Language
GPS	Global Positioning System
GTZ	Gesellschaft für Technische Zusammenarbeit
HEC	Higher Education Commission (Pakistan)
HRSI	High Resolution Satellite Imagery
ICT	Information and Communication Technology
ISO	International Standards Organization
IT	Information Technology
KPK	Khyber Pakhtunkhwa
LA	Land Administration
LAS	Land Administration System
LIS	Land Information System
MBR	Member Board of Revenue
NGO	Non-Governmental Organization
NUFFIC	Netherlands Organisation for International Cooperation in Higher Education
OGC	Open Geospatial Consortium
OICRF	International Office of Cadastre and Land Records

RS	Remote Sensing
SMBR	Member Board of Revenue
SOP	Survey of Pakistan
SUPARCO	Pakistan Space and Upper Atmosphere Research Commission
TQM	Total Quality Management
UML	Unified Modelling Language
UN	United Nations
UNFAO	United Nation Food and Agriculture Organization
UNRCC	United Nations Regional Cartographic Conferences
XML	Extensible Mark-up Language

Chapter 1

General Introduction

1.1 Introduction

Land and the way governments deal with land are very important issues in the development of a society. This does not go unnoticed at the global level. In the Global Plan of Action for Sustainable Development, as adopted by the Rio Conference 1992 (Agenda 21), the global objectives of combating poverty, sustainable settlement, sustainable agriculture and forestry are directly related to the land issue. According to the Plan of Action, strengthening legal frameworks for land management and land ownership is strongly recommended to facilitate access to land for the urban and rural poor, to create efficient and accessible land markets, to establish appropriate forms of land tenure that provide security for all land users especially for indigenous people (van der Molen, 2006a).

Recent advances in the geo-information and communication technology (Geo-ICT) and changing societal needs for land administration have also increased the demand for a reliable and effective shared framework for developing, operating and maintaining land data in developing countries. This is due to the fact that existing systems can no longer cope with current demands due to policy shifts in land issues and geo-information technology (Tuladhar, 2002). Such a shared framework leads to the design of a land administration processes through a quality process design and benchmarking techniques which are simple, cheap and transparent (Radwan et al., 2001). Therefore, it is essential to gain full understanding of the existing land administration systems first and then recommend solutions for more improvement and development.

Many research studies have been carried out to evaluate the performance of LASs in different countries keeping in mind distinct evaluation criteria (Burns et al., 2010; Burns et al., 2006; Chimhamhiwa et al., 2009; Rajabifard et al., 2007; Steudler, 2004; Steudler et al., 2004; Steudler et al., 1997; Zevenbergen, 2002). In all these studies, the analyses were carried out on the basis of comparisons between the data sets obtained about the existing LASs of the studied countries. Due to the distinct nature of the geographical, social, cultural, and economic conditions among different countries of the world, there is a need to develop a methodology for analysing the quality of an existing land administration system (LAS) within a country as a stand-alone exercise via a single case study with all possible quality indicators. This will lead to the development of quality improvement guidelines for applying the concepts of Total Quality Management (TQM) concepts to LAS.

Internationally, there is hardly any accepted or standardised method or quality assessment framework for improving, evaluating or comparing land administration systems (LASs) around the world. This may be largely due to the fact that LASs reflect the cultural and social values of the societies of the

prevailing country in which they are operated (Steudler et al., 2004; Williamson and Fourie, 1998). In some cases, the institutional arrangements within the same country may not be optimal for efficient LASs. While, in other areas, the organisations face significant challenges in introducing modern technologies which are also constantly changing over the time (Auzins, 2004). In this way, the development of a quality assessment framework for analysing and improving the quality of a land administration system (LAS) is one such area that asks for urgent attention.

In order to develop a framework for assessing the quality of LAS and then apply the concepts of TQM, section 1.2 of this Chapter gives a brief introduction to the research topic background and problem definition. The research aims and objectives are presented in section 1.3, whereas the research questions are described in section 1.4. The research framework is then presented in section 1.5. The thesis structure is outlined in section 1.6 at the end of this Chapter.

1.2 Research Background and Problem Definition

A number of studies indicate that the focus of cadastral and land administration systems issues has changed from purely technical ones to institutional, social, political and economic ones (Dale, 1985,1990; Zevenbergen, 1998). Dale (1985) argues that "unlike other aspects of land surveying which are depersonalised, a cadastre and LAS is as much about people as it is about land, law and technology". To this end, three important aspects: the technical, legal and organisational are emphasised. However, the success of a system largely depends on the organisational aspects. Other studies reveal that technical, legal and organisational aspects have a dramatic effect on the functioning of land registration systems (including cadastral surveying and mapping) and achieving their goals (Zevenbergen, 2002,2004). The World Bank (2001,2010) indicates that land administration system usually operate within distinct social and cultural norms and values. Therefore, it is essential to develop a quality assessment framework for assessing the quality of a standalone land administration system that takes into account both the institutional and technical aspects of LAS.

The LAS in Pakistan has a long historical background routing from the early Muslim Rule in the 13th and 14th centuries. The system was developed in the past for tax collection purpose where no attention was given to the security of tenure and other societal needs. The system is based on a traditional system of land registers and records that are somewhat complicated, out-dated and quite incompatible to the new developments in the field of information technology (Gauhar, 2004; Raza et al., 2005). The traditional and existing LAS is entirely based on out-dated processes and land records in paper formats having no standards with quite obsolete information restricting

their operational usefulness in extracting precise information on land parcels and land ownership. There is a need to highlight all the elements and indicators of the institutional and technical aspects that would be considered in assessing the quality of an existing LAS and developing quality improvement guidelines within a country's environment.

Keeping in mind the quality situation of the existing LAS in Pakistan, it is necessary to design a framework to analyse the quality of existing LAS for developing quality improvement guidelines. The framework must focus on improving the quality of existing LAS using TQM concepts taking into account all its aspects (both institutional and technical) through a single case study. This will further help to develop quality improvement guidelines for improving the quality within the broad context of the TQM concept. In order to analyse the research problem in more detail, research aims and objectives as well as research questions have been arranged, which are presented in the next section.

1.3 Research Aims and Objectives

The aim of this research work is to develop a framework for assessing the quality of an existing LAS through systematic use of the case study research methodology for developing quality improvement guidelines within the broad context of Total Quality Management (TQM) concept. This research work also develops quality improvement guidelines for the LAS in Pakistan in such a way that the quality of land data and geometric data in the land records can be upgraded to an acceptable level by meeting the quality requirements for the institutional and technical aspects of the system. To ensure a thorough and complete exploration of this research work, the following objectives are established:

i. To investigate the systematic use of the case study methodology for designing a quality assessment framework to analyse the quality of a deteriorated LAS.
ii. To explore the contributing elements of the framework taking into account the institutional and technical aspects of LAS for assessing the quality of the existing LAS in Pakistan.
iii. To define the indicators and variables of the quality assessment framework considering the institutional and technical aspects of LAS to evaluate the quality of a LAS.
iv. To develop quality improvement guidelines for a deteriorated LAS within the broad context of the TQM concept.

1.4 Research Questions

In order to achieve the above mentioned objectives, some basic questions are raised each corresponding to one objective;

i. Why is case study research the most suitable methodology for carrying out this research, and how is it applied in a 'systematic' way to design a quality assessment framework?
ii. What are the relevant elements of the institutional and technical aspects in the existing LAS to develop a quality assessment framework for assessing its quality?
iii. Which indicators and variables can be used for the elements of the institutional and technical aspects of LAS and how can the quality of a LAS be assessed by using these indicators and variables?
iv. What would be the quality improvement guidelines to improve the quality of a deteriorated LAS within the broad context of TQM concept?

1.5 Research Framework

This research work aims to develop a framework for analysing the quality of a deteriorated LAS and then develops quality improvement guidelines for improving the quality of existing LAS in developing countries where the quality of present LAS is in poor conditions. A research framework representing the steps and techniques for conducting this research work is shown in Figure 1.1.

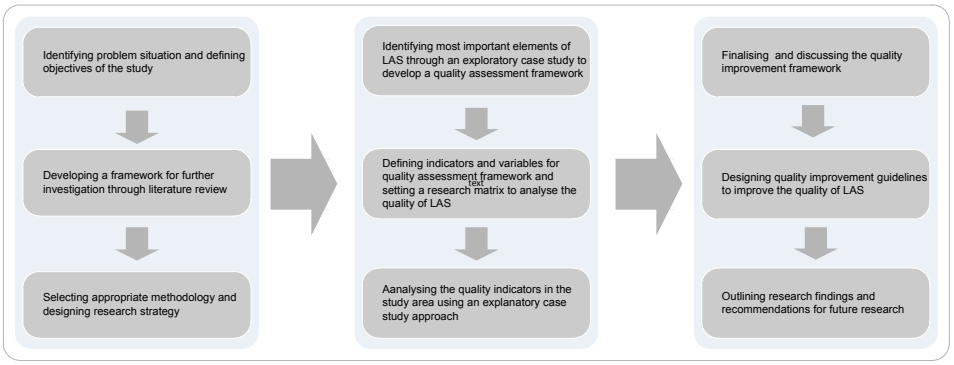

Figure 1.1: Framework representing the research steps and techniques

This involves the collection of both qualitative and quantitative data using the systematic use of the case study research methodology for exploring and analysing the existing situation of a LAS in the study area. This approach takes into account the institutional and technical aspects of LAS at the organisational levels (policy level, management level, and operational level), processes in LAS, and interaction with all stakeholders to maximise the benefits of case study research methodology in cadastral studies.

In order to analyse the first component of this research work i.e. analysis of the institutional and technical aspects of the existing LAS, an exploratory

case study methodology is used to form a conceptual quality assessment framework for assessing the quality. This includes the review of relevant literature and interviews with different stakeholders including land owners, real estate agents, law professionals, and land management professionals. For the second component of this research work, i.e. the analysis of quality indicators for institutional and technical aspects, an explanatory case study approach is applied. This helps to model and formulate all the necessary actions and guidelines required for improving the quality of existing LAS. The synthesis is carried out at the end of this research work to finalise the framework for evaluating the quality of existing LAS and then develop quality improvement guidelines for improving the quality of the system within the broad context of TQM.

1.6 Thesis Structure

This thesis consists of three parts which are the introduction and theory part, the case studies part, and the synthesis and discussion part. The first part includes Chapter 1, Chapters 2, and Chapter 3 that presents the introduction to research topic and its aims and objectives, the review of land administration systems and quality concepts, and the research methodology and research design. The second part includes Chapter 4 and Chapter 5 by developing the quality assessment framework and describing the present situation of LAS in Pakistan, defining the elements and indicators of the framework, and analysis of these quality indicators in the case study area. The last part comprises Chapter 6, Chapter 7, and Chapter 8 by synthesising the results, discussing the quality assessment framework, developing the quality improvement guidelines within the broad context of the TQM concept in the case study area, and concluding the outcomes of the research work as well as recommending its importance for the future research in the field of cadastre and land administration studies. The schematic diagram of thesis structure is shown in Figure 1.2.

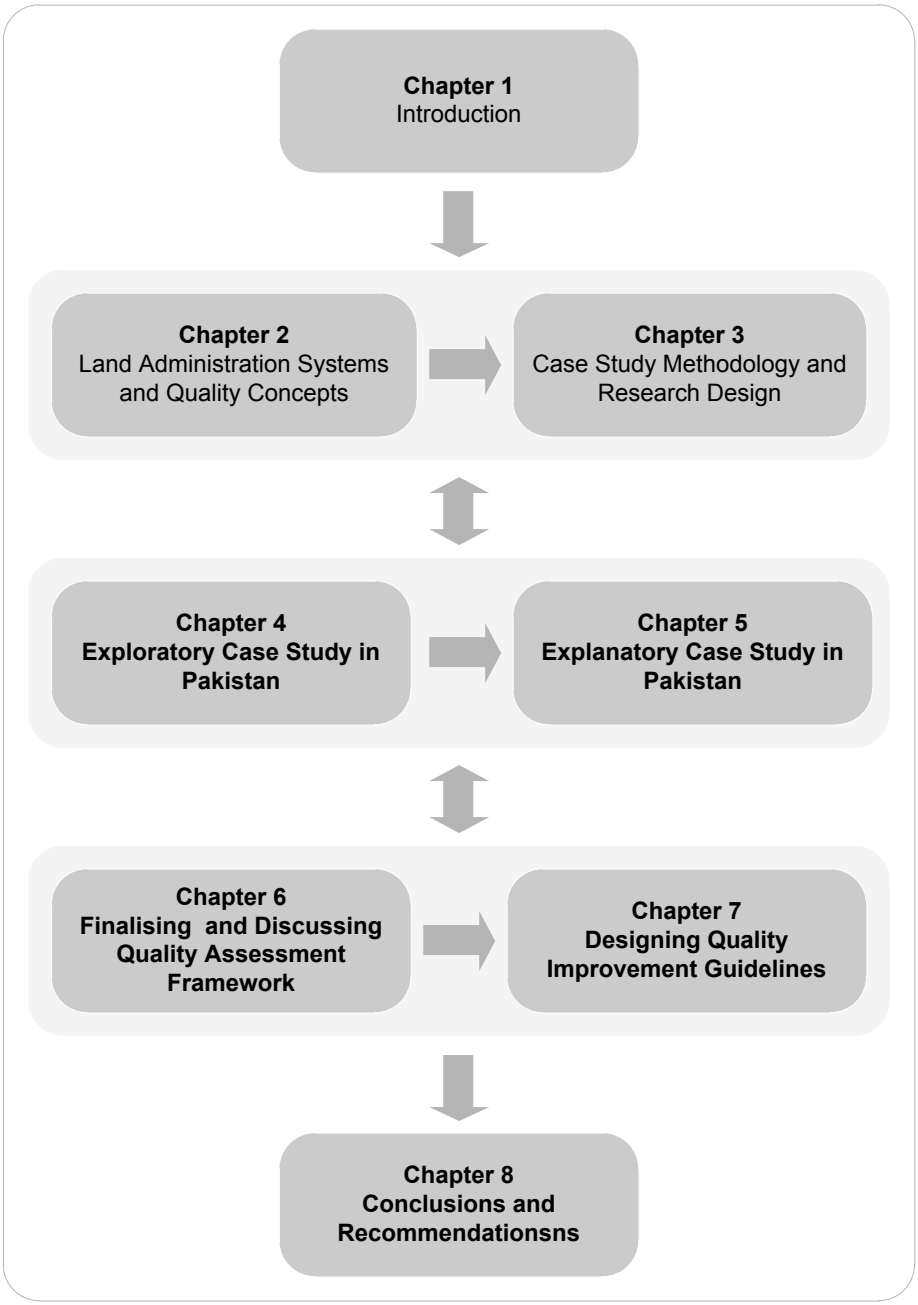

Figure 1.2: Schematic diagram of thesis structure

Following is a brief description of the contents of each Chapter;

CHAPTER 1: *General Introduction*
This Chapter presents the whole overview of research work by describing the research background and defining the research problem. The aims and objectives are also outlined in this Chapter followed by research questions to deal with the aims and objectives of this research. This Chapter also introduces the research framework to be followed in doing this research. The schematic diagram of the thesis structure is then described to depict the number and position of each Chapter in framing the overall structure of the thesis.

CHAPTER 2: *Land Administration System and Quality Concepts*
This Chapter presents basic definitions of LAS followed by its functions and components. The concepts of quality and total quality management (TQM) are discussed in this Chapter from theoretical point of view and in relation to LAS. The previous scientific work carried out on assessing and evaluating LASs are reviewed in this Chapter, focusing on the evolution and paradigm shift in LASs assessment approaches. At the end, this Chapter explicates both the institutional and technical aspects of LASs to identify the contributing elements for analysing the quality of LAS.

CHAPTER 3: *Case Study Methodology and Research Design*
This Chapter presents a general literature review about the case study methodology. The effective use of case study methodology in conducting cadastral studies is described through a literature review. The steps in doing case study are presented in this Chapter followed by a holistic approach for assessing the quality of LAS. The research design and research strategies for adopting a case study methodology in this research are also discussed in this Chapter.

CHAPTER 4: *Exploratory Case Study in Pakistan*
This Chapter presents the current situation of LAS in Pakistan based on an exploratory case study conducted during this research work. This Chapter describes the current situation of the LAS in Pakistan as a base to carry out further analysis for investigating the problems and issues in the existing system. Both qualitative as well as quantitative data are collected through meetings and interviews with stakeholders during the fieldwork. The findings of the exploratory case study are analysed and the elements of LAS in the study area are presented and discussed.

CHAPTER 5: *Explanatory Case Study in Pakistan*
This Chapter first identifies the indicators for the elements of institutional and technical aspects of LAS to assess the quality of LAS and then develops the

quality assessment framework. The quality situation of existing LAS in the study area is then presented through the analysis of quality indicators. The present status of each of the quality indicators concerning the elements of LAS in Pakistan are described through explanatory case study approach and the present quality situation of the system in the study area is presented in more detail.

CHAPTER 6: *Finalising and Discussing Quality Assessment Framework*
This Chapter provides a synthetic thinking from the results obtained in this research to answer the research questions based on the aims and objectives outlined in the first Chapter. The research resulted in a number of observations and conclusions about the LAS quality assessment framework and the contributing indicators which are summarised and discussed in this Chapter.

CHAPTER 7: *Designing Quality Improvement Guidelines*
This Chapter designs a quality improvement framework based on the results obtained from this research. This Chapter presents a set of guidelines for the concerned authorities and LA agency to improve the quality of deteriorated LAS in Pakistan. These quality improvement guidelines are drawn under the wider management approach TQM.

CHAPTER 8: *Conclusions and Recommendations*
This Chapter concludes the research findings and outlines a set of recommendations for each objective of the research. This Chapter also draws recommendations for the use of this research in future research work.

Chapter 2

Land Administration System and Quality Concepts

2.1 Introduction

The need for land information, which is the basic necessity for carrying out any land-use planning, land development, and land management activity, can hardly be over-emphasized. Land administration (LA) is a tool for legal, administrative, and economic decision making as well as an aid for land-use planning, land management, land market, and land development. Always there is a need to evaluate and improve the quality of land administration system (LAS) so that maximum benefits can be achieved through better management of land. In this context, this Chapter provides a theoretical background for this research covering both the fundamental concepts in LAS and quality parts. While explaining the important aspects of LAS i.e. the institutional and technical aspects, this Chapter focuses on the contributing elements of the system for quality analysis looking at literature and then highlights all the elements that are required for evaluating the quality of LAS.

Section 2.2 of this Chapter presents some basic definitions of LAS followed by its functions and components in section 2.3. The concepts of quality and total quality management (TQM) from theoretical point of view in relation to LASs are outlined in section 2.4. The review of previous scientific work carried out on assessing and evaluating the quality of LASs is presented in section 2.5. It focuses on the evolution and paradigm shift in LASs assessment approaches. Section 2.6 explicates the institutional and technical aspects of LASs to highlight the contributing elements for analysing the quality of LAS (Chapter 4 & 5). At the end, section 2.7 summarises the summary of this Chapter.

2.2 Land Administration System

Land is the habitat of man and its wide use is crucial for the economic, social, and environmental advancement of all countries (Thakur et al., 2004). Land information is a prime requisite for making decisions related to land investment, land development, and land management. All these information reduce uncertainty by helping to identify and analyse land-related problems. Land records are also very important as these records form the basis for assignment and settlement of land titles (Thakur et al., 2003). In this way, the development and implementation of LAS plays key role in land resource management and planning of any country. Different agencies all over the world are working for the improvement and implementation of cadastre and land administration systems.

Land administration is the processes of land surveying and mapping, land registration, land conveyance, land valuation and taxation, regulation of land tenure, allocation of interests in land, land dispute resolution, and land markets (Nichols, 1993). In this way, LA covers a range of processes dealing with definition of rights in land through registration, collection of land taxes,

valuation of land for establishing land market, mechanism for solving land disputes, and procedures for land transfer. According to Lyons and Satish (2001), "LA is a regulatory framework, institutional arrangements, systems and processes that encompass the determination, allocation, administration and information concerning land." Thus, LA includes the determination and conditions of approved uses of land, the adjudication of rights and their registration via titling, the recording of land transaction and the estimation of value and taxes based on land and property for better management.

According to Williamson et al. (2010), LAS provide the infrastructure for implementation of land polices and land management strategies in support of sustainable development. The infrastructure includes; the institutional arrangements, a legal framework, processes, standards, land information, management and dissemination systems, and technologies required to support allocation, land markets, valuation, control of use, and development of interests in land.

Land administration systems are concerned with social, legal, economic and technical framework within which land managers and administrators must operate (UN-ECE, 1996). Land administration system comprises of an extensive range of systems and processes to administer land tenure, land value, land use, and land development (Enemark, 2004). In order to share the experiences in designing LAS and diagnose the trends in design and implementation of local systems, a global perspective of LAS is needed (Williamson et al., 2010) as shown in Figure 2.1.

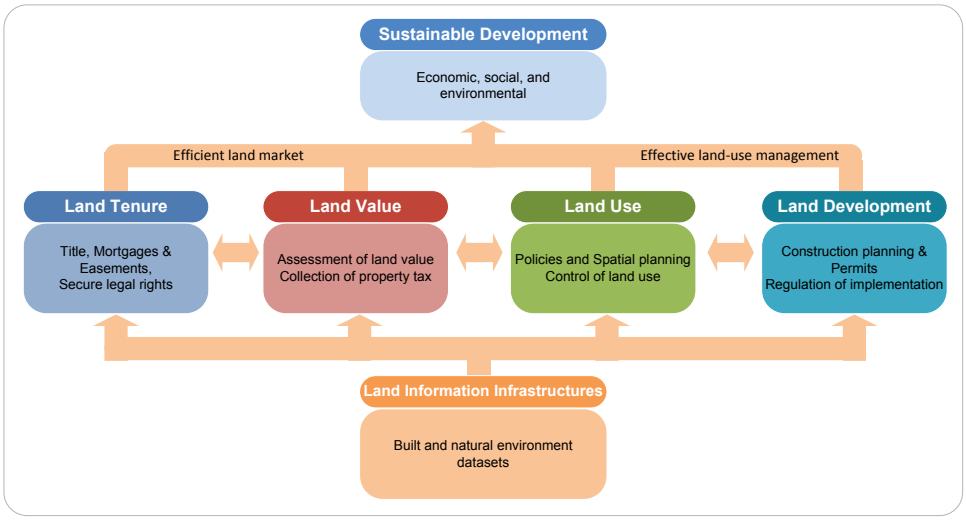

Figure 2.1: A global land administration perspective (Enemark, 2005)

This global perspective of LA relates the four functions of LAS to support efficient land markets and effective land-use management for promoting sustainable development.

Land Tenure: Land tenure can be defined as the way people are holding the land. More specifically, land tenure is the perceived institutional arrangement of rules, principles, procedures and practices, whereby a society or community defines control over, access to, management of, exploitation of, and use of means of existence and production (Dekker, 2006). The land tenure part of LAS deals with the allocation and security of rights in lands, the legal surveys to determine the parcel boundaries, the transfer of property or use from one party to another through sale or lease, and the management and adjudication of doubts and disputes regarding rights and parcel boundaries.

Land Value: Land valuation is a part of LAS dealing with economic dimensions of land (Dale and McLaughlin, 1999). Land valuation system has its own process to approach to the value. This process is affected by three main axes in which the first axis includes the inputs comprising legal title (legal rights), legal use, and legal location; the second axis deals with the constraints comprising valuation laws and regulations, valuation measure standards, code of conduct, and methodologies; and the third axis comprises the resources comprising human resources, and information resources. All these three axes are required to produce the value (Al-Omari, 2008). Thus the land valuation part of LAS concerns the assessment of land value and properties; the gathering of revenues through taxation; and the management and adjudication of land valuation and taxation disputes.

Land Use: The land use part of LAS deals with the control of land use through adoption of land-use planning policies and land use regulations at national, regional, federal, and local levels; the enforcement of land use regulations; and the management and adjudication of land use conflicts. Land use is concerned with both the formation of new units of real properties and the readjustment of the existing ones involving changes in both the purposes of their use and their spatial structure. Economically, land use can be justified in terms of land consolidation, definition of 'best use', territorial readjustments (land re-organisation) or imposition of restrictions (Auzins, 2004).

Land Development: The land development part of LAS deals with the processes and institutions related to building of new physical infrastructure and utilities; the implementation of construction planning; public acquisition of land; expropriation; change of land use through granting of planning

permissions, and building and land use permits; and the distribution of development costs.

The land information infrastructure provides a base for running the interrelated systems of LAS within the four interrelated areas. The land information area should be organised to combine cadastral and topographic data and thereby link the built environment (including legal land rights) with the natural environment (including environmental and natural resource issues). Therefore, land information should be organised as a spatial data infrastructure at regional/federal, national, and local level based on relevant policies for data sharing, costs recovery, access to data, standards, etc. (Enemark, 2005).

In a nut shell, LASs are the basis for conceptualising rights, restrictions and responsibilities related to people, policies and places. Property rights are normally concerned with ownership and tenure whereas restrictions usually control the use and activities on the land. Responsibilities relate more to a social, ethical commitment or attitude to environmental sustainability and good agricultural activities (Enemark, 2009b). In the UN-ECE (2005) document, LAS is considered as part of the infrastructure that supports good land management. It is further stated that LAS should be treated as a way to an end, not an end in itself.

It is evident from the above discussion that LAS covers a range of processes aiming for arrangements of rights in land and better management of land within social norms and values of a society. All these processes are influenced by new developments in technology and users' needs with changing societal demands. Therefore, all the important elements and indicators concerning LAS processes including land tenure, land value, land use, and land development must be outlined and then analysed from quality point of view. This analysis will help to model the changing role of LAS within country's social, cultural norms and values as per users' needs. In order to define quality parameters for LAS, it is essential to understand the functions and components of LAS before going to outline the contributing elements and indicators for analysing the quality of LAS.

2.3 Functions & Components of Land Administration System

A brief overview of cadastral and land administration systems is presented in the previous section. From prior discussion it is clear that LAS deals with implementation of policies and laws for the management of land rights, land value, land use, and land mapping. Land administration systems reflect the social relationship between people and land which is recognised by a

community or a State (van der Molen, 2004). LAS is implemented by a State to implement policies for recording and managing all rights in land.

2.3.1 Functions of Land Administration System

The main functions of LAS includes land tenure, land value, land use, and land development. These functions are interrelated and the interrelations appear through the fact that the actual conceptual, economic and physical uses of land and properties influence land values. Land value is also influenced by the possible future use of land as determined through zoning, land use planning regulations, and permit granting processes. And the land use planning and policies will, of course, determine and regulate future land development (Enemark, 2004).

The four functions of land administration system (land tenure, land value, land use, land development) are different in their professional focus, and are normally undertaken by a mix of professions, including surveyors, engineers, lawyers, valuers, land economists, planners, and developers. Furthermore, the actual processes of land valuation and taxation, as well as the actual land use planning processes, are often not considered to be part of the land administration activities. However, even if land administration is traditionally centred on the cadastral activities in relation to land tenure and land information management, modern LAS must be designed to deliver an essential infrastructure that encourages integration of the four functions (Enemark, 2009a).

As said, all the above functions are interconnected. The interrelations appear through the fact that the actual conceptual, economic and physical uses of land and properties influence land values. Land values are also influenced by the possible future use of land determined through zoning, land use planning regulations, and permit granting processes. And the land use planning and policies will, of course, determine and regulate future land development.

2.3.2 Components of Land Administration System

The variety of these LAS functions requires land administration to have various kinds of components to deal with land. For example, the land tenure function requires placing emphasis on the holding and the registration of interests in land. On-ground identification is provided by surveyors through development plans to assist in the regulation of use. At the same time, the land use function is also concerned with use restrictions imposed through the regulatory planning mechanisms. The land value function focuses on the economic utility of land. The taxation office requires the change of land use to calculate the revenue and tax for specific purposes (Kalantari, 2008).

In order to fulfil all these LAS functions, the LAS has historically been organised around four sets of components responsible for surveying and mapping, land registration, land valuation (Dale and McLaughlin, 1999) and land development as shown in Figure 2.2.

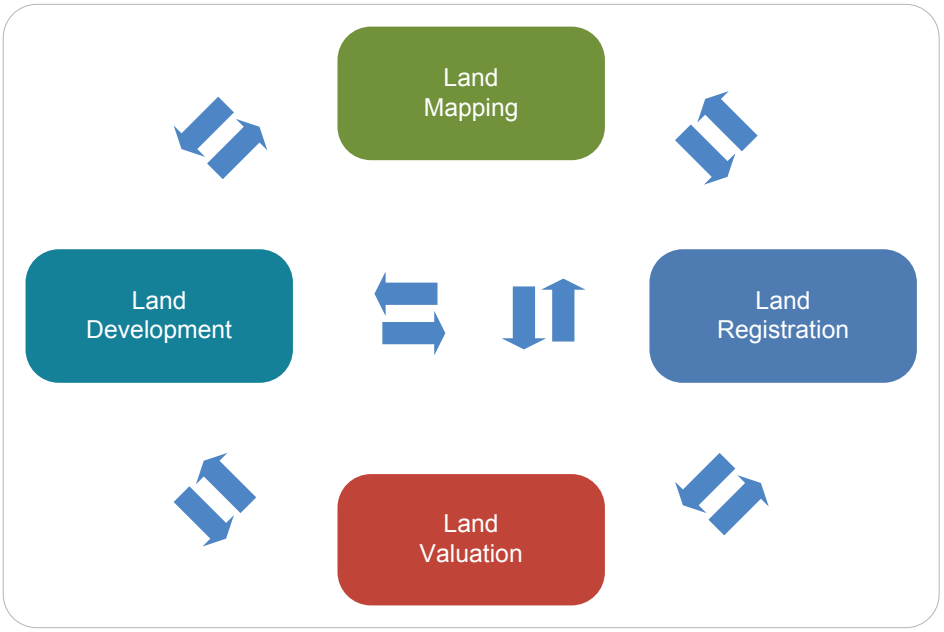

Figure 2.2: Components of LAS (Kalantari, 2008)

Land Registration: Land registration is a process of official recording of legally recognised rights in land through deeds or as title certificates on properties. This is an official record of rights on land or of deeds concerning changes in the legal status of land (Henssen, 1995). Land registration is a public register in which the documentation effecting interests in land are kept. It is the official legal registration of properties (land, buildings and apartments), of legal rights and of rightful claimants (Bogaerts and Zevenbergen, 2001). Land registries document contains all information about the rights in land and the owner that can be traced back in case of resolving the land disputes as well as for the assessment of property tax. Land registration is very important for governments to collect property taxes for economy generation. Without knowing who owns/uses the land and what that land is being used for, governments cannot levy property taxes (Farvacque and McAuslan, 1992). Land registration (land titling) can be undertaken sporadically at the time of each legal transaction or systematically area by area. While the sporadic approach gives more immediate benefits to individual land holders, the systematic approach provides a wider range of benefits more quickly, especially if the land registry is part of a more

comprehensive land information system (FIG, 1995). The land registration component provides a data set of rights in land for LAS in both approaches whether sporadically or systematically.

Land Valuation: Land valuation is a part of LAS dealing with economic dimensions of land (Dale and McLaughlin, 1999). The land valuation component deals with the assessment of land value and properties; the gathering of revenues through taxation; and the management and adjudication of land valuation and taxation disputes. An effective and efficient land market depends upon good valuation component. Land valuation on one hand helps the State to collect land taxes for economy generation while on the other hand it helps the land owner to generate money through values from sale and mortgage for improving his standard of life. A standard mechanism for land valuation should be adopted to boost up the land market for investment in land and real estate. The significant issues of existing land valuation mechanism need to be analysed as per quality requirements so that maximum benefits could be accessed both at State and individual level.

Land Development: Land development deals with the processes and institutions related to building of new physical infrastructure and utilities. It also deals with the implementation of construction planning; public acquisition of land; expropriation; change of land use through granting of planning permissions, and building and land use permits; and the distribution of development costs. Thus, land development plays an important role in the allocation of land resources and land use management for a society (Enemark, 2004). While considering other components of LA, it is also essential to consider the existing land development plans so that efficient utilisation of land can be carried out as per users' need and societal requirements. In this way the important elements of land development need to be analysed within quality assessment framework for better management of land use to serve society in an efficient manner.

Land Mapping: Traditionally in LAS, the land mapping component is responsible for providing the cadastral map. It is concerned with geometrical data, especially the size, shape, and location of each land parcel. In some jurisdictions, land mapping is only concerned with the location of property boundaries while in others it includes all things attached to the soil. The latter concept encompasses both land and its associated buildings, objects that in some jurisdictions are treated as separate entities (Steudler, 2004). Land mapping gives preference to survey records (coordinates and plans) of parcel boundary positions over physical locations of beacons on the ground. Hence, in case of lost or disputed boundary of a land parcel, it is the record in the register that takes precedence over surveys on the ground (Silayo, 2005). The main purpose of land mapping is to collect and make available

geoinformation in support of land tenure, land valuation and land use functions.

As a whole, LAS helps to transform land policies (which define how resources and benefits are to be allocated) into management of land i.e. governance of society's spatial environment. Whether formal or informal, LAS comprises an extensive range of systems and processes, some of which are closely linked with land policy, and others which fall nearer to management of land. It includes processes involved with regulating the development and use of land; gathering revenues from the land through sale, leasing, taxation, etc.; and resolving conflicts concerning the ownership and use of the land (Dale and McLaughlin, 1988). The use of geo-information and communications technology (Geo-ICT) has provided new tools for more efficient functioning of land development, management and planning activities.

While adapting Geo-ICT in LAS, it is important to consider the users' need and society norms and values for enhancing the quality of the system to work within country's environment. In this regard the analysis of problems and issues concerning the LAS within a country's environment can provide necessary inputs for further quality development. Moreover, the introduction of quality improvement concepts such as quality assurance, quality control, and total quality management can help to understand the existing quality situation for improving the quality of the system and effective implementation of new technologies as per users' need and societal norms and values. The next section describes basic definitions and concepts of quality and total quality management for developing LAS quality improvement guidelines.

2.4 Quality and Total Quality Management – Literature Review

Many definitions of quality are available in the literature. Quality is the degree to which an object (e.g. process, product, or service) satisfies a specified set of attributes or requirements (Cooper and Fisher, 2002). According to the American Society for Quality (ASQ), "Quality denotes an excellence in goods and services, especially to the degree they conform to requirements and satisfy customers" (Chandrupatla, 2009). According to Bilich and Neto (2000) "quality, as a macro function of institutions, must be present in the day-to-day running of an institution, in aspects such as establishment of policies, the decision process, selection of personnel, allocation of resources, definition of priorities and service delivery to satisfy customer requirements". Quality is an on-going process that has to be so pervasive throughout the institution that it becomes the philosophy and culture of the whole institution. All institutions and each department within

the institution need to adopt the same strategy, to serve the customer with even better quality, lower cost, quicker response and greater flexibility (Schonberger, 1990).

A hierarchical process of quality includes the development of inspection through to quality control, within the context of systems of quality assurance under the wider management approach of total quality management (Das Mulm, 2009). Oakland (1993) defines total quality management (TQM) as "an approach to improving the competitiveness, effectiveness and flexibility of a whole organisation". In this way TQM can play an important role in improving quality of any organisation as it considers the whole system including all the processes and workforce.

Total Quality Management is the total of activities and methods used by an enterprise in order to fulfil the requirements of a client with the least cost. This can be achieved by activating all the resources of the enterprise (techno-structure and infrastructure) and using learning procedures and innovative ideas springing from inside or from the surroundings of the enterprise. TQM presupposes that its principles will be applied to all levels of the organisation of the enterprise. This implies that it must be incorporated not only in every product or service provided (as many people may think) but also to all levels of activity. Total Quality Management can be developed in four stages as shown in Figure 2.3 (Lakakis et al., 2000);

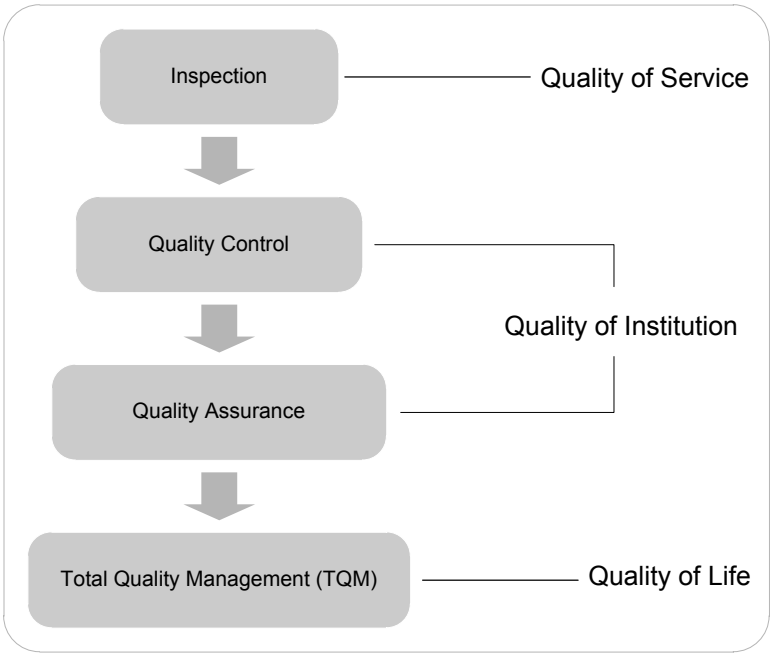

Figure 2.3: Stages of TQM development (Oschman, 2004)

Inspection: is the comparison of the characteristics of the final product or service to the technical specifications. It is an elementary way for the control of a product or service. The basic actions taken in inspection are grading and evaluation, corrective actions, and determination of causes responsible for a miss or failure. This is the phase in which the quality of a product or service is tested before customers notice it. In LAS aspect, this will focus on technical problems and issues concerning the existing system and adapting new technologies for overcoming those problems and issues. This will mostly concern with the operational level where most of the products or services delivered at the users' end.

Quality Control (QC): follows *inspection* and is the total of operational and technical procedures which can confirm the quality of a product or service according to specifications. In this phase the quality problems are not only detected but also treated in a more systematic approach. The basic components of QC are the quality handbook, inspections and controls, product testing, and data documentation. From LAS point of view, it will focus on both the institutional and technical problems and issues at management level so that the quality of the product or service can be measured at this stage.

Quality Assurance (QA): is the total of pre-programmed or systematic actions and procedures necessary for ensuring that a product or service fulfils and will continue to fulfil certain specifications. This phase includes functions other than direct operations of an institution to improve the quality of a product or service. The basic components of QA are systems control, quality design, statistical quality control, certification by third parties, cost of no quality, and analysis for the root causes which are responsible for a failure. In LAS, this plays an important role at the policy level where a set of rules and regulation must be defined to ensure the quality of the product or service.

Total Quality Management (TQM): is the total of activities and methods used by an enterprise in order to fulfil the requirements of a client with the least cost, emphasis given on the link between TQM and QA. The basic components and actions of TQM are continuous improvement, participation of clients and suppliers, participation of all levels of the enterprise, evaluation of performance, team work, and involvement of all the personnel. For LAS, it is most important to develop TQM concept at regular basis so that new advancements in technology and customers' needs analysis could be brought into consideration for improving the quality of existing system. In this way, it will cover the processes of LAS at all organisational levels including policy level, management level, and operational level within the TQM quality improvement framework.

TQM is an organisational concern and not the domain of any specialist or specific function (Zairi, 1992). TQM involves employee involvement and teamwork in order to develop a system that meets the needs of product quality, process quality and organisational quality. With TQM everybody within an organisation works for customer satisfaction. TQM includes a set of principles, tools, and procedures that provide guidance in the practical affairs of running an organisation. TQM involves all members of the organisation in controlling and continuously improving how work is done (Maas, 2004).

TQM encourages organisations to operate simple procedures that are both necessary and sufficient for the achievement of a quality and to eliminate non-productive activities and waste. Embarking on quality without going the whole way to TQM is in general regarded as a mistake. Every consumer needs and expects quality and the only effective way to ensure this is possible through TQM (DTI, 1991). In this way, the holistic approach of TQM should be considered while developing a framework for improving the quality of existing LAS so that all the processes within LAS (starting from input through the processing to the final product/services) could be brought into consideration.

2.5 Evaluating the Quality of Land Administration System

Many studies have been conducted by different researchers to evaluate existing LAS within specific evaluation frameworks. The coming part of this paragraph presents some of these studies in detail and then draws the attention to the quality of LAS in the next part of this paragraph.

2.5.1 Assessing Land Administration Systems

Assessment is a natural activity for human beings as most people are inclined to evaluate an activity carefully before deciding on a course of action. Similarly, often times managers will have to demonstrate that decisions made were rational and objectives were achieved. This type of justification can be attained and demonstrated through an assessment (Georgiadou et al., 2006; Giff, 2006; McNamara, 1999). LASs are aimed with their own objectives within societal norms of a society for the protection of rights in land and management of all other land related information. Therefore, the quality of LASs must be assessed to ensure the achievement of these aims and objectives. The results of assessment will help all the stakeholders to outline the elements of the existing LASs that may require further improvement.

The quality of LAS can be evaluated in terms of efficiency and effectiveness. An efficiency assessment refers to the evaluation of LASs to determine if they

are achieving their objectives in the most economical manner. On the other hand, effectiveness refers to the evaluation of LASs to determine if they are achieving their goals, along with, having the predicted impact on society (Giff and Crompvoets, 2008). However, the main challenge is to develop assessment techniques capable of providing and adequately reporting quality results to financiers, stakeholders and the public where applicable.

The quality of LASs is currently being evaluated by different international organisations and national aid agencies as well as by LA agencies themselves in order to assess the systems for planning, sponsoring, or carrying out reform projects. The FIG (1995) suggested the criteria of security, clarity, simplicity, timeliness, fairness, accessibility, cost and sustainability for assessing actual or potential success of a cadastre or LAS. These measures are customer-oriented and can be used to evaluate the effectiveness of LA (Chimhamhiwa et al., 2009).

The FIG-Commission 7 also attempted in 1997 to collect statistical data of national cadastral systems and received feedback from some 53 countries in order to develop a model to benchmark cadastral systems across countries (Steudler et al., 1997). The model was built on the five measurement dimensions of (1) general statistics and content, (2) performance and reliability, (3) completeness, (4) personnel and salary structure and (5) cost recovery aspects, along with several performance indicators (Chimhamhiwa et al., 2009). A wealth of information was collected in this regard about the LASs in these countries but a lack of a clear framework was observed (Steudler et al., 2004).

The World Bank and the United States Agency for International Development (USAID) financed a comparative study in 2002 to elaborate indicators on several features of land information systems that can be used to make comparisons of LASs. This study included 17 developing countries and six developed countries. This was the first effort at international level to evaluate cross-country LASs but the study has three important limitations. Firstly, it is based on the limited UN-ECE definition of the LAS and hence it does not include indicators related to key intervention and regulation tools that a government has. Secondly, the study uses a set of qualitative indicators with open questions lacking a benchmark framework. As a consequence, the qualitative section is basically descriptive, and cannot be used to derive policy conclusions regarding effectiveness or efficiency of the systems. Finally, while the study includes a set of quantitative indicators supported by an explicit benchmark framework, the data required for these indicators is difficult to collect, and is not available in most of the developing countries included in the sample (Burns et al., 2006).

Furthermore, a framework for benchmarking LASs was also presented and discussed in the Annual meeting of Commission 7 at Gävle, Sweden (Steudler and Williamson, 2001) and a report was also published by the FIG-Commission 7 on "Benchmarking Cadastral Systems" (Steudler and Kaufmann, 2002).

Building further on the benchmarking model, the cadastral template of (Rajabifard et al., 2007; Steudler et al., 2003) suggested some additional dimensions for cadastral systems performance evaluation. Using the measurement categories of (1) parcels to survey and register, (2) informal occupation of land, (3) completeness, (4) comprehensiveness, (5) use and usefulness of spatial cadastral data, and (6) capacity in place, and numerous indicators (Rajabifard et al., 2007), this cadastral template has been tested in 34 countries.

The UN-ECE Working Party on Land Administration (UN-ECE WPLA) has also tried over the last few years to coordinate the evaluation of LAS reforms in transition countries for reforming and improving these LASs. The UN-ECE WPLA (2001) started to offer assistance to national LA authorities reviewing the current situation and performance of their LAS and undertook evaluation missions to countries in transition. However, the WPLA relied on the background and expertise of the participating consultants and a standardised method was not adopted for evaluating and assessing national systems (Steudler et al., 2004).

There have been few attempts to standardise the procedures for evaluating or comparing LASs on the international level but there is no internationally accepted or standardised method for evaluation. This is mainly because the LASs are reflecting the cultural and social context of the country in which they are operating, making them distinctly different and therefore difficult to compare with each other (Steudler et al., 2004). It should be kept in mind that the benchmarking could be useful only if comparisons are made between countries that are developing along the same path. Otherwise, difficulties arise in using the comparison for the purposes of proposing solutions where the systems have different structures and differing objectives.

In this connection, Steudler et al. (2004) suggested an evaluation framework for LASs which takes a holistic approach looking at the whole system. This evaluation framework considers four evaluation elements namely objectives, strategies, outcomes and review process by linking them with different stakeholders within the organisational pyramid. This corresponds with other accepted concepts such as the framework for re-engineering LASs and the book keeping or accounting system analogy for LA. The resulting elements,

aspects and indicators are then facilitated by the toolbox principles for LA which provides a valuable basis for the evaluation of the whole system.

Similarly Chimhamhiwa et al. (2009) presented a conceptual model for measuring end to end performance of LAS based on cross-organisational business processes (CBPs). They developed a performance measurement framework for LA CBPs that considered the critical measurement areas for CBP delivery.

2.5.2 Quality Improvement of Land Administration System

It is apparent from the above discussion that the quality of LAS can be evaluated through several multi-dimensional approaches. These evaluation measures can further help to improve the quality of existing LAS as per quality requirements. However, the main aim pursued in an evaluation should determine what to measure and how to measure it? It is important to keep in mind that the performance of any system can be measured only if the quality parameters and indicators of the existing system are known first. These quality parameters and indicators are also varying from system to system depending upon the structure of existing LAS, users' needs, social and cultural norms and values of a society in which the LAS is being practised.

In all these previous studies, the quality of LASs was measured across different land administration systems that were in use in different countries and the attention was given to only those quality parameters which were common in all these LASs. Therefore, due to diverse nature of LAS, a comprehensive method is thus required to analyse the quality of an existing LAS of a country exclusively by considering all its components through an assessment framework for better assessment and analysis.

This quality assessment framework will further help to model the changing role of existing LAS within country's social, cultural norms and values as per users' needs and quality requirements. However, the basic concepts of quality and total quality management (TQM) should be considered in this connection so that a holistic approach could be followed to analyse and improve the quality of existing LAS. No work has been carried out in this regard to present a set of quality indicators for assessing the quality of existing LAS first and then develop quality improvement guidelines for a standalone LAS.

As discussed earlier in the previous section, all previous research studies considered different components of LAS including legal, technical, social, organisational, and political component in order to evaluate these components. The analysis of different components calls for a holistic response before going to suggest further suggestions for improvements. Therefore, a

conceptual framework is thus required to analyse these components for the existing LAS before going to define quality improvement guidelines.

Therefore, all the aspects of LAS should be brought into consideration before going to analyse the quality issues of the existing system. These aspects can be broadly categorised into two categories i.e. institutional aspect and technical aspect which are discussed in the next section.

2.6 Land Administration Systems' Aspects

The World Bank (2001) indicates that LASs are usually operated within distinct social and cultural norms and values. Therefore, it is important to develop a framework that takes into account both institutional (including organisational) and technical aspects for implementing LASs in the context of land policy development. Research study implies that the technical, the legal and the organisational aspects are affecting system of land registration and on achieving its goals. Similarly the interrelation between these aspects also effects this even stronger (Zevenbergen, 1998,2002,2004).

Land Administration System involves many issues relating to historical, cultural, social, technical and economic conditions of a society. Different societies face different issues. For instance, countries with informal and customary rules will face different issues to those in post conflict situations. The technical requirements of a changing LAS for developed countries are different to those of developing countries (Kalantari, 2008). Many research studies have been conducted to highlight different issues concerning the development and improvement of LAS. However, this section discusses these issues under the umbrella of institutional and technical aspects of LAS whereas the elements concerning to these two aspects are put in italic within the text.

2.6.1 Institutional Aspect

Institutions are defined as "the rules of the game in a society or, more formally, institutions are the humanly devised constraints that shape human interactions" (North, 1990). The players of the game are the 'organisations'. The cost of reducing uncertainty in human interactions are dependent on the quality of the institutions and how seriously these are enforced (van der Molen, 2003). The World Bank (1998) considers the land titling, land registration and information supply in general as examples of institutional development.

A sound institutional framework is built upon a strong ability to evaluate local conditions and technological developments in other countries or organisations (Chigiinge, 2006). There are three basic categories of institutions, namely the

constitutional order, the institutional arrangements, and the normative behavioural codes (Feder and Feeny, 1991). These three categories directly affect the quality of LAS and provide clues when current systems are not operating in accordance with society's requirements and users' needs.

2.6.1.1 Constitutional Order

The constitutional order deals with the fundamental rules about how society is organised are based on, "the rules for making rules" (Feder and Feeny, 1991). From the early days of history, man always had a relationship with land. Such a relationship leads to so called "land tenure" which defines how land is to be held and used. This arrangement always differ from one country to another and even within one country, as it is often influenced by history, politics, culture, geography, religious/social systems, and the economic situation. The relationship between an individual or a group of people or communities and a unit of land through a bundle of rights (or property rights) is the most important part of land tenure (Tuladhar, 2004). A land tenure system is the institution that shapes the interaction of the people and land within a social context to come to better land management and dispute resolutions. There are different forms of tenure including statutory tenure, customary tenure and informal tenure that shape human interaction with land in different societies. LASs have to cope with the registration of rights that must obey the country's laws and constitution with its tenure system. Furthermore, the *security of tenure* must be ensured within the system for better management of land and dispute resolutions.

2.6.1.2 Institutional Arrangements

The institutional arrangements are created within the rules specified by the constitutional order such as laws, regulations, associations, contracts, and property rights in land (Feder and Feeny, 1991). There are also specific institutional arrangements like LA (land registration) and land management (land consolidation) to support and activate the institution of property rights (Sevatdal, 2002). Land management involves the implementation of fundamental policy decisions about the nature and extent of investments in land. From an institutional perspective, land management includes the formulation of land policy, the legal framework, resource management, administrative arrangements, and land information management which is included in the technical perspective. It entails both government and private initiatives (UN-ECE, 1996). Thus the institutional arrangements include; *property rights, land policy, legislation, land-use planning, organisations and financial elements* for handling property rights and data in LAS. Institutional arrangements work as a backbone for developing LAS in a society within rules defined by the constitutional order.

Land policy is a part of the national policy of a country which generally relates to economic development, social justice and equity, and political stability. The land policy promotes the provision of security of tenure and provides measures to prevent land speculation and land disputes (UN-FIG, 1996). The coherency of a national land policy with policies in other sectors reflects the quality of a system that supports the customers' needs and society's requirements.

2.6.1.3 Normative Behavioural Code

The normative behavioural code refers to the cultural values that legitimise the arrangements and constrain behaviour. According to Scott (1995), "Normative systems include both values and norms. Values are conceptions of the preferred or the desirable together with the construction of standards to which existing structures or behaviour can be compared and assessed. Norms specify how things should be done; they define legitimate means to pursue valued ends." In this way, 'values' are closely linked to 'goals' and the 'norms' are the 'acceptable means' to achieve these pre-defined goals as per user needs and society's requirements. The normative behavioural code include the *legal framework* for co-ordination, definition of the operational rules, *responsibilities*, *users' needs*, *LAS processes, access to information (timeliness, clarity, simplicity, fairness and quick responses), data organisation (privacy and data protection), public awareness,* and *data pricing*.

Since land administration systems operate within different social and political environment. Therefore, these systems should address all the elements of institutional aspect to recognise the stakeholders' needs because different stakeholders may need different forms of product or services. Furthermore, the success of any broad-ranging LAS depends on a number of institutional issues to be addressed (UN-ECE, 2005). Hence elements of institutional aspect should be taken into consideration while designing a quality assessment framework for cadastre and LAS within the country's environment.

Generally, the State is responsible for establishment and enforcement of the institutional framework within which the land markets are able to operate properly. The State also needs an efficient LA capability in order to meet other national policy objectives, including justice and home affairs, revenue generation through tax policies, environmental controls, rural development, cross border issues and municipal administration at local level (Dale and Baldwin, 1998).

Dale and Baldwin (1998) further recommended the need for institutional strengthening of the LA sector, which includes the three pillars of the

regulatory authorities (registration, valuation, real estate financing) and the underlying legal framework. They also endorse the establishment of technical systems required for implementing and providing a national level of service within a reasonable time and with a high level of security and confidence. In this way, technical competency plays an important role and institutions with high technical dimensions are more inclined to deliver their services more efficiently as per users' needs and community requirement (Chigiinge, 2006). Therefore, it is necessary to also focus on the technical aspect of LAS to develop quality assessment framework.

2.6.2 Technical Aspect

A substantial amount of the LA activity is of a technical nature (UN-ECE, 2005). Land administration system contains, on one hand, the database containing spatially referenced land data, and on the other hand the procedures and techniques for systematic collection, updating, processing, and distribution of the data to the end users in an efficient manner. The elements of technical aspect play important roles in different processes of LAS including *system development, data management (capture, maintenance, access),* and *process designing*. All these elements are most important to improve the efficiency of LAS by considering the pace of changing technology and societal needs.

It is important to know about the LAS objectives in relationship with the opportunities offered by Geo-ICT before going to adapt this technology in the system. In this connection, the conceptual model of MIT's 'strategic alignment model' (Henderson et al., 1992) provides a line-of-action for establishing a technical strategy that links a relationship between institutions and supporting technologies to achieve organisational goals and objectives (Avison et al., 2004; Coleman and Papp, 2006). The adaption of Geo-ICT in LAS can be viewed at three organisational levels including; the strategic level, management level and operational level (Steudler et al., 2004) in accordance with users' needs.

2.6.2.1 Strategic Level

The strategic level requires exclusive links with changing views of Geo-ICT. Recent developments in Geo-ICT have a strong impact on the development of LASs and sharing of land data among various stakeholders usually known as spatial data Infrastructures (SDI). Both the theoretical and practical developments in technologies such as different remote sensing satellite images and geographical information systems (GIS) including database management concepts can improve the quality, cost effectiveness, performance and maintainability of LASs (Aleksic et al., 2005). The adaption of these technologies provides enormous opportunities to share land related information in a more easy way than the old fashioned technologies/methods

in which the information is managed and shared through manual records and procedures. The FIG (1995) stresses the selection of an appropriate technology for mapping and maintaining geometrical cadastral information within the strategic objectives. This can really reduce the chance of duplication in data creation and updating for better performance of the organisations dealing with land information and management.

The elements influencing the quality of deteriorated LAS largely depend on two strategic elements. The first element is about the analysis of users' requirements including their roles. The second element is the adaption of latest technologies on LA processes/ services to achieve high quality of products that are easily accessible and reliable for land data supply. Both these elements would then bring system architecture that needs to be aligned with the elements of institutional aspect specifically on land policy, and laws for property rights and privacy issues. Elements for improving the quality of LAS in this regard would be: the *adaptability of technologies in the organisation, involvement of users, needs and their roles, use of quality standards, development* and *understanding of system architecture* for LAS, and availability and use of a strategic plan (Enemark and van der Molen, 2008; Steudler et al., 2004).

2.6.2.2 Management Level

At management level, the information system concepts for data modelling and process modelling are the most prevailing elements in term of organisational structure, as they relate to how good data are gathered, processed, stored and disseminated at affordable cost with many data access points such as a front desk or the internet. On system development side, the cadastral modelling, such as Land Administration Domain Model (LADM), is considered as a basic tool for facilitating appropriate system development and forming the basis for meaningful communication between different (parts of the) systems (van Oosterom et al., 2006). On the data capture side, due to advancements in Geo-ICT, the traditional surveying concepts have taken on a new shape from discipline-oriented technologies such as geodesy, photogrammetry, surveying, and cartography into a methodology-oriented integrated discipline of geo-information science. These are based on the global positioning system, high-resolution remote sensing images and digital photography (Tuladhar, 2005a). A participatory geographic information system (PGIS) combined with remote sensing images is interesting for gathering good data with the involvement of land owners, tenants and other stakeholders (Ali et al., 2012).

Similarly GIS and database technologies are to be employed for *land data processing, updating, storing* and *dissemination*. The integration and sharing of geo-referenced data becomes more and more crucial, and there is an

increasing need for efficient and reliable data exchange (Steudler, 2006). In this context, OpenGIS and GML/XML are important tools for efficient and transparent data access in LA activities.

The important elements of a framework for improving the quality of LAS at management level would be the *system development approach, systems/data/process models, distributed databases, resource allocation*, *data standards*, s*ervice quality*, and spatial and non-spatial *data quality*.

2.6.2.3 Operational Level

The operational level includes the processes and techniques for *data capture, data maintenance, data access, data storage,* and *data dissemination*. These can be considered as the backbones for quality data products and services at the operational level. Workflow management and secured databases are basic components of functional LASs. Standard operating instructions for each step of workflow should be developed and implemented as a part of total quality framework. Important elements of such operational systems and workflows are those concerning steps required for the *workflows*, involvement of users in land transaction, amount of land transaction in a day, time required for registration and surveying, availability of services in case of fraud or conflicts, and timely availability of data.

2.6.3 Land Administration Quality Elements

It is clear from the above discussion that both the institutional and technical aspects of LAS must be considered in order to understand the present situation of the existing system and then suggest guidelines for further quality improvement. The contributing elements of LAS both on institutional and technical aspects to analysis the quality of the existing system as introduced in italic above, are listed as follows;

- tenure security,
- land policy,
- legal framework,
- land dispute resolution mechanism,
- availability of a strategic plan,
- coordination and data sharing,
- use of new technologies,
- data organisation (privacy and data protection),
- data management (capture, maintenance, access, storage),
- LA processes and workflows,
- LIS design,
- training and human resource development,
- users' needs analysis,
- access to information,
- organisations and financial issues,

- data pricing and resource allocation,
- data standards, and
- quality of services and products offered.

It is not possible to draw a picture fully separating these elements either on institutional or technical side due to their mix up contribution to both aspects. This picture is presented and discussed in Chapter 6 which is on the results obtained from the case studies in this research. However, all the elements either on institutional or technical side play an important role in analysing and evaluating the quality of LAS as per quality requirements.

2.7 Summary

Land administration is a tool for legal, administrative, and economic decision making as well as an aid for land-use planning, management, and development. The whole system of LA comprises an extensive range of systems and processes, some of which are closely linked with land policy, and others which fall nearer to management of land. LAS involves many issues relating to historical, cultural, social, technical and economic conditions of a society. The problems and issues can be categorised into two aspects i.e. the institutional and technical aspects. All these issues affect the quality of LAS directly or indirectly. It is necessary to analyse these issues and the present quality of existing LAS before going to do further development in the system. A holistic approach is required to analyse all the problems and quality issues of existing LAS as per users' needs and societal requirements. The analysis of these quality issues can further guide to outline the quality improvement guidelines within the broad the broad context of TQM framework.

Chapter 3

Case Study Methodology and Research Design

3.1 Introduction

The previous Chapter introduced a thorough review of literature on land administration systems and understanding their issues for assessing their quality. This Chapter builds the research design for investigating the problems and issues of an existing Land Administration System (LAS) using the literature review on case study methodology. In this regard, section 3.2 presents a comprehensive literature review on case study methodology to do an in-depth analysis of a system. The research design for conducting this research is presented in section 3.3. The research strategies including the literature review, case studies and research sample are described in section 3.4. At the end, section 3.5 sums up the summary of the Chapter.

3.2 Case Study Methodology

Research in the area of cadastre and land administration systems is increasingly using the information system's research methodologies (Barry, 1999; Bittner et al., 2000; Castanyer and Canet, 1990; Fourie and van Gysen, 1995; Steudler et al., 1997; Stubkjær, 2000; Tan 1999; Ting and Williamson, 1999; Williamson and Fourie, 1998; Williamson and Ting, 2001; Zevenbergen, 2002). Studies in this area have been carried out using different research methodologies such as soft system methodology, case study methodology, etc. Silva and Stubkjær (2002) outlined in their study that the methodologies used in cadastral research are largely those of the social sciences. That agrees with the notion that cadastre and LAS relate as much to people as it relates to land, and that cadastral and land administration systems are shaped by social, political and economic conditions, as well as by legal and technological factors. This research further prevails that a case study methodology is used as a research method in most of the cadastral research studies, which proves the effectiveness of case study methodology in cadastral research.

A case study is an examination of the phenomenon in which the primary purpose of the observer has been to carry out research rather than to implement a system or improve an operational environment (Onsrud et al., 1992). Case study is an ideal methodology when a holistic and in-depth investigation is needed (Feagin et al., 1991; Yin, 2003). The analysis of a land administration system also requires an in-depth investigation and holistic approach to consider all aspects of the existing system.

Case study research can be positivist, interpretive or critical. Positivist case study research can be descriptive, exploratory (theory building) or explanatory (theory testing) and each of those three approaches can be either single or multiple-case studies (Paré, 2001). An exploratory case study, whether based on single or multiple cases, is aimed at defining

questions, constructs, propositions or hypotheses to be the object of a subsequent empirical study (Yin, 2003). Exploratory case study can provide a basis for further investigation and analysis to include all the parameters of a system to be studied through an explanatory case study.

3.2.1 Exploratory Case Study

Exploratory research provides insights into and knowledge of an issue or situation drawing the definitive conclusions only with extreme caution. Exploratory research is a type of research conducted when the problem has not been clearly defined. It helps to determine the best research design, data collection method and selection of subjects (Wikipedia, 2010). Exploratory research studies are also termed as formulative research studies. The main purpose of such studies is that of formulating a problem for more precise investigation. The major emphasis in such studies is mostly on the discovery of ideas and insights (Kothari, 2004). These ideas and insights provide a line of action for further investigation.

According to Creswell (2007), "exploratory case study means that not much has been written about the topic or the population being studied, and the researcher seeks to listen to participants and build an understanding based on their ideas." Exploratory case studies involve original field interviews on a limited scale with interested parties and individuals with a view to secure greater insight into the practical aspects of the problem (Kothari, 2004). Exploratory research uses a less formal approach. It pursues several possibilities simultaneously and in that sense it is not quite certain of its objective. In other words, exploratory case study provides a background, to familiarise the general subject. It investigates the relationships among variables without knowing why they are studied.

Since an exploratory case study does not have a hypothesis to start with, the findings of such a study have to be interpreted on a post-factum basis. The findings of exploratory case study often result into hypotheses for experimental research (Kothari, 2004). Creswell (2007) argues that for an exploratory case study, the use of a qualitative approach is considered appropriate. However, the questions outlined through exploratory case study can be further explained through an explanatory case study approach to investigate a system in more detail.

3.2.2 Explanatory Case Study

Explanatory research attempts to clarify why and how there is a relationship between two aspects of a situation or phenomenon (Kumar, 2005). Stake (1995) defines explanatory case study research as a disciplined, qualitative form of inquiry into the single case, the aim of which was to understand and

emphasise the complexity and uniqueness of that case. Yin (2003) described the applications of explanatory case study as a research tool across the social science disciplines, in both the traditional fields such as psychology, sociology and anthropology as well as the practice-orientated fields of urban planning, public administration, public policy, management science, social work, and education.

Explanatory case studies are useful when conducting causal studies such as the performance evaluation of a system. Particularly in complex studies of organisations or communities, one might desire to employ multivariate cases to examine a plurality of influences (Berg, 2001). Fisher and Ziviani (2004) concluded that "An explanatory case study design provides a contemporary framework, which extends beyond the traditional descriptive and explorative case study avenues, enabling cases to be used with greater rigour in research as a tool to support or refute hypotheses and develop theoretical models." In this way the use of an explanatory case study enables the researcher to develop a theoretical framework and then justify it through analysing the qualitative and quantitative data being collected in the case study. This can further help to strengthen this theoretical framework after analysing the collected data.

3.2.3 Stages of a Case Study Methodology

Yin (2003) recommended four stages for a case study methodology:

i. Designing the case study
ii. Conducting the case study
iii. Analysing the case study evidence
iv. Writing the case report and research implications

i. Designing the case study

The design is the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions. In other words, a design is an action plan for getting from here to there, where 'here' may be defined as the initial set of questions to be answered, and 'there' is some set of conclusions (answers) about these questions. A number of major steps, including the collection and analysis of the relevant data may be found between 'here' and 'there' (Yin, 2003).

In an exploratory case study research, which merely leads to insights, the case study design must continue to remain flexible so that many different facets of a problem may be considered as and when they arise and come to the notice of the researcher. However, the research design in case of descriptive studies must be rigid to make enough provision for protection against bias for maximising reliability, with due concern for economical completion of the study (Kothari, 2004).

Five important components are pointed out by Yin (2003) to design a case study which include;

a) A study's questions
b) Its propositions, if any
c) Its unit(s) of analysis
d) The logic linking the data to the propositions
e) The criteria for interpreting the findings

Formulation of a study's questions is the first task of a researcher. Designing one or more related research questions, in at least broad terms, is as important in building theory from case studies as it is in hypothesis-testing research (Paré, 2001). The form of question - in terms of 'who', 'what', 'where', 'how', and 'why' - provides an important clue regarding the most relevant research strategy to be used (Yin, 2003).

The study's propositions are sometimes derived from the study's questions, and are helpful in focusing the study's goals. Each proposition directs the attention to something that should be examined within the scope of the study. Not all studies need to have propositions. An exploratory study, rather than having propositions, would have a stated purpose or criteria on which the success will be judged (Tellis, 1997; Yin, 2003).

The definition of the unit of analysis (and therefore of the case) is related to the way the initial research questions have been defined. The unit of analysis defines what the case is. It is the actual source of information which may be an individual, organisational document, and artefact (e.g. the capital flow between countries, an economic policy). Selection of the appropriate unit of analysis results from accurately specifying the primary research questions. If the questions do not lead to the favouring of one unit of analysis over another then the questions are probably either too vague or too numerous (Yin, 2003).

Linking the data to propositions and to the criteria for interpreting the findings are the components that have been the least well developed in case studies. These components represent the data analysis steps in case study research, and a research design should lay a solid foundation for this analysis (Yin, 2003).

ii. Conducting the case study

Conducting the case study is the most important and difficult stage. If not done well, the entire case study investigation can be endangered, and all of the earlier work - in defining the research questions and designing the case study - will have been for nothing. The preparation for doing a case study includes the prior skills of the investigator, the training and preparation for

the specific case study, the development of a case study protocol, and the conduct of a pilot case study (Yin, 2003). This is the next stage of case study methodology in which the data is collected in the field.

Case study research typically combines multiple data collection methods. Collecting different types of data by different methods from different sources produces a wider scope of coverage and may result in a fuller picture of the phenomena under study than would have been achieved otherwise (Bonoma, 1985). Data collection for case studies can rely on many sources of evidence. The six important sources of evidence are identified in case research which are documentation, archival records, interviews, direct observation, participant observation, and physical artefacts (Stake, 1995; Yin, 2003). Not all need to be used in every case study. No single source has a complete advantage over the others (Yin, 2003). However, the selection of these different sources depends upon the nature of the research questions and case study approach to be used.

iii. Analysing case study evidence

Data represent the fruit of a researcher's labour because they provide the information that will ultimately allow him to describe phenomena, predict events, identify and quantify differences between conditions, and establish the effectiveness of interventions. Because of their critical nature, data should be treated with the utmost respect and care. If a study has been conducted in a scientifically rigorous manner, the data will hold the clues necessary to answer the researchers' questions (Marczyk et al., 2005). Therefore, the data acquired in a case study through different sources of evidences should be analysed carefully to answer the research questions and ultimately fulfil the objectives of the research.

The analysis of case study evidence is one of the most difficult aspects of doing case studies. Data analysis consists of examining, categorising, tabulating, or otherwise recombining the evidence to address the initial propositions of a study. Case studies tend to produce large amounts of data that are not readily amenable to mechanical manipulation, analysis, and data reduction (Yin, 2003). The basic goal of qualitative data analysis is understanding, i.e. the search for coherence and order (Kaplan and Maxwell, 2005). This is the most difficult aspect of case study methodology. Different analytical techniques such as creating flowcharts, matrices, data displays, and tabulation can be used to facilitate data analysis (Miles and Huberman, 1984). After analysing case study evidence, a clear picture of a studied system can be drawn for further improvement.

iv. Writing the case report and research implications

The reporting aspect of a case study is perhaps most important from the user (reader) perspective. It is the contact point between the user and the researcher. A well-designed research work that is not well explained to the reader will cause the research report to fall into disuse (Paré, 2001). A case report deals with the results of a completed case study. It is generally produced in the written form and is called case report. It is a matter of communicating what was done, what occurred, and what the results mean in a concise, understandable, accurate and logical manner (Singh, 2006).

Reporting a case study means bringing its results and findings to closure. It is one of the most challenging aspects of doing case studies. The case study 'report' does not follow any stereo-typical form, such as a journal article. Different alternatives exist for structuring case study 'reports' as per case study requirements. These alternatives include linear-analytic structures, comparative structures, chronological structures etc. The sequence of linear-analytic structures involves the issue or problem being studied, a review of the relevant prior literature, the methods used, the findings from the data collected and analysed, and the conclusions and implications from the findings (Yin, 2003). It is the most important step of a case study methodology in which the final conclusions are drawn after analysing the case study evidence.

3.3 Research Design

The role of research design is to connect the research questions to data through appropriate tools and procedures. Thus, the research design sits between the two, showing how the research questions will be connected to the data, and the tools and procedures to use in answering them. Research design must follow from the questions and fit them with data. Research design is the basic plan for a piece of empirical research which includes main ideas such as strategy, sample, and tools and procedures to be used for collecting and analysing empirical data (Punch, 2007). The selection of methods for analysing and collecting data is very significant in the research design phase. In order to conduct this research, a holistic approach is adopted to consider all aspects of LAS and then develop a quality assessment framework for evaluating the quality of the system.

It is mentioned in Chapter 2 that the nature of issues relating to LASs is varying from system to system, depending upon the norms and values of a society in which the system is being practised. It is also clear from the discussion in Chapter 2 that the institutional and technical aspects of LAS cannot be separated because most of the elements and indicators for these two aspects are intermingled. A holistic approach is thus needed to get in-

depth understanding of the existing system before going to define a set of quality improvement guidelines for further quality improvement.
Therefore, a conceptual model so called 'LAS Prism Model' is adopted for carrying out this research as shown in Figure 3.1. This model helps to understand the relationship among all the components of this research i.e. the institutional aspect, technical aspect, elements and indicators, and quality improvement guidelines.

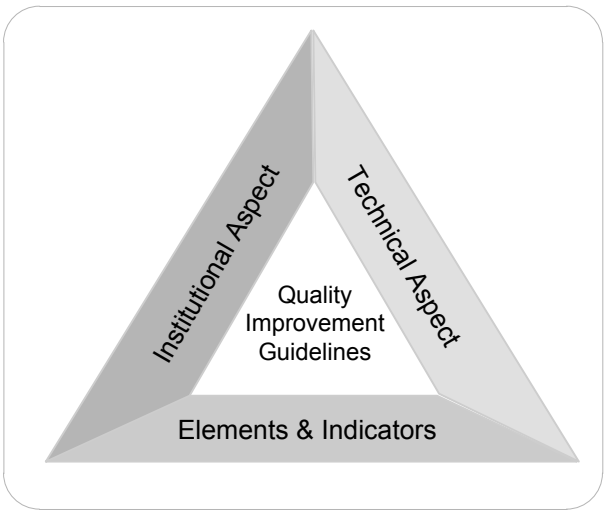

Figure 3.1: Top view of LAS prism

The 'LAS Prism Model' consists of a central area called the quality improvement guidelines for improving LAS, which is surrounded by the three sides:

- Institutional aspect
- Technical aspect
- Elements and indicators

The *Institutional aspect* side includes the elements contributing to the institutional side of LAS such as tenure security, land policy, legal framework, organisations and financial issues, land dispute resolution mechanism, training and human resource development, LA processes and workflows, data pricing and resource allocation, and data organisation (privacy and data protection) elements for handling property rights and data in LAS.

The *Technical aspect* side comprises all the elements contributing to the technical side of LAS such availability of a strategic plan, users' needs analysis, technology adoption, LIS design, data standards, and quality of services and products offered.

The *Elements and indicators* side contains all the elements and indicators of both the institutional and technical aspects of LAS. All these elements and indicators should be taken into consideration while evaluating the quality of LAS and then developing quality improvement guidelines.

It is important to note that all the four components of 'LAS Prism Model' i.e. LAS quality improvement guidelines, institutional aspect, technical aspect, and elements and indicators are interrelated. If one is developed to the neglect of another, this may be unfavourable to overall quality improvement of LAS.

3.4 Research Strategies

The research strategy outlines the tools and procedures to be used for collecting and analysing data to answer the research questions and ultimately provide a solution to research problem. There are two methods of data collection which are qualitative and quantitative, having their own strengths and weaknesses. The use of qualitative approach is considered appropriate in conducting exploratory case studies (Creswell, 2007), but the questions outlined in exploratory case studies can be further explained in detail using a quantitative approach through explanatory case study. One important technique to strengthen a research design is to use both the qualitative and quantitative data collection methods. This will help to avoid their respective disadvantages.

Based on the research questions proposed in this study as outlined in Chapter 1 and the theoretical background presented in Chapter 2, the research strategies of literature review and case study methodology (exploratory and explanatory) was adopted in this research.

3.4.1 Literature Review

The literature review serves two purposes. First, it convinces the reader that the researcher is familiar with the literature and competent to conduct investigations. Second, it convinces the reader that the proposed study fits into the existing body of knowledge and explains how the proposed study is needed to fill a gap in the literature. Therefore, the importance and value of a well-conducted and thorough literature review cannot be overstated in the context of planning a research study (VanderStoep and Johnston, 2009). In this way, a literature review helps the researcher in providing knowledge about the topic to strengthen his hold on the subject and helps him in collecting sufficient information to answer his research question. The research questions of this research are descriptive in nature up to some extent. According to Punch (2007), a descriptive study sets out to collect, organise, and summarise information about the matter being studied. It is concerned

with making complicated things understandable. A literature review approach was the best strategy to answer these research questions. In order to understand the whole structure of cadastral and land administration systems, a deep review of relevant literature has been carried out. This helped to outline the important aspects and elements that contribute to the quality evaluation of these systems. The literature review on quality and Total Quality Management (TQM) also helped to provide a detailed understanding of quality and TQM in terms of its research and application in land administration. Similarly, the literature review on case study methodology highlighted the use of this methodology in different scenarios and helped in designing this research. Hence, the literature review provided an initial answer to these research questions up to some extent that can be further explained through case study.

3.4.2 Case Studies

In order to do the holistic analysis of existing LAS in the study area, this research considered the systematic use of exploratory and explanatory case study approaches for collecting the qualitative as well as quantitative data, as shown in Figure 3.2.

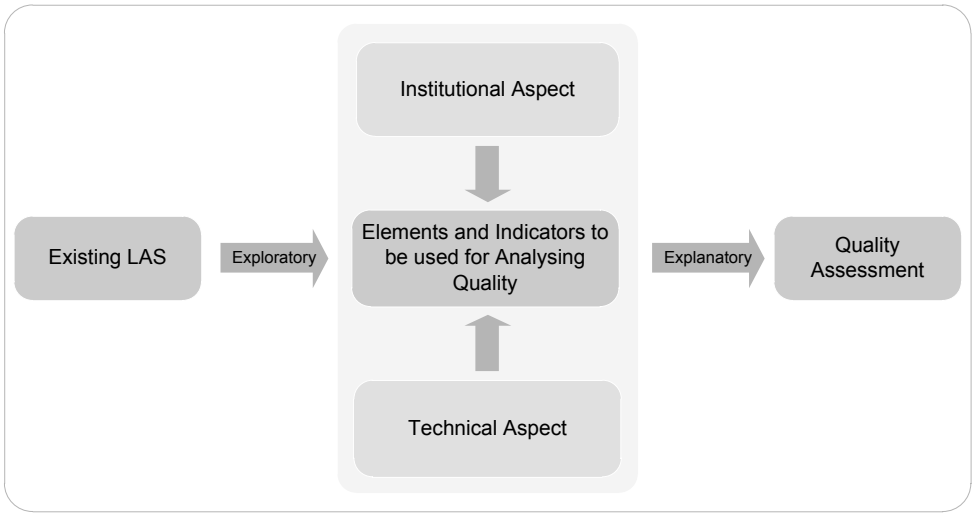

Figure 3.2: Methodological framework for using CSM

The exploratory case study approach was used to explore the problems of the existing LAS and then defining elements and indicators for further analysis. When the elements and quality indicators of the existing LAS were defined, an explanatory case study approach was then used to analyse the status of these quality indicators in more detail. At the end the LAS quality

improvement guidelines were developed as per problem situation and quality requirements after analysing the results obtained.
Two field visits were carried out in this research to collect the data in the field for analysing and exploring the existing situation of LAS in Pakistan. These two case study approaches took into account all the organisational levels (policy, management, operational) of land administration agency through interaction with all stakeholders to collect sufficient information for in-depth analysis of the existing system.

3.4.2.1 Exploratory Case Study Approach

An exploratory case study approach was used in the first field visit to collect data in the study areas to understand the issues of existing LAS by exploring the most elements of the system. This was carried out by adopting all the four stages of case study methodology as described in Section 3.2.3. To understand the existing situation of LAS in the study area, some critical questions were brought into consideration to make this case study research focused and more effective. These research questions were explored in this exploratory case study to develop a conceptual framework for LAS quality assessment in the study area as per country's environment. A set of questionnaires (Appendix 1) were designed to analyse the present situation of LAS in the study area. These questionnaires were distributed among different stakeholders including; lawyers, land owners, and land administration staff to get a clear picture of the present system for finding the indicators contributing to the quality assessment framework.

In this study, three sources were frequently used to provide data for this case study. These were (a) interviews, (b) analysis of archival documents, and (c) participant's observations. These sources were used during field visit to get a clear picture of the present LAS in the study area. Data was collected through interviews (structured and semi-structured) with all the stakeholders during office visits at Board of Revenue (BOR) headquarters and district offices to gain full understanding of the present situation of LAS in the country especially in the study area. To understand the actual practices carried out by the land administration staff in the field, some visits were also carried out in the field. Other information about the existing system were also collected through literature review and interviews with different stakeholders including; farmers, lawyers, and BOR personals in the study area.

During the data collection process, a variety of techniques including structured and semi-structured interviews with individuals and groups were applied to collect the data in the field. The qualitative data were collected through review of historical documents, official reports, and news articles. On the preliminary analysis of this qualitative data, appropriate questionnaires

were then designed during the field visit to get quantitative data. These questionnaires were designed on the basis of LAS issues to analyse the present situation of the system in study area. These questionnaires were distributed among the stakeholders to get deep understanding of the existing system.

This investigation aided in developing a conceptual quality assessment framework for assessing the quality of existing LAS. On the analysis of transcribed qualitative and quantitative data from this case study, the quality indicators for most important elements of the institutional and technical aspects of existing LAS were selected (Chapter 4).

3.4.2.2 Explanatory Case Study Approach

An explanatory case study approach is used in the second field visit to explain the quality situation of the existing LAS for the most important elements (explored in the first case study) as well as other contributing elements through their indicators and variables. The second field visit was also conducted in the study areas to collect both qualitative and quantitative data through visits, interviews, and questionnaire surveys. This included interviews with the stakeholders including; land owners, law professionals, real estate agencies, revenue courts, and banks officials, as well as visits to the Board of Revenue (BOR) offices in these districts to meet with BOR officials and staff.

To understand the present status of these indicators for existing LAS in the study area, some structured and semi-structured interviews were also conducted with land administration officials including; Senior Member Board of Revenue (SMBR), Member Board of Revenue (MBR), Sectary, Director Land Records (DLR), Tehsildars, Naib-Tehsildars, and Patwaries being working at different organisational levels. A number of detailed questionnaires (Appendix 3) were also distributed among the 235 stakeholders including BOR officials, law professionals, land owners, real estate agencies, revenue courts and banks officials, to understand the present situation of these quality indicators in detail.

Both qualitative and quantitative data was collected from the cross-section of different stakeholders in urban and rural areas of these districts. All the stakeholders were proportionally sampled in each district to achieve an appropriate distribution of data sample. The qualitative data was collected through interviews (structured and semi-structured) with stakeholders including; land administration agency officials, land owners, and law professionals while the quantitative data was collected through structured questionnaires distributed among all the stakeholders.

An in-depth analysis of collected data was carried out to understand the present status of these quality indicators in the study area (Chapters 4 and 5). The analysis of this data provided an in-depth understanding of these quality indicators in existing LAS. This investigation helped in assessing the quality situation of existing LAS in the study area (Chapter 6). This detailed assessment further led to formulate the necessary guidelines within the broad context of TQM concepts for improving the quality of the existing LAS (Chapter 7).

3.4.3 Research Sample

In Pakistan, land administration system is under the control of provincial/state governments where all land administration activities are carried out under their jurisdiction at provincial level. Since, all the land administration activities are carried out by each LA authority in their concerned province/state; therefore, a selection of one province can be used as a research sample for in-depth analysis of the system. The results can be then generalised to represent the situation of existing LAS in the whole country.

The land administration organisation called Board of Revenue (BOR), in the Khyber Pakhtunkhwa (formerly called NWFP) province of Pakistan was chosen in this research for exploring both the institutional and technical aspects of the existing LAS. Some facts about the Khyber Pakhtunkhwa (KPK) province are given in Table 3.1.

Table 3.1: Fact sheet about Khyber Pakhtunkhwa

Capital:	Peshawar
Area:	74,521 sq.km
Population:	20,215,000 (2008 Estimated)
Density:	270/km^2
Languages:	Pashto, Saraiki , Urdu and Hindko
Literacy Rate:	49.9%
Administrative Division:	7
Districts:	24
Tehsils:	90
Kanungo Circles:	115
Patwar Halqas:	1227
Mauzahjat:	4335
Revenue Appellate Courts:	5

Source: Wikipedia (2012) and BOR

The BOR offices at the Peshawar and Swabi districts of KPK province were visited during the field visits. The locations of the districts on the provincial

map are shown in Figure 3.2. Peshawar is the provincial capital city of KPK province, and BOR has its provincial headquarters in this city. Swabi is a district city and BOR has its office at district level in this city. Meetings and interviews were arranged with the BOR officials at the headquarters in Peshawar city. This included; Senior Member Board of Revenue (SMBR), Member Board of Revenue (MBR), and Director Land Records (DLR). The other BOR officials such as Tehsildar, Naib Tehsildar, and Patwari (Chapter 4) were also interviewed in these two districts to note down their concerns about the existing system.

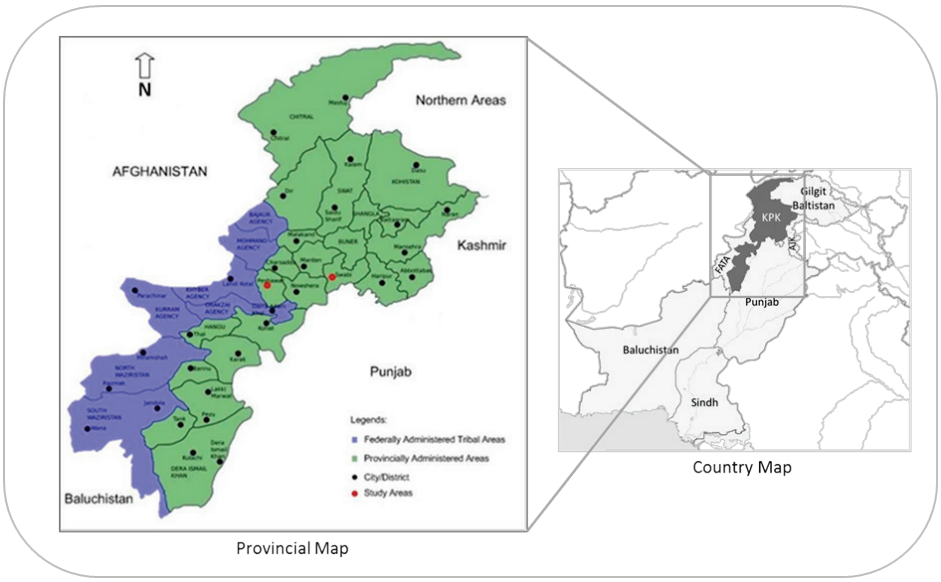

Figure 3.3: Location of fieldwork study areas

These two districts were selected because the researcher had a good contact with people who were working in BOR here in the province. KPK is also the home province of the researcher and it was quite easy to obtain sufficient information for this study using personal contacts. Furthermore, these two districts were selected to include the issues of urban as well as rural population in the data collection and information gathering process.

3.5 Summary

The area of cadastre and land administration system research is getting increasingly use of the information system's research methodologies such as soft system methodology, case study methodology, action research, grounded theory etc. but Case study methodology is used as a research method in most of the cadastral research studies. This proves the effectiveness of case study methodology in cadastral research. Case study is an ideal methodology when a holistic and in-depth investigation is required.

There are two methods of data collection which are qualitative and quantitative, having their own strengths and weaknesses. The use of a qualitative approach is considered appropriate in exploratory case study but the questions outlined in exploratory case study can be explained in detail using quantitative approach through explanatory case study. To avoid their respective disadvantages, one important way is to use both the qualitative and quantitative data collection methods in a study.

This research considers a systematic use of both an exploratory and an explanatory case study approach for collecting qualitative as well as quantitative data about the quality of the existing LAS in two study areas of the KPK province of Pakistan. The in-depth analysis of the data further contributed to investigate the present quality situation of LAS before going to define quality improvement guidelines.

Chapter 4

Exploratory Case Study in Pakistan

4.1 Introduction

The contributing elements for assessing the quality of LAS are outlined in Chapter 2 and the methodological approach for conducting this research is discussed in Chapter 3. However, a more precise investigation is required to identify the most important elements for developing LAS quality assessment framework. An exploratory case study approach would be the best option to formulate these elements more precisely as per problems/issues situation (Section 3.2.1). This Chapter identifies the most important elements for developing the LAS quality assessment framework by investigating the problems and issues of the existing LAS in Pakistan using exploratory case study approach. In this connection, section 4.2 highlights the historical background of land administration in Pakistan. The existing land ownership patterns in the country are discussed in section 4.3 to identify different ownership types in Pakistan. Section 4.4 explains the organisational structure of land administration agency in Pakistan, its organisational and legislative framework, land administration processes, and the maintenance of land records. The existing situation of institutional and technical aspects of LAS in Pakistan is presented in 4.5. The contributing elements for developing the quality assessment framework are outlined in section 4.6. The summary is given in section 4.7 at the end of the Chapter.

4.2 Historical Background of Land Administration in Pakistan

The evolution of land administration in Indo-Pak can be traced to the early Muslim Rule in the 13th and 14th centuries. *Sultan Ala Uddin Khilji* was the first Indian Ruler to have introduced a system of measurement of land and preparation of a record of owners and holders of usage rights. It was however during the reign of great Mughal King *Akbar* (1556-1605) that the system of measurement of land, mapping and preparation of land records was substantially improved, and an effective hierarchy for land administration was established. Akbar's Hindu Minister, *Todar Mal* has unanimously been given the credit for laying down the foundations of the present day LAS prevalent in India, Pakistan, Bangladesh, and some other south Asian countries (Gauhar, 2004).

The British - during their two hundred years of rule in India - improved, refined, and formalised the system of land administration. The necessary legislation pertaining to lands, rights and responsibilities of the owners vis-à-vis the State, relationship between land owners and tenants, rights and responsibilities of various tenants categories, system of adjudication of disputes on matters pertaining to land, and powers and duties of various revenue officers were clearly defined.

Agriculture was the main source of food production for the people as well as the principal source of income through land revenue for the government. Other than the considerations of income, the system also enabled the Ruler to have a tight grip on his subjects, through tiers of intermediaries appointed by him. Preparation of land records became necessary, to keep full record of the tax paying owners of land, and to periodically update the changes in ownership on account of inheritance or sale. It also became necessary for the authorities to know exact details of land belonging to each owner in a village i.e. how much total land each individual owned, in how many parcels, and in what locations in a village.

Hence a need was felt for preparation of a comprehensive record-of-rights at the time of 'Land Settlement'. Furthermore, the government also needed to know the type or quality of land for determining land productivity for assessment of land revenue. Subsequently, it also became necessary for the government to make periodic estimates of the production of various crops. Therefore, the crop inspection registers 'Khasra Gardawari' and crop estimation registers 'Jinswaras' were also introduced.

In a nut shell, the existing land administration system was refined, vastly improved, and formalised by the British during their two hundred years rule over India. 'Land Settlement' operations were undertaken in various parts of the country to survey the entire area of a district for undertaking measurement and mapping various parcels of land in every village. This was carried out to assess the total land revenue dues from a village and to allocate the total land amongst various land holders in a village.

4.3 Land Ownership Patterns in Pakistan

All the land in a province is owned either by government or by individual land owners. Land rights are further classified as under (Masud, 2009);

4.3.1 Government Land

The terms to denote government land are 'State Land' or 'Khalsa Sarkar', where 'Sarkar' means 'government' and 'Khalsa' means 'pure' i.e. free or un-encumbered. 'Khalsa' was the land which was pure or free as distinguished from the land which had been assigned or granted to individuals by the Ruler (Moreland, 1998). 'Khalsa Land' is further falling into the following broad categories i.e. (a) 'Khalsa Land' under the management and control of the land revenue department, and (b) 'Khalsa Land' under the management and control of the forest department.

The village community has a time honoured rights of grazing their cattle and taking fallen tree branches in the 'Khalsa Land'. These rights are enjoyed by

the residents of villages located adjacent to the 'Khalsa Land' at all times except when part of the 'Khalsa Land' under the management of the forest department is officially closed for regeneration purposes (Chaudhary, 2005). These types of government lands are still in existence as found during the field visits and studying the archival documents.

The British Ruler/government from time-to-time granted land out of this 'Khalsa Land' to the village communities, to be used as 'Village Common Land'. 'Non-Khalsa State Land' falls into three categories i.e. (a) Assigned to individuals who could normally be resumed by the ruler, (b) Granted to individuals who could not be normally resumed, and (c) Land cultivated directly under the State. The granted land was more like a gift under the 'Muslim Law' and it cannot be revoked after possession has been given to the beneficiary.

4.3.2 Private Land

Farm land is almost entirely owned privately, except for the illegally encroached and cultivated 'State Land'. Farm land may be self-cultivated or cultivated through tenants who pay rent to the owner either in cash or in-kind. If the land is cultivated through servants or seasonal labour, it remains in the category of self-cultivated. Owners have full rights to sell, gift, exchange or dispose-off their 'Private Land' (Chaudhary, 2005). However, the law of pre-emption imposes certain restrictions on the sale of land to people residing outside the village or not owning adjacent lands in the village. The law also gives equal rights of sale and purchase of land to women owners. The 'Islamic Law of Inheritance' is applicable to all Muslims, and on the death of an owner the proprietorship of his land is transferred (mutated) in the names of his legal heirs (sons, daughters, parents, wives etc.) in accordance with the shares fixed by the law. This law is strictly followed in the existing system as observed from the documents collected in the field. Furthermore, the government is empowered to compulsorily acquire 'Private Land' under the 'Land Acquisition Act' for public purposes. In this case, the owners are entitled to be compensated in cash according to the prevalent market prices as determined by the 'Collector Land Acquisition'. The affected owners also have the right of two appeals in the court (Douie and Gorrie, 1980).

4.3.3 Village Common Land

This is also called 'Shameelat' or 'Shameelat Deh' of a village, which is the land collectively owned by all the land owners of that village. 'Shameelat' land is a grant given by the Ruler/government, out of the 'State Land' to the owners of a village, to be used for their common purposes and this grant is usually made at the time of 'Land Settlement'. Such land in a village is jointly owned and possessed by the land owners of that village and is used for the

common purposes of the village community. These common purposes are; grazing grounds, firewood collection, graveyards, community buildings (mosques, schools, dispensaries etc.), village ponds and roads, bridal paths, and passages for cattle movement (Chaudhary, 2005). All persons recorded as owners of land in a village are also joint owners of 'Shameelat' of that village and their shares being proportionate to the size of their holding vis-à-vis total farm land in the village. This principle is described in the revenue records as 'Hasab Rasad Khewat' or 'in proportion to his ownership in the village' (Douie and Gorrie, 1980). No land owner can sell his share of 'Shameelat', unless he also sells whole or part of his farm land. No co-owner may encroach on 'Shameelat' and any other co-sharer can move the authorities to get the encroacher immediately ejected.

4.4 Land Administration System in Pakistan

The land management activities in Pakistan are carried out by a land administration agency called Board of Revenue (BOR) at province/state level. The province/state is divided into divisions. The 'Division' is then divided into districts and a 'District' is sub-divided into tehsils. For the purposes of land revenue administration, a 'Tehsil' is further divided into 'Kanungo Circles', and a 'Kanungo Circle' into 'Patwar Circles' which comprise of a number of revenue estates (Moza) or 'Villages'. The land administration is decentralised down to the village level. The provincial governments are responsible for land matters and local land management through their revenue departments and district administration as shown in Figure 4.1.

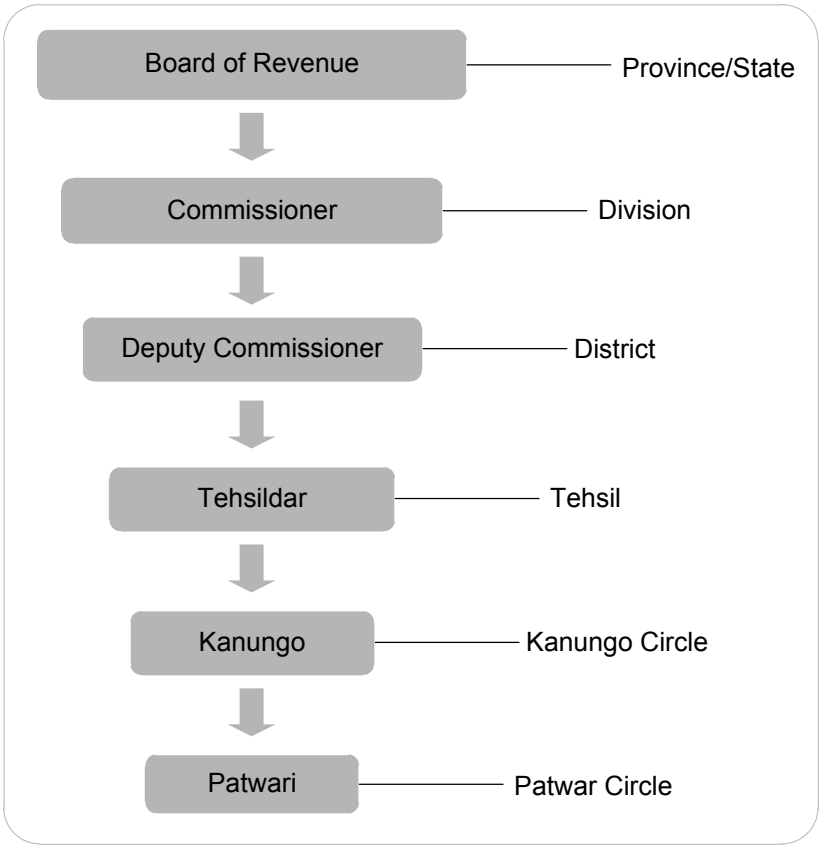

Figure 4.1: Administrative hierarchy of land administration in Pakistan

In the context of land administration, the Board of Revenue (BOR) is at the top. BOR is the only organisation at provincial level which is mandated with all matters concerning the administration of land, collection of land revenue, preparation of land records, and other land matters. It is also the highest court of appeal and revision in revenue cases within the province. Revenue information is concentrated at village level with the lowest level of revenue official, the 'Patwari', for maintaining collective and detailed information on land in the 'Record-of-Rights'.

4.4.1 Organisational Framework

Organisational structure of BOR at provincial level in Khyber Pakhtunkhwa province (formerly called NWFP) of Pakistan is shown in Figure 4.2. The BOR has three highest Members, namely the Chief Land Commissioner (Senior Member Board of Revenue-SMBR), Chief Settlement Commissioner (Member-I) and the Provincial Relief Commissioner (Member-II) under the provincial revenue minister (Govt. of KPK, 2007).

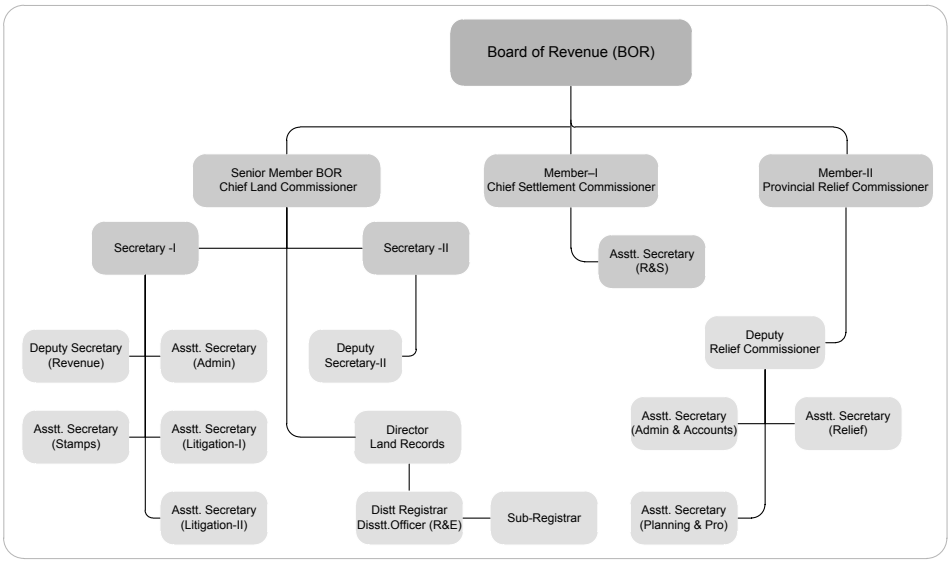

Figure 4.2: Organisational structure of BOR at Provincial level

The *Chief Land Commissioner* is responsible for recovery of government dues such as agricultural income tax, land revenue, water rate, Usher (religious tax), mutation fees, stamp duty, registration fee, copying fee, and arrears relating to the Agricultural Development Bank of Pakistan (ADBP) and co-operative societies. He also frames the laws/rules/policies relating to revenue matters and provides guidelines for maintenance of record-of-rights, periodical record for use of right-holders and revenue department. He supervises revenue work of Commissioners, Deputy Commissioners, Assistant Commissioners and other officers and courts in the province. He also notifies new administrative units such as 'Divisions', 'Districts', 'Tehsils', 'Kanungo Circles', and 'Patwar Circles' (Govt. of KPK, 2007). Finally, he deals with all service matters relating to revenue staff.

The *Chief Settlement Commissioner* is responsible for preparation and execution of policies for disposal of state land for different purposes such as agriculture purpose in rural areas, residential purpose in rural/urban areas, commercial, industrial, charitable and religious purposes (Govt. of KPK, 2007). He is also the appellate/revisional authority for revenue cases.

The *Provincial Relief Commissioner* is appointed under the 'Prevention and Relief Act 1958'. He has the responsibility for laying down policies and plans for disaster management in the province (Govt. of KPK, 2007). He provides the maintenance and restoration of law and order in areas affected by calamities for extending relief to the affected population.

The *Director Land Records* (DLR) - under the direct supervision of the *Chief Land Commissioner* - is in charge of all districts in the province. In each district, the staff under the DLR include; the 'Chief Settlement Officer', 'Settlement Officer', 'Tehsildar', 'Naib-Tehsildar', 'Kanungo' and 'Patwari'. The DLR supervises both the 'Patwari' and 'Kanungo' agents and inspects the 'Record-of-Rights' and statistical record compiled through its means (Govt. of KPK, 2007). He makes the posting of settlement 'Kanungos' and 'Mappers'. He checks the record of crop, price/weather reports, rain gauges, cattle census, crop experiments, and return of wages and of agricultural statistics carried out by the district officers. He has control of certain charges such as mutation fees, copying and inspection fees of 'Patwaris' record and all expenditures related to any work carried out by 'Kanungo' and 'Patwari'.

At 'Tehsil' level, a *Tehsildar* is the name given to an officer in charge of a 'Tehsil'. *Tehsildar* is primarily a revenue officer and is responsible for the collection of land revenue and other dues payable to the government. He is constantly on tour to keep in touch with sub-ordinate revenue officials to observe the seasonal conditions and condition of crops to take note of the difficulties of the cultivators. He draws up reports and recommends remission or suspension of revenue, keeps the land records up-to-date, sits in court to settle disputes regarding tenancy, arrears of rent, ejectment of tenants, and makes entries in account books. The duties of the *Tehsildar* and *Naib-Tehsildar* do not substantially differ except that a *Tehsildar* is vested with the powers of an Assistant Collector 1st grade, where as a *Naib-Tehsildar* is vested with the powers of an Assistant Collector 2nd grade (Chaudhary, 2005).

Kanungo supervises the work of 'Patwaris'. He is the only link between the tehsil officer and *Patwari*. Each *Tehsildar* is assisted by an *Office Kanungo* whose main duty is to consolidate the information on different matters. *Patwari* is the lowest functionary of the revenue department. He maintains and updates the record pertaining to his own 'Patwar Circle' (revenue estate). A *Patwari* carries out field survey/crop inspection twice a year in the months of March (Rabi) and October (Kharif).

4.4.2 Legislative Framework

On one hand, the BOR is responsible for keeping an up-to-date record of the details of field numbers and on the other hand, it has Revenue Courts (Figure 4.3) to adjudicate upon disputes arising out of it.

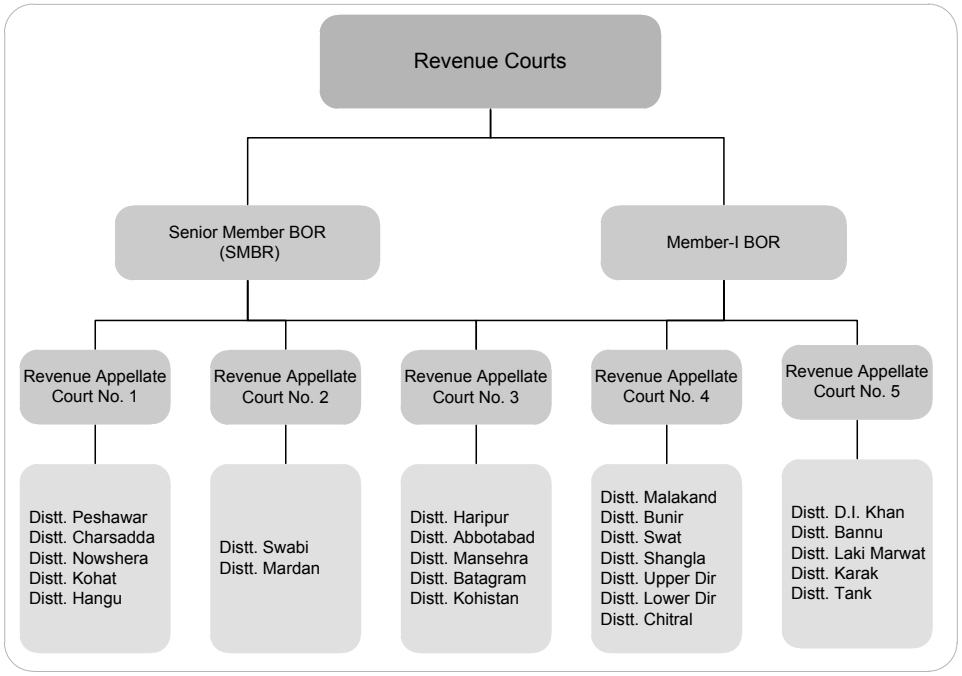

Figure 4.3: Structure of Revenue Courts in Khyber Pakhtunkhwa

Basic legislation on land laws was promulgated throughout British period, which were mostly based on the same principles and concepts as were developed during the Mughal Period (Section 4.2) but varying in detail from province to province. There are several 'Laws' and 'Acts' that deal with land, the relationship between landlord and tenants, mortgagor and mortgagee, assessment and collection of land tax, agriculture income tax, local rates, and land acquisition for public purposes. These 'Laws' and 'Acts' are administered and maintained by BOR in each province. The main acts administered by BOR are as follows (Qazi, 2005);

i. Land Revenue Act 1967

This 'Act' was passed during the one-unit (East and West Pakistan) time but has been adopted and amended by all of the provinces together with necessary changes. It deals with the issues of 'Record-of-Rights' and land revenue. The 'Land Revenue Act' was revised in 1967 having XV Chapters and 184 Sections.

ii. NWFP Tenancy Act 1950

All the provinces have adopted this 'Act'. It deals with the relationship of landlord and tenants regarding produce of land and ejection of tenants due to non-payment of rent or produce by the tenant to the landlords. It is the only legislation which deals with various aspects of tenancy rights in Pakistan.

iii. Pre-Emption Act 1987

This law has become operative by revenue department after promulgation of para-25 of the 'Martial Law Regulation' (MLR-115) in 1972 which has given the first right of pre-emption to a tenant. Normal cases of pre-emption of land are dealt by the civil courts. The revenue courts entertain only those cases in which a tenant brings a pre-emption suit. Pre-emption laws give certain preferential rights to neighbours in matters of sale of land.

iv. Land Acquisition Act 1894

This 'Act' deals with the acquisition of land needed for public purposes and determining the amount of compensation to be paid on account of such acquisition. Whenever any land is acquired by the government for any public purpose or by a company, the proceedings are undertaken by the 'District Collector' under the jurisdiction of this 'Act'.

v. Registration Act 1908

This 'Act' deals with the registration of various documents (including those relating to land) with registration authorities. Normally revenue officers (as detailed in 'Land Revenue Act 1967') are declared as registration authorities. Under this 'Act', various documents to be executed and registered in the office of sub-registrar like sale deeds, mortgage deeds, lease deeds, power of attorney, partnership deeds, and other deeds. These deeds are entered in the relevant registers after the documents are properly stamped, checked, and duly witnessed.

vi. Land Consolidation Act 1960

In order to achieve better agriculture yields, the government has passed a law known as 'Land Consolidation Act 1960'. The purpose of this 'Act' is that with the consent of land owners, the exchange of land takes place in a consolidated shape.

vii. Transfer of Property Act 1982

This 'Act' deals with the transfer, sales and mortgages charges, lease exchanges, and actionable claims in respect of property. This is a very important piece of legislation in terms of disputes.

viii. Land Reforms Act 1982

Land reforms laws have been introduced at various stages including the 'MLR-64' on 7.2.1959, 'MLR-115' on 12.3.1972 and 'Land Reforms Act: II' on 5.1.1977. The main aim of these land reforms was to determine the individual holdings to a manageable size for improving the destiny of peasantry life. This 'Act' gives the rights to tenant-in-possession of a certain property.

Several rules are available in order to implement these 'Acts', which are;
a) Land Revenue Rules
b) Settlement Manual
c) Land Records Manual
d) Land Administration Manual

4.4.3 Land Administration Processes

The BOR are carrying different Land Administration (LA) processes in the province at local level (Patwar Circle). Complete details about all the LA processes are written in the Land Administration Manual (1980) and Land Record Manual (2005). These manuals are regularly published as per amendments/changes suggested by the bills passed out in the provincial assembly. The most common LA processes as found in the study area during the filed visits are discussed below;

i. Records-of-Rights Process

'Records-of-Rights' are constructed for every 'Deh' (a 'Revenue Estate' or a 'Revenue Village') during 'Settlement Operations'. A 'Revenue Village' or a 'Revenue Estate' or a 'Moza' or a 'Deh' or a 'Mahaal' is a habitation for which a separate 'Record-of-Rights' is being prepared. In flat countryside of the plains, the dwellings are constructed close to each other, in one central place, surrounded by farm land and 'Shameelat' on all sides. In mountainous and hilly areas, the dwellings are not constructed at one location but are dispersed all over the watershed. Usually a couple or more houses are constructed in one place, next to each other, in the midst of (or) in close proximity to their land holdings.

The area and population of a 'Revenue Village' varies greatly. The population of a 'Revenue Village' varies from about 50 households to 5000 households (population about 35000) and the area varies between 50 and 15000 acres. Usually the inhabitants of a 'Revenue Village' are the descendants of a common ancestor. However, the population of a village may comprise of more than one tribes or castes in some cases. A single 'Revenue Village' may comprise of one village or several sub-villages. Historically, residents of a village were governed on the principle of 'Collective Responsibility'.

ii. Gardawari (Binomial Inspection) Process

Before every harvest season, the 'Patwari' makes a survey in his 'Patwar Circle' called 'Gardawari'. Its purpose is to collect information about the matured cropped area under different crops sown by farmers in a 'Patwar Circle'. 'Gardawari' provides information about the date on which the inspection of each harvest should begin, the kind of soil (Qism Zamin), type of the crop (Jins) sown, and the area sown (Raqba Kasht) with reference to 'Khasra Number' (parcel identification number).

iii. Fard Malkiyat (Ownership Document) Process

The document showing ownership of land is called the 'Fard Malkiyat'. It is prepared by the concerned 'Patwari' or district officer on payment of fee as prescribed in schedule of 'copies of extract charges'. It is created from 'Haqdaran Zamin' (Jamabandi) register and the incorporations made through any mutation (Intiqal).

iv. Fard Badar (Error Correction) Process

Whenever a clerical mistake is detected in current 'Jamabandi' after it has been finally attested and filed, whether that mistake was originally made in that or any previous 'Jamabandi', the 'Patwari' makes the necessary entries about it in the columns of the 'Fard Badar'. This process is used for the purpose of avoiding the entry of a further mutation of inheritance in cases where in entering the original mutation some of the holdings of the deceased were unknowingly omitted.

v. Register Haqdaran Zamin (Land Registration) Process

The 'Register Haqdaran Zamin', previously known as the 'Jamabandi Register', is one of the most important documents of 'Record-of-Rights' as well as the periodic record in rural areas. It primarily shows the right holders of land including details on owner, cultivator, land, soil, and rent. It is created every four years for incorporating recent mutations (Intiqalat) that have taken place since the last document was created from the previous 'Haqdaran Zamin' (land owners) register.

vi. Mutation Process

A mutation is a change in the agricultural land records. There are various types of mutations with different transaction characteristics. A mutation process is a process with many checks and balances. In this process, an oral report or application for mutation in writing is made to 'Patwari'. The key persons involved in a mutation process are 'Patwari', 'Gardawar'/ 'Kanungo', and 'Teshildar' or 'Naib-Tehsildar' (Revenue Officer). Changes in the recorded rights and interest are managed at 'Patwar Level'. There are various types of mutations such as sale, gift, and devolution of land, mortgaging, lease, and subdivision.

4.4.4 Maintenance of Land Records

The land record data is maintained at tehsil offices as observed in the field visits. These record sets are developed for each 'Patwar Circle' at the time of 'Settlement'. For maintenance of these records, a 'Patwari' has to maintain the following maps and registers;

i. Field Map

A cadastral map called 'Musavi' is shown in Figure 4.4. It shows all the fields, duly measured and numbered in a village. This is basically a surveyed paper map at different scales depending upon the village area, normally at a scale of 1″=40 Karam (about 1:2500 scale or so according to parcel sizes in the village). The yard-stick of measuring a field is called 'Karam' which is 5.5 feet in length. Land parcels are labelled with their 'Khasra Number' (parcel identification number) and dimension of each side. Each 'Khasra Number' is owned by an owner. 'Musavi' is developed at the time of settlement and no changes can be made in this record set till the next settlement. Subdivision lines break up an irregular land parcel in different regular geometrical shapes. These subdivision lines are generally represented with dotted line and are defined for area calculation on the map.

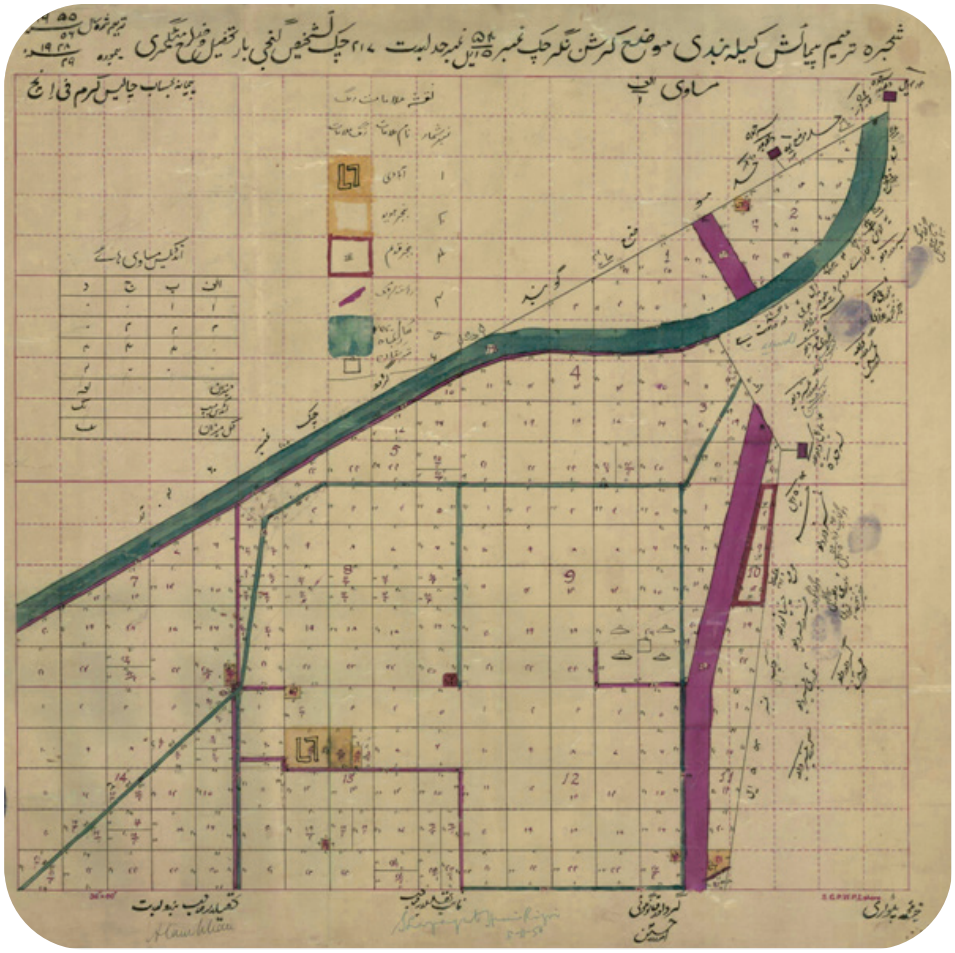

Figure 4.4: A sample cadastral map (Musavi)

ii. Field Book

This book contains the details of measurement of each field such as its length, breadth, diagonal detail, and total area worked out.

iii. Shajra Kistwar

All the 'Musavies' of a village are drawn up conjointly on a cloth (lattha) for day-to-day use by a 'Patwari' which is called 'Shajra Kistwar'.

iv. Register Haqdaran Zamin (Jamabandi)

This is the most important register containing necessary particulars about ownership, tenancy, 'Khasra Number', classification, source of irrigation, land revenue, and rent (lagan).

v. Register of Mutations

It contains particulars of all transactions which are entered by a 'Patwari' and decided by a revenue officer.

vi. Register Khasra Gardawari

This register contains the details of the inspection of crop grown in each field in each harvest and all changes of ownership and tenancy. It is a track record of the possession of a particular patch of land which helps to resolve issues relating to ownership of that patch.

vii. Lal Kitab (Village Note Book)

This book has details about the statistics of a village lands e.g. total area, area sown, assessment of land revenue, number of entered and attested mutations, notes about changes in cultivation, and ownership for the last four years. It also shows the population of a village and the approximate number of livestock. It is the statistical book of a village.

viii. Fard Bach

It contains the details of the demand of land revenue and taxes thereon recoverable from each land owner in a village.

ix. Roznamcha Waqiati

All happenings about the land affairs are recorded in this diary. For instance, hailstorm, severe rains, the reports of all transactions of land, encroachments on State land, tours conducted by various revenue officers, and all other matters connected with land are entered in it.

In addition to these registers, there are other forms of registers which are maintained by 'Patwari' (Appendix 1) but are not of much importance. All these land records are kept under the custody of different BOR officials at distinct levels.

4.5 Analysis of Institutional and Technical Aspects of LAS

Although the LAS in Pakistan is time tested and has remained functional for more than two hundred years, presently there are several concerns due to changes in societal needs, particularly users' views (Gauhar, 2004; Qazi, 2006; Raza et al., 2005; World Bank, 2005). Since this study was exploratory in nature, only limited field questionnaires were used at this stage. In addition to collecting the archival documents and studies on the present organisational mandates, supporting laws, and processes and records (as discussed in section 4.4), field visits were conducted to get in-depth understanding of existing issues. During this fieldwork study, many issues were raised verbally and a number of responses were collected in writing. Major findings are organised below under the institutional and technical aspects of LAS.

4.5.1 Institutional Aspect Analysis

The responses from different stakeholders including 13 land administration agency officials, 15 farmers, and 15 law professionals regarding the existing institutional aspect were received through a questionnaire (Appendix 2a) by asking critical questions. Nine open interviews from the 6 officers of BOR at headquarters and 3 at district offices showed that the present LAS is fiscal in nature which is mainly used for land tax collection to generate revenue. The land records show information on who the tax payer is?, how much the tax value is?, how much the land (cost and size) is?, and where the location is? It does not clearly define the nature of rights in land for land owners. This means that the legal security on land rights is not fully guaranteed in the existing system.

Responses from the stakeholders including 15 law professionals and land owners showed that they were not satisfied with the performance of the present LAS. As 93% of the stakeholders indicated that there is a room for corruption and unofficial changes in land records due to dependence on 'Patwaris' for land transaction and other processes which affect the efficiency and effectiveness of the present LAS. 87% of the stakeholders were not satisfied with the procedures and processes in the present LAS such as mutation. These results were in agreement with the literature and reports accessed in this fieldwork (Qazi, 2005,2006; World Bank, 2005).

All the stakeholders agreed that inaccuracy and the complex nature of present LAS exacerbates land-related disputes. This also creates doubts about the security of tenure in land owners' minds due to which they do not use their property for any mortgage and loans from banks. Moreover, the land transactions are relatively expensive and disputes about the correctness

of land rights are caused among others by an inefficient and dispersed land record system (Qazi, 2005). The 46% of 13 BOR officials including 'Patwaris' and 'Naib-Tehsildars' pointed out that the government provide insufficient funding for stationary in the land offices. The fund is provided according to the old rules and regulations following from the British period. Therefore, they are seeking to get the desired money from stakeholders through different means affecting their performance.

87% of the stakeholders including 15 law professionals and land owners accepted that the official procedures in existing LAS are so complicated that this always leads to delays in court decisions, which affect the land market directly or indirectly both at local and national level. 87% of the stakeholders also admitted that lack of credible information and insufficient cooperation of land administration officials during land disputes generate considerable delays in resolving pending cases in courts. Mumtaz and Nosherwani (2006) also mentioned that the legal procedures in land cases are complex and the duration of a land case may go beyond the litigant's lifetime. 62% of the stakeholders were not in agreement with court procedures in the present LAS.

Although a 'Patwari' is obligated to appear in court in all land-related inquiries as responded by 92% of the 13 BOR officials during the fieldwork study but 87% of the stakeholders pointed out that land administration officials do not provide in-time cooperation during their land related disputes. However, as pointed out by 92% of the land administration officials, the workload on a 'Patwari' makes it impossible for him to perform his duties in a better way. 61% of stakeholders also said that BOR does not have sufficient infrastructure and manpower to deliver all their services in an efficient manner.

Moreover, land record maintenance takes place through an intricate system which involves several levels of administration as mentioned by 46% of the land administration officials. For example, all the changes of ownership, use or other dealing with land is recorded by a 'Patwari' but the records have to be checked and forwarded by the 'Kanungo' and approved by 'Tehsildar' or 'Naib-Tehsildar'. This makes the process time consuming and always leads to delays at the users' end.

It is clear from the above analysis that the most prevailing issues in the existing LAS on institutional side are; tenure security, land dispute resolution, land administration processes, and financing and data costs.

4.5.2 Technical Aspect Analysis

The responses of the stakeholders including 13 land administration agency officials, 15 farmers, and 15 law professionals regarding the present technical aspect were received through a set of questionnaire by asking critical questions (Appendix 2b). It is evident from the responses of the land administration officials that the present land records are in paper format. These land records are quite out-dated and there is a lack of updated geographical information. 92% of the BOR respondents said that there is no referencing (projection) information available on the existing cadastral map which creates a gap between the map and the register to present the reality on the ground as pointed out by 67% of the stakeholders.

Information about the 'Record-of-Rights' is originally established on the basis of a detailed field survey and includes a map of each village which shows the position and boundary of each land parcel. All these graphical information is intended to be updated every 25-35 years which is not in accordance with rapid changes in developmental works in a society. The agricultural land in many areas is still recorded in the name of a person who passed away long ago and whose legal successors are the owners but whose names are not entered in the land records (Khalid, 2002). It is accepted by most of the BOR officials that 'Record-of-Rights' are updated once every four years which affects the efficiency of LAS and slows down the land transaction business in the land market. In fact, land records should be maintained for land transactions on regular basis.

67% of the stakeholders responded that delays in most of land disputes were due to unavailability of sufficient knowledge and information about the land. Moreover, 87% of the stakeholders argued that a 'Patwari' does not provide correct and timely information in all land related disputes. 93% of the stakeholders said that land related disputes can be solved easily in-time if the information on land is provided correctly by BOR officials in a timely fashion.

Most of the stakeholders responded that they are not aware of the land related procedures and fees defined by BOR. 92% of BOR officials agreed that no effort is carried out by BOR to publish any printed information for public awareness about land related procedures, basic steps, and other rules for land transactions. That is why, the public was not aware of who has to be approached for an appeal in land disputes or who is responsible for what at different levels of land administration agency.

The SMBR said that less education and training facilities are presently available for the training of BOR staff and officials. He said that there is only one training school at provincial level to train their staff. He also said that the existing educational and training programs do not have sufficient capacity.

According to 93% of the stakeholders, the land registers and cadastral maps are not in good condition which restricts their use for producing an efficient land market. The temporal archives (land record rooms) are only stored at district level as mentioned by all of the BOR officials. There were still occasions when the entire record was wiped out due to fire or flood. During the field visit, it was observed that the methods used for land surveying were quite old and time consuming even impossible sometimes when there were harsh weather conditions. Due to this reason, no land records were prepared by BOR in some remote hilly areas and no settlement surveys have been carried out in those areas for the last sixty years.

Moreover, 100% of the stakeholders and 92% of the BOR officials agreed that the introduction of new technologies in the present system will result in an improvement in its quality and performance.

It is clear from the above analysis that the most important issues in the exiting LAS on technical side are; co-ordination & data sharing, data organisation, technology adaption, workflows for LA processes, and quality standards.

4.6 Important Elements of the Quality Assessment Framework

From this exploratory case study, in case of Pakistan the following elements are seen as critical for developing the quality assessment framework, although national particularities might lead to adding one or more elements when applying it in another country.

i. Tenure Security

Tenure security is assured by a multitude of factors, not only by the revenue record. In addition to the official documents, the social capital, community relations and one's position of power in the local context add to the authenticity of one's claim to land, leading to tenure security (Qazi, 2005). The present LAS is found fiscal in nature which is developed only for tax collection purpose. It does not clearly define the nature and extents of rights in land for the land owners and tenants. In present LAS, tenure security is based on interaction of various social, administrative, and legal factors. This has affected the quality of LAS for market demands as per users' needs and country's economy.

ii. Land Dispute Resolution

The main types of land disputes are; conflicts between various persons with a joint ownership of the same piece of land (because of inheritance), conflicts between smallholders on determining the boundaries of fields, efforts to

encroach upon another's or communal or government land (often with the involvement of revenue officials), and rarely conflicts between land owners and tenants on the division of earnings from land or when the landowners want to evict the tenants. In all these conflicts a reference always needs to be made to the land records (Qazi, 2005). The land dispute resolution mechanism is very complicated and it takes very long time to resolve these land disputes. These mechanisms also bring high costs and are time consuming (many stakeholders highlighted this during the interviews). Moreover, an analysis of legal and policy framework documents shows that land related matters are governed under several pieces of legislation and two parallel systems of adjudication under revenue courts and civil courts (Qazi, 2005). Although an independent judiciary exists in the country but still the land related disputes (such as boundary, land revenue, partition) are adjudicated by revenue courts while other matters relating to land title and ownership are adjudicated upon by civil courts.

iii. Data Organisation

Land record data include maps, field sketches, and registers that need to be kept up-to-date for getting land information. All these land records are created and maintained at local level (village level) in the present system where most of the work is carried out by a 'Patwari' and all the land records are in his custody. The expansion of Patwari's jurisdiction due to increasing sub-division of holdings and population growth make the land records unmanageable. There are areas where no proper land records are prepared due to the absence of the consolidation, land settlement operations, and absence of new technologies. Moreover, improper maintenance of land record and interpolation (illegal changes) in the record-of-rights lead to a lot of difficulties and land disputes. The land record data in the present LAS needs to be organised in a better way. Furthermore, there should be easy ways for sorting, accessing, and disseminating land data at local level for the users to support efficient land market.

iv. Technology Adaption

The present LAS is quite old and new technologies should be adapted as per new possibilities and demands at users' end. The adaption of latest technology plays a key role in improving the efficiency of LAS. For example, recent advances in the space based data capturing techniques (imaging) have revolutionised the field of cartography and mapping. In this way, new photogrammetric (or remote sensing) techniques using the aerial photographs or high resolution satellite images can be used as an alternative to the traditional land surveying approach for spatial data acquisition. In this case most measurements can be done in the office (Tuladhar, 2005b). The technology adaption will make the LAS processes quicker to provide fast services at users' end to fulfil land market needs for enhanced economy

generation and users' satisfaction. The use of historical satellite images can also help in resolving many disputes such as parcel boundary dispute etc. While adapting the latest technologies in LAS, it is necessary to understand the users' needs and requirements so that the cost of technology adaption must be reduced as much as possible.

v. Land Administration Processes

The complex system of maintaining land records, cumbersome business processes, hard-to-decipher language of land records, and general apathy towards the rights of citizens have added to the mystification of land records. This creates fear in the minds of people about the potential manipulation of these land records (Qazi, 2005). The land administration processes in present LAS are too old and time consuming (World Bank, 2006). For example, a chain of six steps is followed in mutation process which requires 4-10 weeks for processing a single mutation. These LA processes need to be improved to provide quick services to users for fulfilling the demands of a society and land market.

vi. Workflows for Land Administration Processes

Workflow management and secured databases are the basic components of functional LASs. Standard operating instructions for each step of workflow should be developed and implemented as a part of a total quality framework. In this way, the workflows should be considered while improving the quality of LAS as it will provide a line-of-action for land agency staff to carry out their tasks efficiently. The important sub-elements of workflows are those concerning steps required for workflows, participation of users in land transaction, amount of land transaction in a day, time required for registration and surveying, availability of services in case of fraud/conflicts, and timely availability of data.

vii. Financing & Data Costs

Availability of funds is a limiting factor in addressing land administration and land management issues as observed in this study while interviewing the BOR officials. Financing is an important factor that affects the quality of LAS to provide a sufficient push to run the system properly. These elements must be brought into consideration while improving the quality of existing LAS in the country.

viii. Quality Standards

The traditional/existing land information system is entirely based on maps and land records which are in paper formats. These records have no surveying standards and often have quite out-dated information which restricts their operational usefulness in extracting precise information on land parcels and ownership. Quality standards should be defined for these

products and processes so that less effort would be required while the data is accessed, shared, and transferred.

Form the list of all the elements presented in Chapter 2, the above nine elements are most important. All these elements must be brought into consideration while developing a quality assessment framework for evaluating and then improving the quality of LAS within country's environment. These elements should be viewed from both the institutional and technical aspects of LAS so that all the problems/ issues must be brought into consideration. In this way, a thorough evaluation is further required to find out a relationship between these elements and two aspects of LAS. This can be done by explaining these elements in more detail using their parameters and indicators for assessing the quality of the system.

4.7 Summary

The LAS in Pakistan is organised and maintained at provincial level in all the four provinces. The Board of Revenue (BOR) is the only organisation in the country at provincial level which deals with all matters concerning the administration of land, collection of land revenue, preparation of land records, and other land matters. The present system is quite old where most of the land records are prepared and maintained with poor quality in old fashion. There is always a demand for improving the quality of LAS due to rapid changes in technology and users' needs with changing social demands. This holds especially in countries where the present LAS is based on traditional approaches, and can be seen as deteriorated, as in Pakistan. The most important elements contributing to the quality assessment of LAS in Pakistan are found as; tenure security, land dispute resolution, co-ordination & data sharing, data organisation, technology adaption, land administration processes, workflows for LA processes, financing & data costs, and quality standards. These elements are belonging to the institutional and technical aspects of LAS. The consideration of these elements is necessary for designing a framework to assess the quality of LAS.

Chapter 5

Explanatory Case Study in Pakistan

5.1 Introduction

It is mentioned earlier in Chapter 3 (Section 3.2.2) that explanatory case study is very useful for conducting causal studies such as the performance evaluation of a system. An exploratory case study approach was adopted in Chapter 4 for highlighting the most important elements of quality assessment framework and an explanatory case study approach is now adopted in Chapter 5 to evaluate the importance of these important elements as well as the other contributing elements using quality assessment indicators and variables for the case of Pakistan. In this connection, section 5.2 outlines a set of quality indicators and variables for the most important elements of LAS quality assessment framework based on the literature review and previous work carried out in evaluating and assessing LASs. These quality indicators are categorised for both the institutional and technical aspects of LAS keeping in mind the basic three organisational levels including; the policy level, the management level, and the operational level to get in-depth analysis of these elements. The analysis of qualitative and quantitative data collected in the fieldwork is carried out in section 5.3 to exhibit the quality situation of existing LAS in the study area. At the end, section 5.4 summaries the summary of the Chapter.

5.2 Framework and Indicators for Evaluating the Quality of LAS

In order to understand and evaluate the existing quality situation of LAS, it is important to define the elements and indicators that play important role in quality assessment and development of the system. The most important elements of LAS quality assessment framework for the case of Pakistan are identified in Chapter 4 but overall there are other contributing elements that can help in explaining these elements in much detail (see Chapter 2). These contributing elements include; land policy, legal framework, availability of a strategic plan, organisation and mandates, LIS design, training and human resource development, users' needs analysis, and quality of services and products offered by LAS.

Furthermore, it is important that all the elements must be considered at all the organisational levels of LAS to have in-depth investigation of the existing situation. Steudler et al. (2004) identified the three levels of an organisation including; the policy level, the management level and the operational level (Chapter 2). Therefore, all the indicators and variables for the elements of LAS needs to be defined and analysed at all the three organisational levels of LAS to assess the existing quality situation of the system. Therefore, all these elements need to be analysed within organisational pyramid of LAS including; the policy level, the management level, and the operational level to get in-depth analysis of the existing system. All these elements are further

categorised either on institutional or technical side of LAS as discussed in Chapter 2 (Section 2.6).

A framework for assessing the quality of LAS through all its elements within the organisational levels of LAS is shown in Figure 5.1.

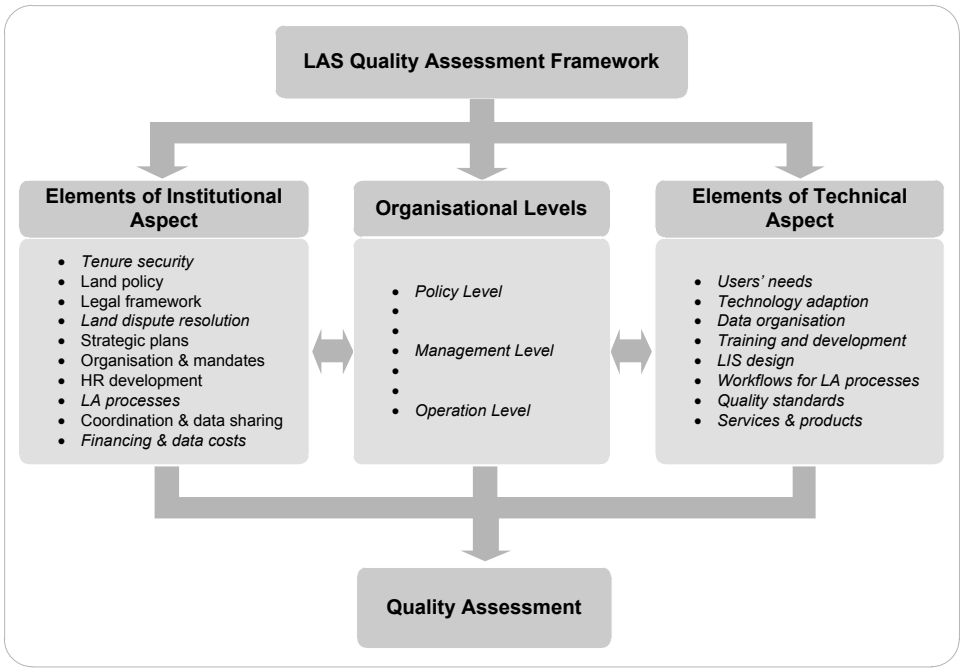

Figure 5.1: Framework for assessing the quality of LAS

The most important elements are written in italic while the contributing elements are written in normal font. The indicators for analysing the quality of these elements for the existing LAS are discussed in the following sub-section. The importance of these quality indicators with respect to their elements as per institutional and technical aspects is outlined below;

5.2.1 Quality Indicators for Institutional Aspect's Elements

i. Tenure Security

Tenure security is assured by a multitude of factors. In addition to the official documents, the social capital, community relations, and one's position of power in the local context add to the authenticity of claims to land, leading to tenure security (Qazi, 2005). Reduction in land disputes is one of the indicators that represent the level of tenure security as evaluated by the World Bank in many land management projects. Land is one of the main sources of collateral for obtaining credit from established financial institutions

such as banks as well as from informal providers of credit (ADB, 2007). In this regard equal access to land offices for land owners plays an important role to get their land related data to apply for credit and investment in their land. The land market can operate effectively and efficiently if tenure security is assured. In this way, an increased investment in the land sector is one of the most important indicators to explain the level of tenure security within a society. Furthermore, tenure security is based on the interaction of various social, administrative and legal factors. The indicators for tenure security include; *reduction in land disputes, equal access to land offices for stakeholders, increased land values, and increased access to formal credits* (Mitchell et al., 2008). These indicators can be used to evaluate the present situation of tenure security in the existing system.

ii. Land Policy

Land policy is a part of the national policy of a country. Such a policy generally relates to economic development, social justice and equity, and political stability (UN-FIG, 1996). A land policy must be defined as the way the government intends to deal with land-related activities such as land management, land reform, land registration, role of LAS in supporting land market etc. Possible indicators to assess the quality of a land policy include; *types of formally and informally recognised rights, percentage of the population covered by the formal system, and characteristics of the population without formal rights* (Burns et al., 2006). Similarly the existence of land policy to define access to land rights and land-use is an important factor for improving the quality of the LAS. The analysis of these indicators can help to present the quality situation of a land policy and provide a line-of-action for further improvements.

iii. Legal Framework

A legal framework that legitimises governmental actions can provide a legally meaningful LAS, and enhances its use in a society (Enemark and van der Molen, 2008). A legal framework must be defined to solve land related matters and land disputes in a peaceful way. The role of a legal framework is very important for land rights, land-use and land valuation in land administration systems. The existence of an adequate legal framework for land-use planning and land-use rights will enhance the ability and capacity of a LAS to serve the needs of a society from both the government and the citizen perspective (UN-ECE, 1996). If the references to legislation governing land administration are scattered among many laws and are out-dated, then the proper implementation and enforcement of laws are difficult. Hence, the analysis of the legal framework in relation to *land rights, land-use, and land valuation* is a very important indicator for assessing the quality of LAS.

iv. Land Dispute Resolution

Land conflicts are a widespread phenomenon that can occur at any time or place. Both need and greed can equally lead to them, and scarcity and increases in land value can make things worse. Land conflicts occur in many forms. There are conflicts between single parties (as for instance boundary conflicts between neighbours), inheritance conflicts between siblings and disputes over the use of a given piece of land. All the land conflicts, no matter how peaceful or violent they are, produce negative consequences for individuals as well as for the entire society (Wehrmann, 2008). The land dispute resolution mechanism is a very important indicator in this regard to assess the quality of LAS. It is often necessary to design effective but fast juridical and technical procedures to document the rights in land and to resolve any subsequent conflicts that occur. This can be measured by getting information about the *level of land disputes, means for conflict resolution, procedures for land dispute resolution, and time taken to resolve land disputes* (Burns et al., 2006).

v. Strategic Plans

Strategic plans require exclusive links with changing views of Geo-ICT and users requirements. Strategic plans should be kept in mind while making necessary changes in a system to adopt new technologies. Strategies must be appropriate to reach pre-defined goals and objectives. The quality of LAS largely depends on two strategic elements. The first element is the analysis of users' requirements including their roles, and the second element is the adoption of new technology for LA processes/services to achieve quality of the products that are easily accessible and reliable for land data supply. The present Information Communication Technology (ICT) developments must be reviewed and their suitability must be assessed to achieve the objectives of the ICT strategy. Indicators for assessing the quality of strategic plans in LAS include; *the analysis of existing strategic and development plans for ICT adoption, analysis of strategic targets, and reviews of objectives and strategies* for achieving those targets.

vi. Organisation and Mandates

The structure of an organisation for land record management and its mandate plays an important role to improve the quality of LAS. Clear mandates within the public administration enhance effectiveness of an organisation. There are countries where various organisations have a mandate on land related issues. Governments should take into account the operational aspects of these mandates. It makes no sense to impose a mandate that is expected not to be workable and manageable. The ability and capacity of any LAS relies on clear mandates. Good performance can never be guaranteed without a clear and manageable mandate (Enemark and van der Molen, 2008). The structure of land administration organisations and

allocation of their mandates towards a specific level of sharing information can help to promote co-ordination among the mandated organisations. The *organisational structure of a land administration agency* and the *analysis of procedures for mandates allocation* are the indicators for assessing the quality of any LAS.

vii. Human Resource Development

Land Administration is more about people – from politicians, senior professionals and managers, middle managers and administrators, to office and field personnel. Therefore, the *capacity assessment* and *development in terms of human resources* is considered to be the most critical (Enemark and van der Molen, 2008). The analysis of capacity needs in terms of human resource development is important to assess the ability of the land administration system in total. This can further facilitate to identify the gap between the existing human resource capacity and the capacity needed for undertaking all land administration tasks in the short, medium and long term.

viii. Land Administration Processes

Land administration is the process of regulating land and property development, the use and conservation of the land, the gathering of revenues from land through sales, leasing and taxation, and the resolving of conflicts concerning the ownership and use of land (Dale and McLaughlin, 1999). Land Administration (LA) processes play a key role for improving the quality of LAS. Land administration processes should be clear and simple to understand by land administrators and stakeholders. More complex procedures and regulations can slow down the system and discourage their use in society. The security and fairness of LA processes are also required for the operation of an effective land market. Indicators to assess the quality of LA processes are; *clarity and simplicity, reliability, security, and timeliness*.

ix. Coordination and Data Sharing

The greatest benefits of LAS can only be realised if this basic information system is used and coordinated with other types of land information. This always involves coordination with other public and private organisations which are responsible for this type of data (FIG, 1995). Data sharing and co-ordination among different organisations for accessing land related data are important indicators for quality assessment of LAS. The other essential indicators are; *institutional and organisational arrangements, co-operation and communication between institutions, and involvement of the private sector* (Steudler et al., 2004). These indicators can help to assess the present status of coordination and data sharing among the different organisations. This assessment will guide towards the necessary arrangements to improve the quality of LAS.

x. Financing and Data Costs

Availability of funds is a limiting factor in addressing land administration and land management issues. Financing is an important factor that affects the quality of LAS to provide a sufficient push to run the system properly. These elements should be brought into consideration while improving the quality of LAS. With sound foundations and a reliable administrative system, a quality system then relies on cost effective operations and reasonable levels of formal market participation (Burns and Dalrymple, 2007). In order to evaluate the financing and data costs element of LAS, the important indicators are; *information about funding authority, foreign (external) funding, tax collection and fee structure*.

A summary of all the indicators and variables for the elements of institutional aspect is presented in Table 5.1.

Table 5.1: Indicators & variables for elements of institutional aspect

Elements	**Indicators and Variables**
Tenure security	– Reduction in land disputes – Equal access to land offices – Increased land values – Increased access to formal credits – Owners' perception about tenure security – Role of Islamic tenure system
Land policy	– Types of formally and informally recognised rights – Percentage of the province & population covered by formal system – Characteristics of population without formal rights – Existence of land policy – Access to land rights – Land use policy
Legal framework	– Legal framework for: *Land rights, Land use, and Land value* – Registration mechanism – Legitimisation of Govt. regulations – Legislation governing LA
Land dispute resolution	– Level of disputes over land – Types of land disputes – Time taken to resolve land dispute – Means for conflict resolution – Procedures for land dispute resolution
Strategic plans	– Strategic targets – Review of objectives & strategies – Strategic & development plans for IT adoption – Analysis of users need & their role
Organisation and mandates	– Existence of land board – Organisation structure – Mandates allocation – Customer relation

Human resource development	– Human resource capacity – Human resource development facilities – Efforts taken for human resource development
Land administration processes	– List of processes – Clarity & simplicity – Reliability – Security – Timeliness – Land registration process – Land surveying process
Coordination and data sharing	– Institutional & organisational arrangements – Co-operation & communication between institutions – Private sector involvement
Financing and data costs	– Funding authority – Foreign (external) funding – Tax collection – Fee structure – Financial resources

5.2.2 Quality Indicators for Technical Aspect's Elements

i. Users' Needs

Land administration systems have to operate within a social and political environment. They should recognise the users' needs because different users may need different forms of products or services. Before altering an existing system or introducing a new one, it is essential that the requirements of those who will use or benefit from the system should be clearly identified. A wide variety of user communities need to be consulted in this regard to understand their requirements and the constraints under which they currently operate (UN-ECE, 1996). While adopting the latest technologies in LAS, it is necessary to *understand users' needs and requirements* so that the cost of technology adoption can be reduced as much as possible. In order to analyse the users' needs in more detail, a *list of users* in both the *private and government sectors* must be defined to incorporate their needs while adopting the latest technologies in a system.

ii. Technology Adaption

Adopting the latest technology plays a key role in quality improvement of LAS (Kalantari et al., 2005). Recent advances in space based data capturing techniques have brought changes in the field of cartography and mapping. Cadastral information can be collected and cadastral parcel boundaries can be surveyed with less labour, time, and cost as compared to the old fashioned field surveying technique by integrating global positioning system data, remote sensing imagery, and existing cadastral maps through participatory geographic information system technique (Ali et al., 2012). Technology adoption makes processes quick and provides fast services at the users' end to accomplish land market needs for an enhanced economy and

users' satisfaction. The ability of land administration organisations to meet their specific functions in a society requires appropriate management of ICT in a land administration organisation. Organisations that apply ICT gradually – from a simple to a more complex approach – should have a sound ICT policy, otherwise, it may lead to serious problems at a later stage (Enemark and van der Molen, 2008). Indicators to assess the capability of LAS for adopting new technology include; *analysis of present GIS status, digital data availability, hardware and software, and capacity building* to adopt technology.

iii. Data Organisation

Land record data include maps, field sketches and registers that need to be kept up-to-date for getting land information in a timely fashion. This updated land information plays an important role in land market development, land valuation, land taxation and land dispute resolution. A clear definition of the data type and overall management responsibility for acquiring spatial and attribute data, data access, data sharing between stakeholders, data custodianship and privacy, are important components in this regard (ADB, 2007; Bennett et al., 2008). Data sharing among the data user agencies is also an important component that should be kept in mind for effective operation of LAS. The important indicators in this context include; *data coverage and completeness, protection, updating, availability* and *data sharing*.

iv. Training and Development

Land administration systems cannot be developed and sustainably maintained without an adequate and sound educational base. Sufficient and adequate educational resources are essential to provide the professional competence required for developing and maintaining appropriate LASs (Enemark and Williamson, 2004). The analysis of this element can further facilitate to highlight the gap between the existing educational facilities for land administration professionals and the required training and development needs to overcome the short-comings for LAS quality improvement. The quality indicators on this side includes; the *analysis of existing facilities for education and training, collaboration of land agency with educational and research institutions*.

v. Land Information System Design

A land information system consists of a number of broad dimensions such as technological dimension, organising procedures and an institutional element which includes a corporate structure. It also includes a platform or a resource base, on which data are stored and from which meaningful land information can be produced, analysed, and disseminated (Bennett et al., 2012; UN-ECA, 1998; Williamson et al., 2010). The information system design concepts for

LAS in data/process modelling are the most prevailing elements in terms of organisational structure. These concepts relate to how the quality data are gathered, processed, stored and disseminated at affordable cost with many data access points, such as a front desk or internet. System design concepts should be taken into consideration while improving the quality of LAS. The most important indicators in this context include; *structural definition of the system, consultation with foreign (external) agencies for improving the system structure, and consistency with new developments in technology*.

vi. Workflows for Land Administration Processes

Workflow management and secured databases are the basic components of functional land administration systems. Good control on the performance of a land administration organisation is impossible without a clear description of the workflows in terms of activities, requirements and responsibilities. This is the basis for monitoring and accountability. At the same time a clear description offers opportunities to identify and abolish inefficiencies. Without appropriate attention to workflows, and the structures in which they have to operate, the ability of land administration organisations for good performance is questioned (Enemark and van der Molen, 2008). The standard operating instructions for each step of the workflow should be developed and implemented as a part of the total quality in LAS. The important quality indicators in this regard include; *information flow analysis within/across the organisation, performance monitoring* and *good management practices*.

vii. Quality Standards

The data quality has an impact on decision-making of an organisation. This impact depends on the role of the geographic information system (GIS) in the organisation for textual as well as graphical data collection and management. The requirements for data quality are different in different scenarios depending on whether GIS is used at operational level, management level or executive level (Mäkelä, 2007). Since in developing a spatial database for a cadastre/land administration system the data comes from different sources, their quality varies. Different aspects of data quality, like positional quality, temporal quality or completeness, must be defined (Stanek and Frank, 1993). The definition of quality standards for the products and processes of LAS should be made in such a way that less effort would be required when the data is accessed, shared and transferred. Important indicators to analyse the situation of existing quality standards in LAS include; *performance evaluation, data standards, data coverage, data accuracy* and *quality control*.

viii. Services and Products

Services and products of LAS should be provided in time to fulfil the users' needs. Services can be improved by introducing new techniques e.g.

photogrammetric techniques using aerial photographs or high resolution satellite images can be used as an alternative to traditional land surveying approaches for spatial data acquisition. In this case most measurements can be done in the office (Tuladhar, 2005b). Front desk services can also improve the quality of services at the users' end to get their desired products in an easier way. Important indicators to measure the quality of services and products offered by LAS include; *service delivery, efficiency, list of services,* and the *list of products* offered by the land administration agency.
A list of all the indicators and variables for the elements of technical aspect is summarised in Table 5.2.

Table 5.2: Indicators & variables for elements of technical aspect

Elements	**Indicators and Variables**
Users' needs	– List of users in: *Govt. sector, and Private sector* – Access to data – Availability of required data
Data organisation	– Coverage & completeness – Protection – Updating – Availability – Sharing
Technology adoption	– Present GIS status – Digital data availability – Hardware & software – Capacity building
Training and development	– Facilities for education and training – Collaboration with educational institutions – Collaboration with research institutions
Land information system design	– Structural definition of the system – Consultation with foreign (external) agencies – Consistency
Workflows for LA processes	– Information flow – Good management – Performance monitoring
Quality standards	– Evaluation – National / International standards – Quality control – Accuracy – Coverage
Services and products	– List of services – List of products – Service delivery – Efficiency

5.3 Assessing the Quality Situation of existing LAS

The research matrices to explain the elements of LAS for describing the quality situation of the existing LAS in the study area are listed in Appendix 3. Similarly, a set of questionnaires used in this explanatory case study for each stakeholder is attached in Appendix 4. An analysis of this explanatory case study is presented in the following sub-sections to assess the quality situation for elements of the institutional and technical aspects of LAS in the study area.

5.3.1 Quality Assessment of Institutional Aspect

i. Tenure Security

The quantitative data collected about the number of land disputes in both study areas was collected. An increasing trend was found for the number of land disputes in Swabi as seen in Figure 5.2. This increasing number of land disputes points towards the fear that tenure security is not being tackled effectively in the present system.

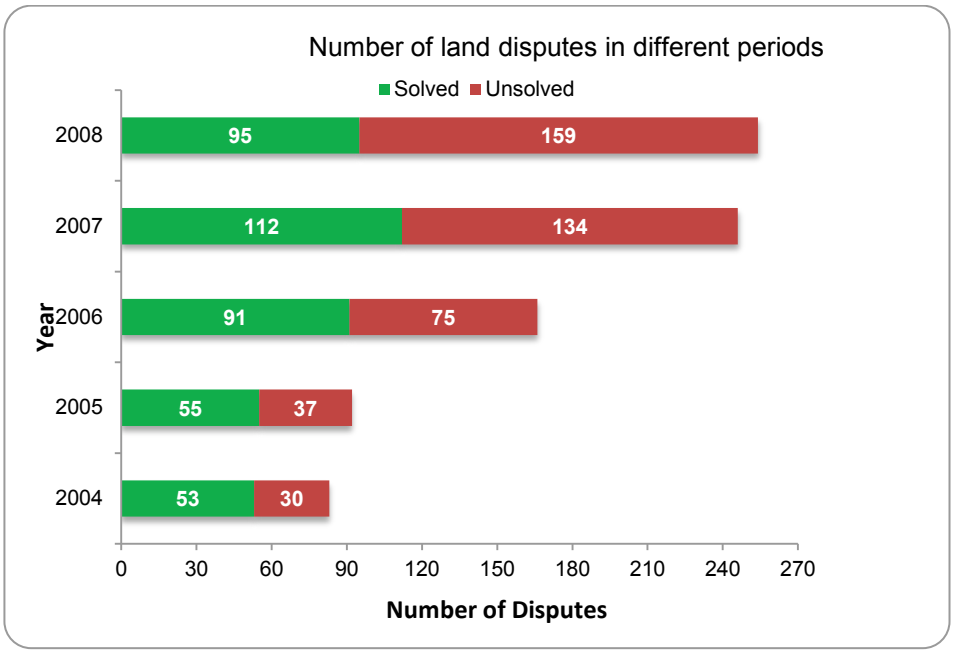

Figure 5.2: Land disputes trend in Swabi district

Moreover, 98% of the land owners felt that their rights are unsecure in the existing system when they responded to a question about tenure security. The stakeholders said that land value is increasing with the passage of time

and investment in property sector is getting higher, but this rate is much higher in urban areas as compared to rural areas. Most of the stakeholders said that they have equal access to land offices for collecting their land records to obtain credit from established financial institutions.

In both study areas, most of banks/financial institutions were willing to mortgage land but it was observed from the fieldwork data that a lower number of land owners were applying due to the fact that they did not get their land documents in time and it took a long time to mortgage their land (Table 5.3).

Table 5.3: Access to formal credits

Questions	**Response**	**Frequency**	
		Bank Officials (n=25)	*Land Owners (n=50)*
Are the financial institutions/banks willing to mortgage land?	*Not willing*	-	-
	Less willing	-	06
	Fully willing	25	44
Do land owners apply for credits against their land?	*No*	06	34
	Yes	19	16
How much time does it take to mortgage land?	*1 week*	09	-
	2 weeks	07	-
	3 weeks	09	05
	More	-	11
Is the number of land owners applying for credits against their land increasing or decreasing?	*Decreasing*	-	×
	Stable	10	×
	Increasing	15	×

Furthermore, the Secretary BOR said that existing LAS is fiscal in nature which was developed in the past for tax collection purposes. He said that it does not clearly define the nature and extent of rights in land for land owners and other stakeholders. Due to this complex nature of rights in land, the land owners still feel that their rights are unsecure. Furthermore, the Senior Member Board of Revenue (SMBR) said that the Islamic tenure system plays an important role to provide rights in land for the owners through the Islamic inheritance system which is fully practiced in the present system.

ii. Land Policy

In Pakistan, a land policy exists at provincial level for the management of all types of land as the SMBR said during his interview. He also indicated that there are still ambiguities in the existing policy to define different forms of formally and informally recognised rights in land. He mentioned that BOR is the only authority in the province which is involved in developing and implementing land policy. The SMBR said that the whole province is covered by a formal system and that there are no unregistered parcels in the province. The SMBR also said that all the procedures for establishment,

transfer and abolition of rights to land are clear and well accepted. He accepted that legally the regulations address equity and fairness on access to rights to land (land reform), but practically it is not fully implemented.

iii. Legal Framework

The existing legal framework of BOR is very old and it does not provide enough clarity and transparency as pointed out by the BOR officials in their interviews. The legal and policy framework governing land records are governed under several pieces of legislation and two parallel systems of adjudication exist under the revenue courts and civil courts. The revenue courts and civil courts intermingle on similar points leading to court cases that take decades. 94% of the law professionals said that the present status of legislation governing land administration is scattered and out-dated. The Director Land Records (DLR) pointed out that the legal framework does not provide enough clarity and transparency on land holdings. He also said that the whole complex of valuation and taxation of land for gathering revenues is neither defined nor enforced. He indicated that no perfect system has evolved so far to take into account the impact of land taxation on use of land and on land markets. Most of the stakeholders also questioned that the valuation method for land taxation does not fit to its societal needs as shown in Figure 5.3. The DLR stated that people comply with these rates because they do not have another choice. He said that the legal framework needs to be tailored as per societal changes and users' demands to make the system more efficient.

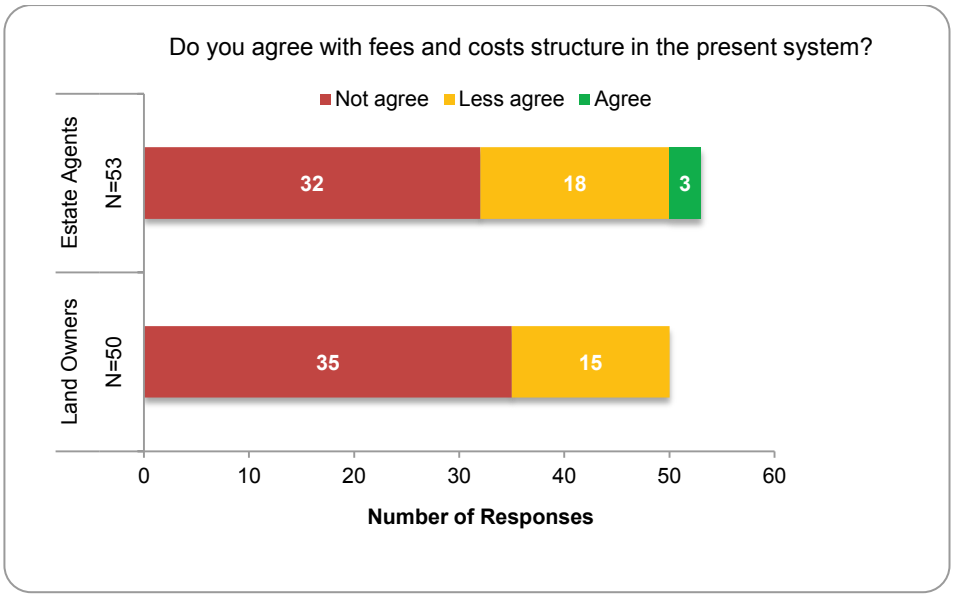

Figure 5.3: Fees and costs structure

iv. Land Dispute Resolution

As mentioned earlier, the land related matters are governed in several pieces of legislation and two parallel systems of adjudication under the revenue and civil courts. Most of the stakeholders agreed that the land conflict resolution mechanisms are very complicated and it takes a very long time to resolve land disputes. They said that these mechanisms are expensive and time consuming as well. They further argued that the procedures in land dispute resolution are not clear and unknown by them as shown in Figure 5.4.

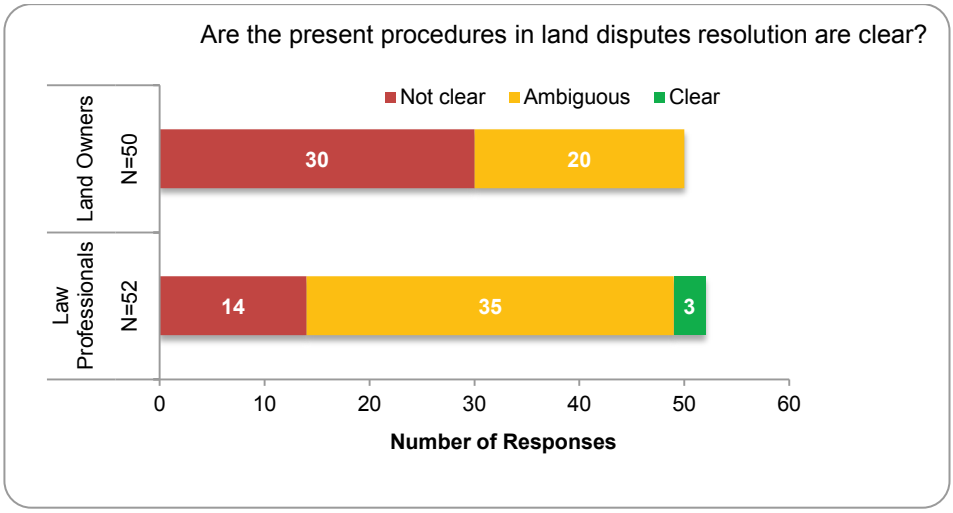

Figure **5**.4: Procedures in land dispute resolution

The land owners said that the Patwari (a land record keeper at village level) keeps all the original land records with him all the time and he has the authority to make changes relating to ownership in the original record which is always questionable and can create land disputes. This is further verified by the type of land disputes as most of the ownership disputes were found among other types of land disputes such as boundary dispute etc. in both districts as presented in Table 5.4.

Table 5.4: Land disputes

Questions	**Responses**	**Frequencies**	
		Land owner (N=50)	*Law professionals (N=52)*
What types of disputes are there in land?	*Ownership*	25	29
	Boundary	14	13
	Both	11	10
How much time it takes to resolve land disputes?	*1 year*	13	-
	2 years	10	-
	3 years	16	22
	More	11	30
Present status of the legislation governing land administration?	*Scattered*	×	35
	Out-dated	×	14
	Updated	×	03
	Other	×	-
What is the level of disputes in land?	*Low*	×	02
	Moderate	×	12
	High	×	38

v. Strategic Plans

The strategic level requires exclusive links with changing views on Geo-ICT. The quality of LAS largely depends upon two strategic elements. The first sub element is about the analysis of users' requirements. The second sub element is the adoption of the latest technologies in land administration processes and services to achieve a high quality of products that are easily accessible and reliable for land data supply. The SMBR said that such a list does not exist which can define the strategic targets and all the procedures followed as it was in the past. Furthermore, he said that the objectives and strategies of BOR are not reviewed and there is no regular process for review. He also said that no GIS development plan is published for adopting GIS technology in the present system.

vi. Organisation and Mandates

There is an independent land board and the Board of Revenue (BOR) is the only organisation in the country at provincial level with a mandate to manage land related data for tax collection and dispute resolution. The BOR works under the provincial government and their mandates are already defined by the provincial government. The SMBR said that these mandates are clear and manageable. He also pointed out that these mandates are not overlapping and the allocation of mandates reflects a well-balanced approach towards decentralisation. He further said that the organisational structure of BOR is well designed for the execution of work processes and the management of customer relations is clearly defined in allocating these mandates.

vii. Human Resource Development

The human resource development issue has not been taken effectively in the existing LAS as only one training school is available for BOR officials at

provincial level with less training facilities. The DLR stated that no effort has been carried out to develop human resource capacity in the existing system. The qualification criterion for the appointment of new staff in the land administration agency is also found ineffective to overcome new challenges in human resource development.

viii. Land Administration Processes

The main Land Administration (LA) processes carried out by the BOR include; land settlement, land revenue collection, land titles, land transactions and land transfers. These processes are not clear and simple to understand for the general public as admitted by 61% of the stakeholders. Moreover, 65% of the stakeholders said that these processes are time consuming and do not provide the necessary information in a timely fashion. The stakeholders' views about the quality of the existing LA processes are presented in Table 5.5.

Table 5.5: Stakeholders' view on land LA processes

Questions	**Responses**	**Frequency**			
		Bank Officials (n=25)	*Law Officials (n=52)*	*Land Owners (n=50)*	*Estate Agents (n=53)*
How reliable is the process and the record itself?	*Less reliable*	08	48	50	34
	Reliable	17	04	-	17
	More reliable	-	-	-	02
Is the present system fair in development and operation?	*Less fair*	×	23	39	39
	Average	×	29	11	13
	Fair	×	-	-	01
Is the system clear and simple to understand for general public?	*Not clear*	×	×	50	43
	Less clear	×	×	-	10
	Fully clear	×	×	-	-
Is the system providing necessary information in a timely fashion?	*No*	17	31	35	34
	Yes	08	21	15	19
The information stored about land in land registers is up-to-date?	*Not updated*	-	24	36	41
	Less updated	25	26	14	12
	Fully updated	-	02	-	-

Answering a question regarding the fairness of the present system, 75% of the stakeholders said that the LA processes and records themselves are less reliable as shown in Figure 5.5. They also said that land records are not kept up-to-date and in most cases they are out-dated.

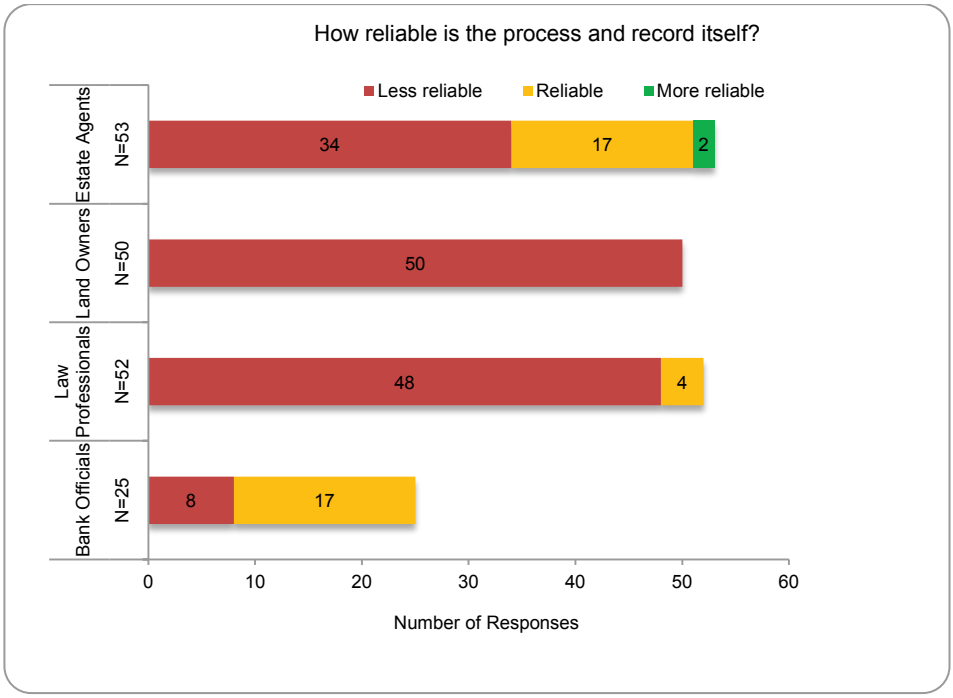

Figure 5.5: Record & process reliability

Although the BOR officials said that the approach to land records is not significant for creation of land disputes due to administrative checks, the land owners as well as the law professionals, pointed out that it is significant due to less security provided in the present system of maintaining these land records at different levels.

Most stakeholders said that the deeds of sale registration and land transfer processes in the present system are too complicated and it takes a long time to register a deed of sale or transfer land. Their responses about time and steps required in these processes are presented in Table 5.6. They also said that these processes are not so easy for them.

Table 5.6: Stakeholders' view on registration & transfer processes

Questions	Responses	Frequencies		
		Land Owners (N=50)	*Estate Agents (N=53)*	*Patwaries (N=50)*
How much steps are involved in the land transfer?	*3 steps*	50	05	50
	4 steps	-	17	-
	5 steps	-	15	-
	More	-	16	-
How much time it takes to transfer land?	*1 week*	-	01	03
	2 weeks	01	-	15
	3 weeks	22	26	27
	More	27	26	05
How much time it takes to register a deed?	*1 week*	-	03	-
	2 weeks	07	05	12
	3 weeks	39	18	24
	More	04	27	14
How easy is the procedure for deed of sale registration?	*Not easy*	14	39	×
	Less easy	36	10	×
	Easy	-	04	×

Moreover, the BOR officials said that the information in land registers is updated every four years while all the graphical information in cadastral maps is to be updated every 25-30 years. Due to this long time span, most of the stakeholders said that the existing system does not provide up-to-date information in a timely fashion. The BOR officials said that only the field survey technique is used in the present system, which is too old and time consuming for them, especially in areas where weather is harsh and the terrain is mountainous.

ix. Coordination and Data Sharing

The SMBR said that BOR has its own institutional and organisational arrangements at provincial level to carry out all land related activities. These arrangements are further narrowed down at local level in each district under the BOR organisational setup to prepare and maintain land records at local level. He said that BOR shares their data and coordinates in an efficient manner as the user agencies ask for the desired data. He said that all the land related information is created and maintained only by the BOR and the private sector is not involved in carrying out these activities.

x. Financing and Data Costs

The DLR said that the provincial and district governments are providing financial support to BOR and approximately 5% of the costs is recovered from fees and data sales. He said that the land revenue then goes to the provincial revenue acknowledgment and becomes part of the annual budget. Regarding fees and costs structure in the present system, 65% of the stakeholders (including real estate agents and land owners) showed their disagreement with the present system. The DLR further said that BOR does

not have sufficient financial resources to adopt Geo-ICT in the present system. Similarly, 75% of BOR officials accepted that the financial mechanisms are not appropriate to meet the business demands.

5.3.2 Quality Assessment of Technical Aspect

i. Users' Needs

Although different users exist in the government and private sectors, unfortunately the BOR officials did not have any specific list of these users. Most of the stakeholders said that the process for accessing land records is not convenient and simple for them (Table 5.7).

Table 5.7: Access to land data

Questions	**Response**	**Frequencies**		
		Bank Officials (N=25)	*Land Owners (N=50)*	*Estate Agents (N=53)*
How can land records be made more accessible to everybody?	*Introducing Geo-ICT*	17	35	24
	Re-structuring	08	15	29
	Other	-	-	-
How convenient is the process to access land record?	*Not convenient*	15	31	39
	Less convenient	10	19	14
	Convenient	-	-	-
How simple is the process required to access land record?	*Not simple*	-	14	39
	Less simple	10	31	10
	Simple	15	05	04
How much (formal and informal) payment is involved in accessing land record?	*Not affordable*	-	48	48
	Affordable	25	02	05
How much time it takes to access land record?	*Short time*	-	-	02
	Average time	17	10	14
	Long time	08	40	37

Moreover, 66% of stakeholders said that it takes a long time to access their land records. The stakeholders, including land owners, bank officials and real estate agents, also agreed that the present system only partially provides all the essential data according to their needs.

ii. Technology Adaption

The DLR said that no land records are available in digital format and all land records exist on paper in the form of registers and maps. He said that only some small efforts have been taken to convert land data into a digital format but they are at snail's pace. The SMBR further said that BOR does not have enough financial resources for providing new hardware and software facilities in the existing land administration system.

The DLR agreed that no GIS technology has been introduced in the present system and only in Chitral district is a settlement operation in process using total station. However, no skilled staff are available to fully operate these devices effectively. 85% of the stakeholders said that new technology should be adopted in the present system where 59% of them were expecting that the introduction of Geo-ICT in the present system will make land records more accessible to everybody. The SMBR further said that BOR does not have sufficient trained staff for implementing new technologies in the system (Figure 5.6). He said that a lot of effort will be required on institutional and human capacity building to introduce new technology in the present system. He argued that there is only one training school for the whole BOR staff in the province to train their officials.

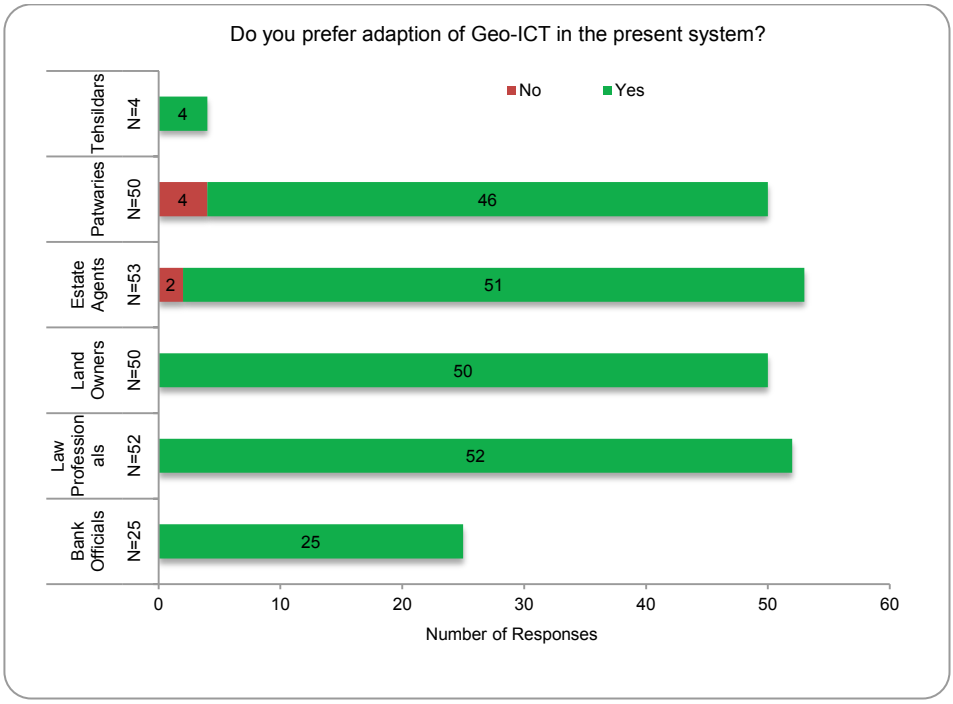

Figure 5.6: Geo-ICT adaption

iii. Data Organisation

The BOR is the only authority which is responsible for keeping and updating land records. Although, the BOR has land records for all 24 districts of the province, there are still areas where no proper land records are prepared due to absence of land consolidation and settlement operations since they were carried out in the past. Land records are maintained at local level in each district but improper maintenance of land records (Figure 5.7) leads to a lot of difficulties. The stakeholders said that improper maintenance of land

records and utterance in record-of-rights also leads to problems concerning the protection of this land data.

Figure 5.7: Land record room at district level

The stakeholders said that all the temporal archives are only stored at the district level records room where there are still occasions where the entire records are wiped out due to fire or floods. Furthermore, all the existing land records are in manual form and no data is available in digital form. 80% of the stakeholders said that they have equal access to land offices, but 70% of them also pointed out that it is not easy for them to access their land records.

iv. Training and Development

The institutional and human capacity building is found less sufficient in the study area. The SMBR said that BOR does not have sufficient trained staff for implementing new technologies in the existing system. He said that lot of effort will be required in institutional and human capacity building side to introduce new technology. He pointed out that less training facilities are available for the land administration agency in the province to train their staff.

v. Land Information System Design

The SMBR said that the structure of the existing system is useful and clearly defined. He said that the existing system is time tested in practice for many decades. He indicated that BOR does not have any consultation with other foreign (external) agencies for system design and all the processes are followed as they were in the past. The DLR said that the existing system is entirely based on maps and records in paper format and no new concepts have been introduced in the present system. Moreover, no spatial reference (coordinate) system is followed by the BOR for cadastral map generation, and all the measurements are carried out using methods not generally applied in more current systems.

vi. Workflows for Land Administration Processes

The DLR said that the allocation of tasks and responsibilities to managers are appropriate but the internal and external information flow is less clearly specified. The SMBR pointed that the managerial tools in terms of planning control, accountability and liability are appropriate. However, the DLR said that the performance monitoring in the present system is less appropriate towards good performance. He said that organisational culture encourages sharing of values towards good performance, but there are less coordinated efforts amongst all stakeholders who share their valuable comments and knowledge.

vii. Quality Standards

The DLR said that the performance of BOR is only monitored internally and there is no external monitoring system available for performance monitoring and evaluation. The stakeholders complained that there are no surveying standards for cadastral map generation in the existing system. They questioned that these maps have quite out-dated information which restrict their operational usefulness in extracting precise information on land parcels and ownership. The DLR also accepted that there are no quality parameter matrices to maintain land records and all the processes are carried out in a conventional way. He said that technology adoption will improve the quality of data/services and will bring tremendous changes for improving service delivery. 56% of the stakeholders complained that the information stored in land registers is not up-to-date (Figure 5.8).

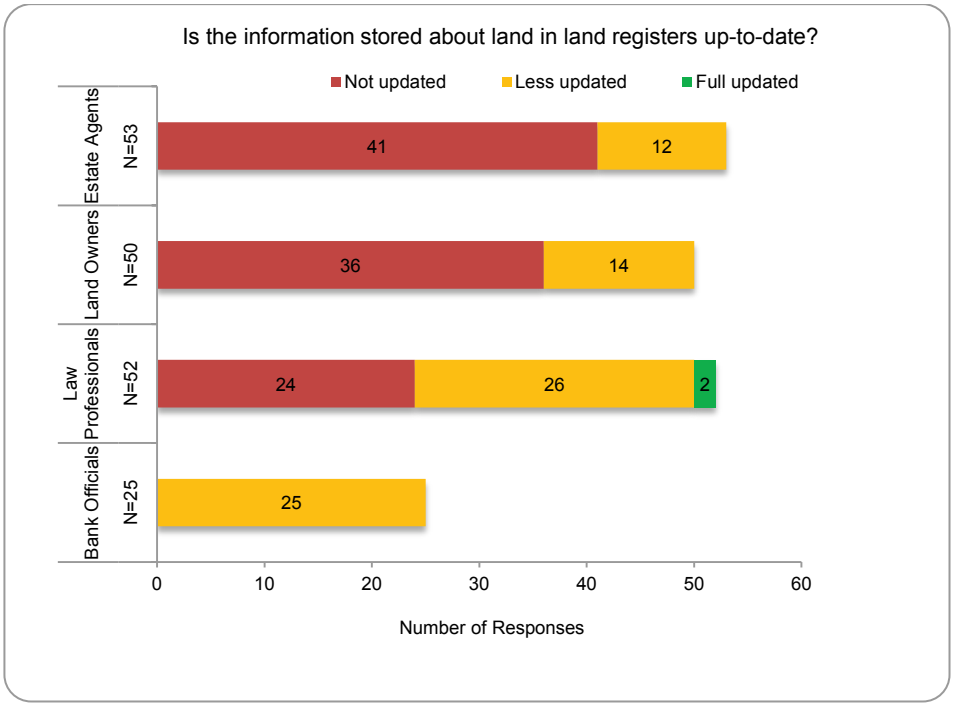

Figure 5.8: Land information updation

The DLR said that the BOR has land data covering the whole province (24 districts) including land registers and cadastral maps. These cadastral maps are available at approximately 1:2,500 scale (Figure 5.9).

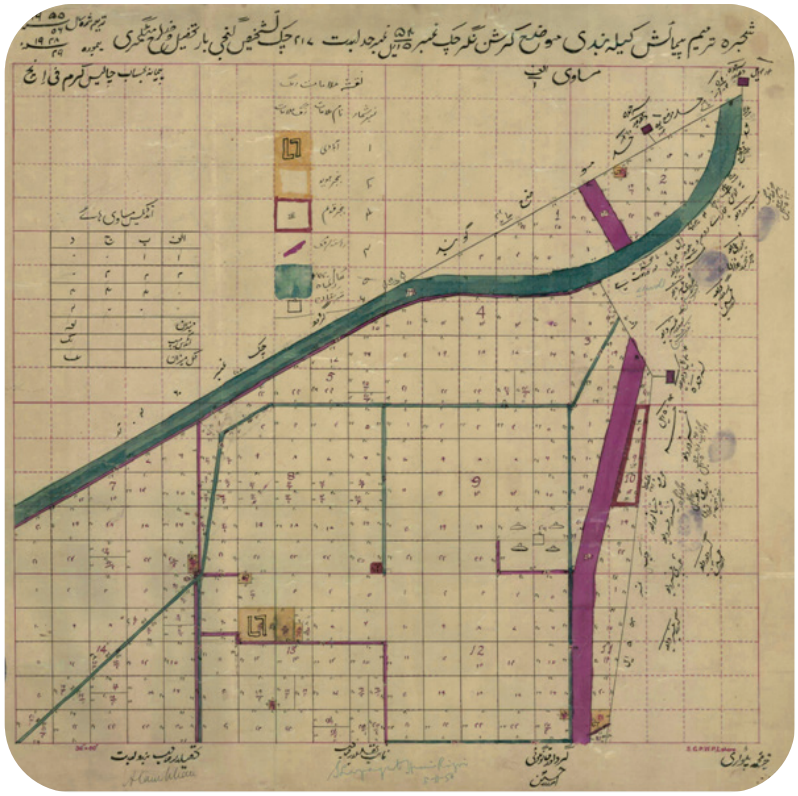

Figure 5.9: An existing cadastral map

All these maps are prepared and maintained manually, but no quality standards are followed to prepare these maps. Furthermore, these maps do not follow cartographic rules and no projection system is followed to prepare them. The conditions of the record rooms for keeping these cadastral maps are also very poor (Figure 5.10).

Figure 5.10: Record room for cadastral maps

viii. Services & Products

The BOR officials said that all the services and products are partially delivered to users at local level. The DLR said that there is a very large establishment of revenue offices and officials at district and tehsil (sub-district) level, but there are not enough offices nor an infrastructure to provide their services effectively. Moreover, 61% of the stakeholders also said that BOR does not have sufficient infrastructure to deliver their services in an efficient manner (Figure 5.11).

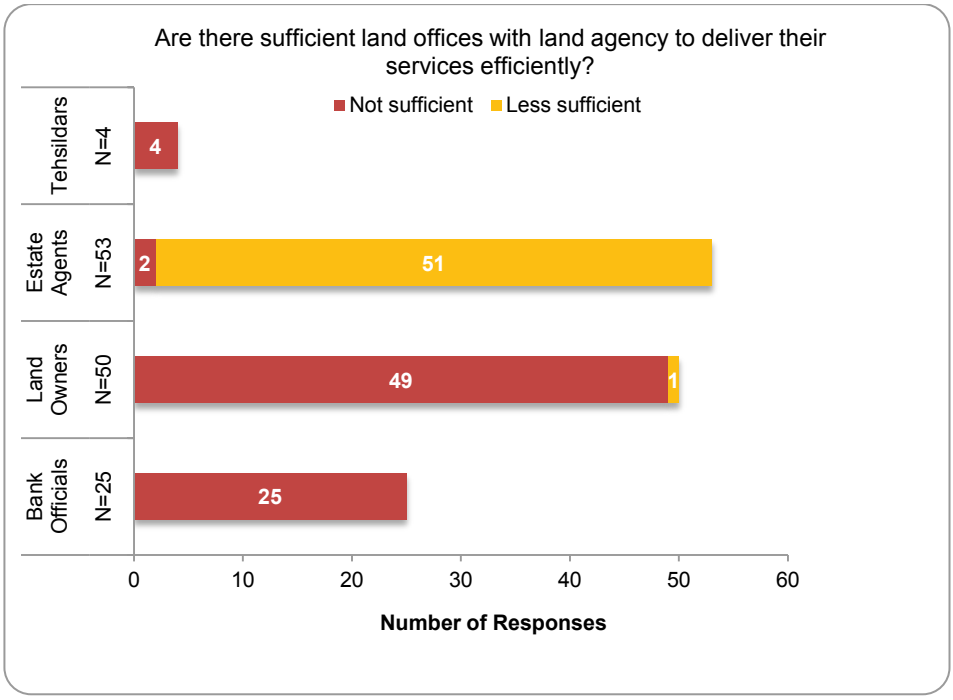

Figure 5.11: Efficiency in services

5.4 Summary

Although the existing land administration system is time tested and is in practice for many decades but still there are some quality issues in the existing system due to rapid changes in technology and users' needs. These quality issues can be categorised between institutional and technical aspects for in-depth analysis. The developed framework for assessing the quality situation of LAS through explanatory case study approach is tested in this study and an in-depth investigation is carried out. This assessment highlighted the quality situation of the existing LAS through active participation of all the stakeholders of the system in the study area. In a nut shell, this investigation provided a methodological framework for assessing the quality of LAS by considering all the elements and quality indicators contributing to the institutional as well as technical aspect of LAS within the pyramid of organisational levels.

Chapter 6

Finalising and Discussing Quality Assessment Framework

6.1 Introduction

This Chapter synthesises the results obtained from this research to finalise the LAS quality assessment framework in terms of methodology, important elements, and quality indicators selection. In order to respond to these criteria, section 6.2 discusses the systematic use of case study methodology for doing this research. The quality assessment framework and its elements including the important ones are discussed in section 6.3. The indicators and quality assessment parameters along with the quality situation of existing LAS in Pakistan are synthesised in section 6.4. At the end, section 6.5 adds up the summary of the Chapter.

6.2 Systematic use of Case Study Methodology

Case study is an ideal methodology when the boundaries between the phenomenon and real-life context are not clearly defined and a holistic and in-depth investigation is needed (Feagin et al., 1991; Yin, 2003). It also preserves the interrelation between the relevant factors affecting the whole system. Çagdas and Stubkjær (2009) discussed the use of case study methodology in most of doctoral research studies carried out in the field of cadastre and land administration. They highlighted the usefulness of case study methodology and the approaches for collecting qualitative and/or quantitative data in conducting those doctoral research studies. An explanatory case study approach is used in some studies whereas an exploratory case study approach is used in others.

Case study methodology is selected for doing this research since no clear boundary is found between the institutional and technical aspects of land administration system (LAS), and the interrelationship between the elements and quality indicators for each aspect is found very strong. It is observed that no clear boundary exists between these aspects of LAS (Figure 6.2), so the use of only exploratory or explanatory case study approach is not sufficient to do in-depth analysis of the system. Furthermore, the research questions framed as 'what' and 'how' also determined the systematic use of both exploratory and explanatory case study approach. An exploratory case study approach is useful to answer the 'what' type of questions by exploring the system, whereas an explanatory case study approach is useful to answer the 'how' type of question by analysing the system in detail (Yin, 2003). For the systematic use of case study methodology, a thorough study of the methodological literature on case study method is considered most important, especially (Gerring, 2007; Roland and Olaf, 2002; Yin, 2003). This helped to keep the focus on the point of interest and what information to be extracted from the case(s).

In this study, an exploratory case study approach is firstly used to investigate the issues of existing LAS in the country to recognise the most important elements for developing a quality assessment framework. This is done by analysing the data collected in the field through interviews with land administration agency officials, land owners, real estate agents, and law professionals. After analysing the transcribed qualitative and quantitative data from this exploratory case study (Chapter 4), the most important elements of existing LAS are selected (Section 4.6).

A quality assessment framework is then developed to assess the existing quality situation of LAS in the country. The contributing quality indicators to be used in explanatory case study for the elements of institutional and technical aspects of LAS are outlined (Section 5.2). An exploratory case study approach can help in this regard to fine tune these parameters and quality indicators for a standalone LAS within country's environment. In this way, the explanatory case study approach is used to understand the quality situation of LAS in the country by collecting qualitative and quantitative data through visits, interviews, meetings, and questionnaires in the study area (Chapter 5). The analysis of this data gave a clear understanding of the present status of these quality indicators in existing system (Section 5.3).

The systematic use of case study methodology (exploratory-explanatory case study approach) provided a methodological framework to do in-depth analysis of a land administration system. This was impossible by using either exploratory or explanatory case study approach in isolation.

6.3 LAS Quality Assessment Framework

It is mentioned earlier in section 2.5 of Chapter 2 that the performance of LASs is assessed through multi-dimensional approaches by suggesting different criteria and using different assessment techniques. In some studies, only quantitative data is collected while a set of qualitative indicators is used in other studies with open questions lacking a benchmark framework. There have been some attempts to standardise the procedures for evaluating or comparing LASs on the international level (World Bank, 2010) but there is no internationally accepted or standardised method for evaluation. This is mainly because LASs are reflecting the cultural and social context of the country in which they are operating. This makes them distinctly different and therefore difficult to compare with each other (Steudler et al., 2004). A quality assessment framework is thus needed to analyse the quality of a standalone LAS within country's environment. However, the quality of any system is assessed only if the parameters and indicators for assessing the quality of the system are first known. In case of land administration, the nature of these parameters and quality indicators are varying from system to system

depending on the structure of existing LAS, social and cultural norms and values of a society in which the system is being practiced.

In order to investigate the quality of LAS, all the essential elements of the existing system should be examined through 'LAS quality assessment framework' as shown in Figure 6.1. This investigation can further assist to develop quality improvement guidelines to improve the quality of LAS. In this study an exploratory case study approach is used to highlight the most important elements for understanding the present situation of LAS in the country. The explanatory case study approach is then used to assess the LAS quality situation by choosing suitable indicators and variables for each element.

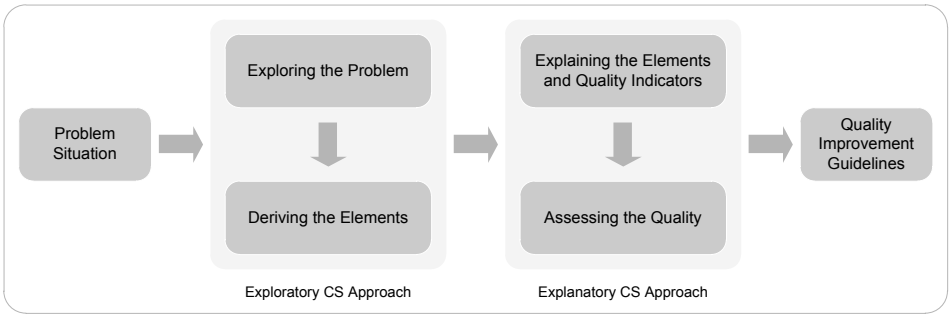

Figure 6.1: LAS quality assessment framework

All the necessary elements of existing LAS are presented and discussed in sections 4.5 and 4.6 of Chapter 4 respectively. The most important elements contributing to the quality assessment of LAS in Pakistan are found as; tenure security, land dispute resolution, data organisation, technology adaption, land administration processes, workflows for LA processes, financing & data costs, and quality standards. However, some other supportive elements are also found helpful such as land policy, legal framework, organisation & mandates, co-ordination & data sharing, human resource development, strategic plans, users' needs, training & development, LIS design, and services & products (see Chapter 2).

This research categorised all the elements of LAS within institutional and technical aspects (Section 5.2). However, it was impossible to separate them completely because most of the elements and indicators combined some of both aspects. The distribution of all these elements (including the important ones in italic font) within two aspects is shown in 'Tornado Chart' in Figure 6.2, where the length of each bar represents the portion of each aspect in different colours. This distribution is carried out on the basis of questions

asked for investigating the quality indicators and variables to assess the quality situation of LAS.

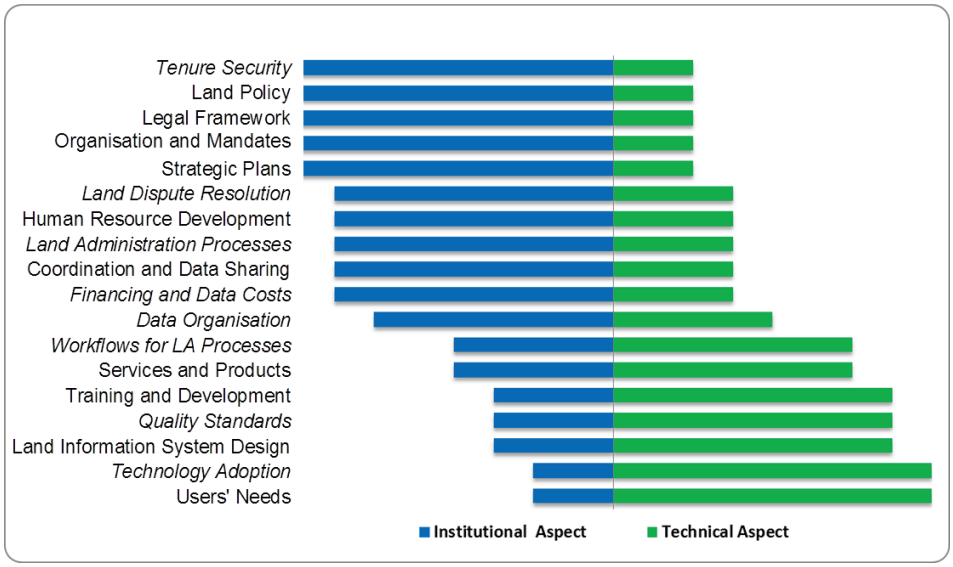

Figure 6.2: LAS aspects and distribution of their elements

In order to do in-depth analysis of the system, a holistic approach is adopted through 'LAS Prism Model' (Section 3.3.1) to link all the four components of LAS quality improvement framework (Section 2.7) being the institutional aspect, technical aspect, elements and indicators, and quality improvement guidelines. This integration further enabled to examine the quality situation of a standalone LAS through a quality assessment framework (Figure 6.1).

6.4 Indicators and Variables for LAS Quality Assessment

The indicators and variables for the elements of LAS, to assess its quality, were classified through exhaustive review of research studies carried out in the field of cadastre and land administration. More details about these indicators and variables are presented in Section 5.2. The selection of these quality indicators and variables is based on the principles of international 'Best Practices' and other research studies carried out in assessing and evaluating land administration systems.

These indicators and variables were analysed for the elements of LAS in Pakistan through qualitative and quantitative data collected in the study area to carry out in-depth quality assessment. This assessment identified the quality issues for each element of existing LAS in the country which are synthesised below;

6.4.1 Synthesis of Institutional Aspect

The quality issues in the existing LAS, as identified for each element of institutional aspect highlighting the important ones in italic, are summarised in Table 6.1.

Table 6.1: Quality situation of institutional aspect

Elements	**Quality Indicators**	**Quality Situation**
Tenure security	– Reduction in land disputes – Equal access to land offices – Increased land values – Increased access to formal credits – Owners' perception about tenure security – Role of Islamic tenure system	Unclear
Land policy	– Types of formally and informally recognised rights – Province and population covered by formal system – Existence of land policy – Access to land rights – Land use policy	Unclear
Legal framework	– Land right, use, and valuation – Registration mechanism – Legitimisation of Govt. regulations – Legislation governing land administration	Complex
Land dispute resolution	– Level of disputes over land – Time taken to resolve land dispute – Procedures for land dispute resolution	Complex
Strategic plans	– Strategic targets – Review of objectives and strategies – Strategic and development plans for IT adoption – Analysis of users' need and their role	Unclear
Organisation and mandates	– Existence of land board – Organisation structure – Mandates allocation – Customer relation	Clear
Human resource development	– Human resource capacity – Human resource development facilities – Efforts taken for human resource development	Inadequate
Land administration processes	– Clarity and simplicity – Reliability – Security – Timeliness – Land registration process – Land surveying process	Complex
Coordination and data sharing	– Institutional and organisational arrangements – Co-operation and communication – Private sector involvement	Clear
Financing and data costs	– Foreign (external) funding – Tax collection – Fee structure – Financial resources	Inadequate

Tenure Security: The tenure security situation is found unclear as a whole due to the fact that the system was developed in the past for revenue collection purpose only and no specific attention was given to tenure security. The land owners' perception about security of tenure is found unclear (Section 5.3.1) as the land owners felt their rights unsecure in existing system. The increasing number of land disputes, as analysed in different periods of time, also revealed that the issue of tenure security has not been tackled effectively in present system. The land market and access to formal credit aspects are found in poor conditions due to problems in access to land information for a common citizen.

Land Policy: There is no comprehensive land policy at national level rather than a number of land laws and acts such as Land Reforms Regulation 1959, Land Revenue Act 1967, and Land Consolidation Act 1960 etc. All these laws and acts are modified with minor amendments to implement it at provincial level. The land policy situation is also observed unclear due to equivocalness in defining different forms of formally and informally recognised rights in land (Section 5.3.1). It is found that legally the regulations in existing land policy address equity and fairness on access to land rights (land reform) in land laws and acts but practically it is not. The legal and regulatory framework to assure the security and assurance of land for the investors is observed very weak in existing land policy.

Legal Framework: The existing legal framework for land management in study area is witnessed complex with less clearness and transparency as presented in section 5.3.1. The status of legislation governing land administration in existing LAS is found out-dated and scattered among many laws, which always cause difficulties in proper implementation and enforcement of these laws. The legal framework does not provide enough clearness and transparency on land holdings. The whole structure of land valuation and taxation for gathering land revenues is neither defined nor enforced effectively. Furthermore, the valuation method for land taxation does not fit to societal needs of all the stakeholders.

Land Dispute Resolution: The land conflict resolution mechanism in Pakistan is noticeable complicated and takes long time to resolve these land disputes (Section 5.3.1). The land disputes resolution mechanism in the study area is also found time consuming and high costs which always cause delays in resolving land disputes. The land related matters are governed under two parallel systems of adjudication under the revenue courts and civil courts. The risk caused by the two parallel modes of adjudication contributes towards delayed administration of justice, hindering investments, and increased transaction costs. The stakeholders pointed out that land disputes

resolution procedures are not clear to them and they do not know who should be consulted in which case.

Strategic Plans: The development of strategic plans for defining and achieving the strategic targets is observed unclear. The existence of strategic and development plans for Geo-ICT adoption is also advocated by BOR officials (Section 5.3.2). There is no mechanism for regular review of objectives and strategies to achieve targets and make the strategic plans more effective. It is also observed in that no development plan exists for the adoption of information technology and analysing users' needs in present system.

Organisation and Mandates: It is seen that BOR is the only organisation in the country at provincial level with a mandate to manage land data. The BOR works under the provincial government and their mandates are defined by the provincial government. The organisational structure and mandates allocation element is found clear in land administration agency. The BOR officials told that these mandates are clear and manageable (Section 5.3.1). He also accepted that the mandates are not overlapping and the allocation of these mandates reflects a well-balanced approach to decentralisation. Furthermore, the organisational structure of BOR is seen well designed for execution of work processes.

Human Resource Development: The human resource development issue is noticed inadequate as this issue is not considered effectively in existing LAS. It is noted that only one training school is available at provincial level with less training facilities (Section 5.3.1) for the training of BOR staff. No efforts are carried out in present system to develop human resource capacity both at individual and organisational levels. It is also found that the qualification criteria for appointments of staff in land administration agency are not updated to overcome new challenges on human resource development side.

Land Administration Processes: The land administration process situation is observed complex in study area. It is evident from the fieldwork data (Section 5.3.1) that most of these land administration processes are not clear and simple for the stakeholders to easily understand. The security and fairness issues of land administration processes are noticed very weak. Most of the stakeholders questioned about the reliability of land administration processes and land records. Furthermore, the time period for updating land information in different land registers and cadastral maps is found very long in the present system.

Coordination and Data Sharing: The coordination and data sharing element is found clear in existing LAS. The BOR has its own institutional and

organisational arrangements at provincial level to carry out land related activities (Section 5.3.1). These arrangements are further narrowed down at local level in each district under the BOR organisational setup to prepare and maintain land records locally. It is observed that no private sector is involved in present system to carry out any land related activities in the province.

Financing and Data Costs: The financing and data costs element is observed inadequate in existing system. The BOR officials agreed that the financial arrangements are insufficient to fulfil their business requirement (Section 5.3.1). The stakeholders also showed their disagreement with fees and costs structure in existing LAS. Furthermore, the assessment of existing funding situation and the financial resource allocation is found unequal in the present system.

The quality situation for elements of the institutional aspect in the existing LAS of Pakistan is found unclear, inadequate, and complex. All the concerned issues and problems relating to quality of the system are highlighted in this regard by collecting qualitative as well as quantitative data in the field. This assessment analysed all the quality issues in the present system on the institutional aspect side. This analysis will assist in the development of quality improvement guidelines to overcome these quality issues and ultimately improve the quality of LAS as per quality requirements.

6.4.2 Synthesis of Technical Aspect

The quality issues in the existing LAS, as identified for each element of technical aspect highlighting the important ones in italic, are summarised in Table 6.2.

Table 6.2: Quality situation of technical aspect

Elements	**Quality Indicators**	**Quality Situation**
Users' needs	– Access to data – Availability of required data	Inadequate
Technology adoption	– Present GIS status – Digital data availability – Hardware & software – Capacity building	Inadequate
Data organisation	– Coverage and completeness – Protection – Updation – Availability – Sharing	Inadequate
Training and development	– Facilities for education and training – Collaboration with educational institutions – Collaboration with research institutions	Inadequate
Land information system design	– Structural definition of the system – Consultation with foreign (external) agencies – Consistency	Unclear
Workflows for LA processes	– Information flow – Good management – Performance monitoring	Unclear
Quality standards	– Evaluation – National/International standards – Quality control – Accuracy – Coverage	Inadequate
Services and products	– Service delivery – Efficiency	Inadequate

Users' Needs: The users' needs analysis element is noticed inadequate in existing system. Most of the stakeholders pointed out difficulties in access to their land records. The stakeholders said (Section 5.3.2) that the present system does not provide necessary data according to their needs. They also demanded for the availability of their required land data with less cost and time at local level.

Technology Adoption: The status of Geographic Information System (GIS) is observed inadequate in existing system. The availability of software/hardware facilities for land record database management and existence of sufficient trained staff, in term of capacity building, is also found insufficient in the present system. The adoption of latest technology in existing system is accepted by all the stakeholders and BOR officials (Section 5.3.2).

Data Organisation: The data organisation element of existing LAS is observed inadequate in study area. It is seen that the BOR is the only

authority at provincial level which is responsible for keeping and updating land records. Although land records is maintained at local level in each district, but improper maintenance of these land records leads to lot of difficulties in managing these record (Section 5.3.1). The stakeholders said that improper maintenance of land records and interpolations in record-of-rights contribute most of difficulties concerning the protection of land data. The storage of land records is made only at local level which is always dangerous where there are chances that the entire record might be wiped out due to fire or floods. The access to these land records is also observed very difficult for the stakeholders.

Training and Development: The institutional and human capacity building is found inadequate in term of training and development in existing system. It is noticed that there is no collaboration between BOR and other research and educational institutions to improve human capacity (Section 5.3.2) of land administration agency in the province.

Land Information System Design: The land information system design element of existing LAS is observed unclear in terms of the structural definition of the system (Section 5.3.2). The existing system is also found very weak in consultation with foreign (external) agencies and consistency with new developments in GIS technology. The BOR official recommended that new concepts and ideas should be brought into consideration to improve the performance of the system.

Workflows for Land Administration Processes: The internal and external information flow in existing system is noticed unclear (Section 5.3.2). Less coordinated efforts of all the stakeholders is found to share their valuable comments and knowledge to improve the performance of existing LAS. Furthermore, the performance monitoring system for the workflows of land administration processes is observed inappropriate toward good performance.

Quality Standards: The quality standards element is noticed inadequate in the existing LAS of Pakistan. The quality of cadastral map is questioned by the stakeholders due to unavailability of quality standards to create and maintain these cadastral maps (Section 5.3.2). No performance monitoring system is found to monitor the performance of land agency both internally and externally. Furthermore, no quality parameter matrix is found to maintain and it is observed that all the processes are carried out on conventional manners.

Services and Products: The services and products delivery element is observed inadequate in the present system. Most of the stakeholders demanded for provision of all the products and services at local level. It is

found during the fieldwork that the quality of services and products is affected by unavailability of sufficient offices and infrastructure at local level (Section 5.3.2).

This assessment pointed out all the quality issues on the part of the technical aspect for the present LAS in the country. The quality situation for all the elements of technical aspect is found as a whole unclear or inadequate. All these issues for the institutional aspect must be included in the quality improvement guidelines to improve the quality of existing system as per quality requirements. However, the institutional aspect also must be kept in mind while developing these quality improvement guidelines as most of the issues concerning these elements are interrelated.

6.5 Summary

The methodical use of case study methodology (exploratory-explanatory case study approach) for analysing and assessing the quality of LAS has resulted in a number of new concepts to evaluate the quality of a standalone LAS. The resultant methodological framework, particularly the quality assessment and quality improvement conceptual models for LAS, maximise the capabilities of case study methodology in analysing land administration systems to develop quality improvement guidelines. The assessment approach applied in this research has identified quality issues for both the institutional and technical aspects of LAS. This research has developed a quality assessment framework for LAS by investigating all the elements, indicators, and variables of the system through a systematic approach of case study methodology. This provided a basis for future research in assessing the quality of a standalone land administration system that could focus on quality issues of the system.

Chapter 7

Designing Quality Improvement Guidelines

7.1 Introduction

The quality situation of existing LAS in Pakistan is deeply analysed in Chapters 4, 5, and 6. This analysis further pointed towards the important aspects that need urgent attention for improving the quality of the existing LAS in the country. This chapter presents a set of guidelines for the concerned authorities and LA agency to improve the quality of deteriorated LAS in the country. These quality improvement guidelines are drawn under the wider management approach of Total Quality Management (TQM) within the organisational levels pyramid as discussed in the previous chapters. In this context, section 7.2 first presents LAS quality improvement framework as an output of the theoretical background (Section 2.4 of Chapter 2) and the results of case studies conducted in the study area (Chapters 4 to 6). The quality improvement guidelines for each component of this quality improvement framework are then outlined within the broad context of TQM in the subsequent sections. In this context, section 7.3 presents a set of quality improvement guidelines for Quality Inspection. The quality improvement guidelines for Quality Control are outlined in section 7.4. Similarly, section 7.5 develops a set of quality improvement guidelines for the Quality Assurance to cover all the steps required for adapting the concept of TQM in LAS. At the end, section 7.6 adds up the summary of the Chapter.

7.2 LAS Quality Improvement Framework

It is mentioned in section 2.6 that the systematic process of quality includes the development of 'Quality Inspection' (QI) through 'Quality Control' (QC) within the context of systems of 'Quality Assurance' (QA) under the wider management approach of 'Total Quality Management' (TQM) (Das Mulm, 2009). In this way, TQM is the total of activities and methods used by an organisation at all its organisational levels in order to fulfil the requirements of a client/user with least cost (Lakakis et al., 2000). In this way, TQM can be used as an efficient tool to improve the quality of a whole system considering all its components. Therefore, the principles of TQM must be applied at all organisational levels (policy level, management level, and operational level) of LAS to improve the quality of the system as a whole.

TQM involves employee involvement and teamwork in order to develop a system that meets the needs of product quality, process quality and organisational quality. In this way, TQM includes a set of principles, tools, and procedures that provide guidance in the practical affairs of running an organisation. All the members of an organisation are involved in TQM for controlling and continuously improving how work is done (Maas, 2004). This implies that TQM should be incorporated not only in every product or service but also to all activities carried out at different organisational levels of LAS.

The basic components and actions of TQM are; continuous improvement, participation of clients and suppliers, participation of all levels of the organisation, evaluation of performance, team work, and involvement of all the personnel. It means that the whole structure of a system should be considered while introducing the concept of TQM in a system - starting from input through the processing to the final product/services. Since a system of land administration also comprises all these basic components (Chapter 2), a set of quality improvement guidelines is thus required to implement the concept of TQM and ultimately improve the quality of the system. Furthermore, all the organisation levels must be brought into consideration while adopting the concept of TQM within organisation since all the basic components and actions of TQM contribute to different levels of an organisation.

In case of land administration systems, it is most important to develop quality improvement guidelines by considering all the organisational levels so that all the processes and stakeholders could be brought into consideration to improve its quality of these systems. Therefore, all these quality improvement guidelines must be developed within the pyramid of organisational levels (Chapter 5) by adopting systematic process of quality under the wider management approach of TQM (Chapter 2). A framework for improving the quality of LAS in order to draw these quality improvement guidelines is shown in Figure 7.1. In this framework, the most important elements of LAS in Pakistan (Chapter 4) are highlighted in italic while the contributing elements of LAS (Chapter 5) are in normal font.

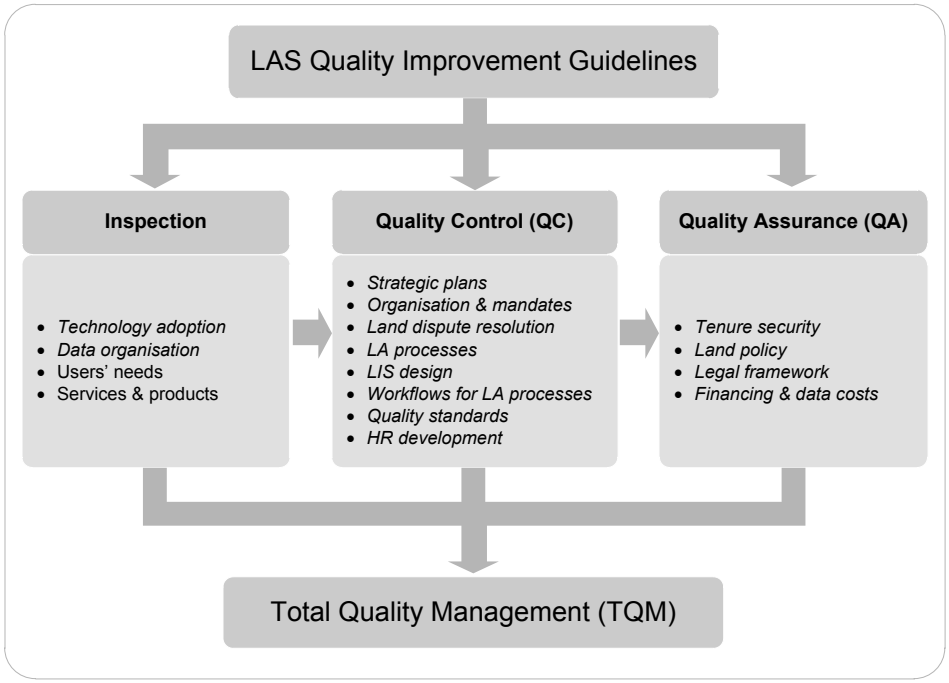

Figure 7.1: LAS Quality Improvement Framework

From the literature review and the fieldwork data collected in the field it is evident that in case of LAS, the 'Quality Inspection' focuses on the technical issues concerning the existing system and adopting new technologies for overcoming those issues. This is mostly concerned with the operational level of LAS, where most of the products or services are delivered at the users' end. The 'Quality Control' concentrates on issues at management level so that the quality of product or service can be measured and evaluated. The 'Quality Assurance' plays an important role at the policy level, where a set of rules and regulation should be defined to ensure the quality of products or services. Therefore, the development of these quality improvement guidelines in this direction will help to implement the concept of TQM within the whole structure of land administration system for improving the quality of the system.

Based on the analysis and results obtained from this research, a set of quality improvement guidelines is developed for improving the quality of deteriorated LAS in Pakistan. The design of these quality improvement guidelines is varying from system to system depending on the existing situation of LAS within the country in which the system is being examined.

7.3 Quality Improvement Guidelines on Quality Inspection (QI)

Quality improvement guidelines dealing with QI stage of TQM in LAS are treated by the stakeholders at operational level. The stakeholders at this level mainly include the operational units which are responsible for carrying out daily tasks of land administration such as Tehsildars and Patwaries from BOR side and real estate agents and financial institutions like banks from the users' side. Their decisions have a short-term effect that mostly depended on users' needs and their requirements. The elements of LAS covered in this stage of TQM include; data organisation, users' needs analysis, technology adoption, training and development, and services & products offered by land administration agency. The QI stage of TQM investigates these elements of LAS to fulfil deficiencies in the present system and improves the quality of products and services offered by LAS. The guidelines on the QI side are;

- *Adopting New Technology*
- *Organising Land Data*
- Analysing Users' Needs
- Improving Services and Products Delivery

Adopting New Technology: Appropriate GIS technology should be adopted to map and maintain geometrical cadastral information within strategic objectives (FIG, 2005). Cadastral information can be collected and cadastral parcel boundaries can be surveyed with less labour, time, and cost as compared to the old fashioned field surveying technique by integrating global positioning system data, remote sensing imagery, and existing cadastral maps through participatory geographic information system technique (Ali et al., 2012). Technology must be adopted to make the system process quick and provide fast services at the users' end to fulfil land market needs for enhanced economy generation and users' satisfaction. There should be easy ways for sorting, accessing, and disseminating this data at local level for the users to produce efficient land market. In this connection, new information system concepts for data modelling and process modelling should be also considered as it can help in gathering, processing, storing and disseminating quality data at affordable cost. In this context, the present status of technology, availability of hardware and software facilities, and human capacity should be considered first while adopting new technology in existing system. Furthermore, the adoption of Geo-ICT in LAS should be looked at all the three organisational levels being the policy level, management level, and operational level, in accordance with users' needs.

Organising Land Data: On data organisation side, there is a need to sort out adequate data and information models for sustainable land information management (van der Molen, 2006b). Land records should be maintained at local level and the copies should be also kept at central level so that original record could be recovered in case of any troubles in land records at local level

or any lost due to other disasters such as flood and fire etc. Similarly, the introduction of front desk facility and one window operation can help the stakeholders to access their land records more easily at all levels.

Analysing Users' Needs: In order to improve the performance of LA system, users' needs should be analysed on regular basis and a list of different stakeholders such as professional (lawyers, financial institutions, etc.) and non-professionals (land owners, real estate agents, etc.) must be created and maintained to understand their needs. The needs or requirements of users can be captured in a variety of ways such as direct discussion or interviews, surveys, focus groups, users' specifications, observation, warranty data, field reports etc. (Crow, 2002). The use of mass media can also help in attracting users' attention and giving their inputs through different questionnaires and pamphlets as well as other media programs. The understanding of these users' needs can be then summarised in a product or service to satisfy their needs.

Improving Services and Products Delivery: All the services and products are partially delivered to users at local level**.** These services and products delivery should be made more efficient by providing sufficient land offices and infrastructure by land administration agency. The organisational capacity should be assessed in terms of human resource and building infrastructure to provide all the products and services at local level to all the stakeholders. This will also help the land agency to collect the taxes and other revenue generated through land transactions as well as to manage the land records effectively. The use of information technology such as internet and web services can be used to improve the product and service delivery. Similarly, the front desk services can also help in improving the quality of services at users end to get their desired products in an easier way. Moreover, the existence of all cadastral information in digital form can help to store, update, and disseminate all the land related data in an efficient manner.

The consideration of these quality improvement guidelines on QI stage will lead to improvement of the quality of these elements of Pakistan's LAS as per quality requirements. This will mainly focus on those problems and issues which originated by the traditional practices in the present LAS.

7.4 Quality Improvement Guidelines on Quality Control (QC)

Quality improvement guidelines concerning the QC stage of TQM in LAS are mostly covered by the stakeholders at management level. The stakeholders at management level include land administration agency officials controlling different tasks at top management level (provincial/ national level) depending upon the organisational structure of LAS in the country. They are mainly responsible for setting the strategic targets that have medium-term

effects, depending upon the changing role of Geo-ICT in the organisation and future plans as per societal demands. The elements of LAS controlled by QC stage of TQM include; the mechanism for land dispute resolution, definition of organisation and mandates, human resource development, land administration processes, coordination and data sharing, strategic plans, land information system design, workflows for land administration processes, and definition of quality standards. The QC stage looks after these elements of LAS to take necessary actions for improving the quality of LAS within country's environment. The quality improvement guidelines on the QC side include;

- Developing Strategic Plans
- Defining the Mandates of Land Administration Organisation
- Improving *Land Dispute Resolution* Mechanisms
- Improving *Land Administration Processes*
- Introducing new Concepts in Land Information System Design
- Developing *Workflows for Land Administration Processes*
- Defining *Quality Standards*
- Building Human Resource Capacity

Developing Strategic Plans: Strategic and development plan should be developed for the adoption of GIS technology in existing LAS to improve the overall performance of the system. Similarly, the ICT–business strategy for cadastral and land registration would greatly support the expansion of a land administration system's spatial-ICT based services, particularly in the area of land markets and valuation (Burns et al., 2007). The strategic targets should be defined in this regard and strategic plan should be published on regular basis to achieve the pre-defined objectives and targets. A collective strategic approach should be adopted to include a number of fundamental principles, issues, and components which are required in the formulation of a land information system (LIS) strategic plan for a jurisdiction (Sedunary, 1993; Tuladhar et al., 2002). A strategic plan is thus required as no such plan was found for adopting GIS technology in the existing system. Furthermore, all the objectives and strategies should be regularly reviewed with changing role of technology and users' needs.

Defining the Mandates of Land Administration Organisation: The organisational structure of LA agency in Pakistan is found good for execution of work processes with its mandates for land administration and management at top management level. However, the allocation of tasks and responsibilities for BOR personals need to be revised at local level. The management of customer relation should be also clearly defined in these mandates to meet the demands of all the stakeholders. Similarly, the role of other sectors such as academic sector and private sector (FIG, 2010a) should be clearly defined in the mandates of land administration organisation. The

academic sector can help on the capacity building side through organising refresher and training courses for the land agency people where as the involvement of private sector can help to reduce the cost and time for carrying different tasks that can be easily done by them.

Improving Land Dispute Resolution Mechanisms: The relationship between land and dispute is extraordinarily complex. Addressing land issues effectively demands a broad, integrated, and inter-disciplinary approach. Lack of accurate information about land rights and other land issues can fuel confusion and suspicion that can lead to land disputes. Early public information and education campaigns about land-related issues can help to clarify issues and correct false assumptions (USAID, 2005). While interviewing the land owners in the field it is observed that the existing mechanisms for resolving land disputes are very complicated and time consuming. Therefore, land dispute resolution mechanisms should be made more simple and low cost for the land owners by introducing alternative approaches such as negotiation, arbitration and mediation. This will help to resolve land disputes at local level through mediation between the concerned parties and involving local government and local citizens.

Improving Land Administration Processes: Land administration processes should be made clear and simple which can be easily understood by a common citizen. These LA processes should be transparent and effective in operation to increase confidence level among all the people. The existing land administration processes can be made simple, cheap, and transparent by considering process design, process simulation, and benchmarking techniques (Radwan et al., 2001). The time required for updating information in land register and cadastral map should be shortened as per changing societal needs and users' requirement. The existing traditional boundary demarcation process can be improved by introducing a photogrammetric technique which uses aerial photographs or high resolution satellite images as an alternative for spatial data acquisition. In this case most measurements can be done in the office (Tuladhar, 2005b). The existing discipline-oriented surveying technique can be also replaced by adopting the methodology-oriented integrated technique in which the parcels boundaries can be delineated and other cadastral information can be collected more efficiently (Ali et al., 2012). Similarly, the registration process can be improved by re-engineering it and introducing front desk and one window operation facility.

Introducing new Concepts in Land Information System Design: The new concepts in information system for data modelling and process modelling should be introduced in existing LAS through consultation with foreign (external) agencies to gather, process, store and disseminate quality data at affordable cost with many data access points such as a front desk or the

internet. For this purpose, the existing processes in land information system including; land surveying, mutation process, and land registration process must be re-engineered as per user/quality requirements and new developments in the field of information technology. On system development side, the cadastral modelling, such as Land Administration Domain Model (LADM), is considered as a basic tool for facilitating appropriate system development and forming the basis for meaningful communication between different (parts of the) systems (van Oosterom et al., 2006). On the data capture side, due to advancements in Geo-ICT, the traditional surveying concept has taken on a new shape from discipline-oriented technologies such as geodesy, surveying, photogrammetry, and cartography into a methodology-oriented integrated discipline of geo-information science. A participatory geographic information system (PGIS) combined with remote sensing images is quite interesting for gathering quality data with the involvement of land owners, tenants and other stakeholders (Ali et al., 2012).

Developing Workflows for Land Administration Processes: Core land administration functions are the registration of rights in land and the survey and mapping of the boundaries of the extent of these rights. A key determinate in the efficiency of a land administration system is the institutional structure that supports these core functions (Burns et al., 2007). In this regard, the internal and external information flow for allocation of tasks and responsibilities to managers within the land administration organisation should be appropriate and clearly specified for better performance of LAS. Standard operating instructions for each step of workflow should be developed and implemented as a part of total quality framework. GIS and database technologies are to be employed for land data processing, updating, storing and dissemination. The integration and sharing of geo-referenced data becomes more and more crucial, and there is an increasing need for efficient and reliable data exchange (Steudler, 2006). In this context, OpenGIS and GML/XML are important tools for efficient and transparent data access in different land administration activities.

Defining Quality Standards: Since databases of LAS reside in different organisations and data are gathered using different sources, the data quality needs to be transparent for users and stakeholders. Different elements of geographic data quality must be defined like positional quality, temporal quality, completeness, data status, logical consistency, lineage and timeliness (FGDC, 1994; Stanek and Frank, 1993). A set of national data standards for service quality and spatial/non-spatial data quality standards should be defined by the land administration agency based on international standards such as ISO. These quality standards should be evaluated on regular basis to incorporate users' need and quality requirements with changing role of

technology in a society. In this regard, the coverage vs. accuracy option must be considered while converting the existing manual cadastral data into digital format to reduce the required cost and time. Similarly, the private sector can be involved in land related activities (Burns et al., 2007) so that the work load would be shared and land administration agency can deliver their services efficiently.

Building Human Resource Capacity: Land Administration is about individuals or people – from politicians, senior professionals and managers, middle managers and administrators, to office and field personnel. All the players in the system need to have some understanding of the overall system as well as more detailed and specific skills, which need to be developed. For this purpose, the capacity assessment and development in the area of land administration should be analysed at all three levels (societal, organisational, individual level) of capacity building through a conceptual framework (Enemark and Williamson, 2004). At societal level, it looks at issues and principles of policy and legal frameworks, tenure, and administration systems. At organisational level, it looks more closely at enabling good governance, institutional strengthening, consideration of spatial data infrastructure principles, and development of a professional body. At individual level, it deals with the professional and technical competence, capacity needs, and educational resources. This can be achieved through collaboration with academic and research institutions through short courses and training opportunities in land administration. While building the human resource capacity, the capacity needs of human resource development in the existing system must be analysed in terms of existing human resource and training/ education facility. This will help to identify the gaps between the existing human resource capacity and the capacity needed for undertaking all land administration tasks in short, medium, and long term.

The selection of these quality improvement guidelines on QC stage will assist to improve the quality of these elements of LAS in Pakistan as per quality requirements and changing role of information technology in a society. These guidelines will mainly concentrate on the concern elements of LAS to improve their quality.

7.5 Quality Improvement Guidelines on Quality Assurance (QA)

Quality improvement guidelines relating to the QA stage of TQM in LAS are handled by the stakeholders at policy level. The stakeholders at policy level mainly include the Parliament and the Government as well as the higher authorities of land administration agency (as observed in this research), who are responsible for setting the objectives and overall definitions for LAS. The

implications of their decisions would typically be long-term, depending upon the nature of their decisions and effect within country's environment. The elements dealing with quality of LAS at QA stage include; tenure security, land policy, legal framework, and financing and data costs. Necessary decisions should be made at this stage for these elements of LAS to improve the quality of existing system. The quality improvement guidelines on the QA side are;

- Improving *Tenure Security*
- Developing Land Policy
- Re-structuring Legal Framework
- Structuring *Financing and Data Costs*

Improving Tenure Security: The nature and extent of rights in land should be clearly defined for the land owners and different campaigns should be launched to educate common citizens about their rights in land and tenure security. Tenure security also can be enhanced by exploring innovative arrangements in land management through simplified procedures and inter-linking cadastral and Land Information Systems (LIS) to provide land information at local level to users in an efficient manner. Similarly, alternative land transfer techniques (land delivery, transactions, etc.) should be developed that can be used by low-income people to get easy access to land information to remove the hindrances to efficient land market and access to formal credits (UN-HABITAT, 2003). Furthermore, negotiation mechanism should be adapted to resolve some of the tenure issues by involving local community and land owners at local level.

Developing Land Policy: The land policy must describe how the government intends to deal with the allocation of land and land related benefits to facilitate the implementation of rules for land tenure and land tenure security, the functioning of the land market, land use planning and development, land taxation, management of natural resources, land reform, etc. (FIG, 2010b). The land policy framework should recognise the growing complexity of rights, restrictions and responsibilities relating to land, and consequent demands on land administration infrastructures (Williamson, 2001). In case of Pakistan, a comprehensive land policy is needed to address all land related issues. Different types of formal and informal rights in land must be clearly defined so that all the stakeholders can easily understand their land rights.

Re-structuring Legal Framework: The legal framework should be re-structured to provide enough clearness and transparency on land holdings and rights. This can be done by re-analysing the existence mechanism and laws for allocating land rights, land use, and land valuation. The whole structure of land valuation and taxation for gathering revenues should be

defined so that the valuation method should fit to the societal needs. For this purpose, an evaluation system must be evolved to take into account the impact of taxation on use of land and land markets by involving land owners and other stakeholders from real estate agencies. The legislation governing land administration also needs to be reformed so that new laws should be included and the out-dated laws could be removed. Furthermore, the division of the jurisdiction of revenue court and civil court must be clearly defined so that the stakeholders can easily contact the concern court in case of their land disputes.

Structuring Financing and Data Costs: Financial mechanisms should be improved by improving the tax collection process and introducing costs recovery concept in the existing system through offering different types of products and services to the users. The fees and costs structure should be considered in such a way that vulnerable sections of population may not be excluded because of the cost factor. International experience can be studied for financial sustainability of existing LAS (Burns et al., 2007) that typically involve investigation of a number of factors such as appropriate fee and tax structures (including the balance of transaction-based) and annual fees and taxes, effectiveness of collecting fees and taxes, fiscal policy concerning the raising of revenue at the various levels of government, alternatives for land administration service delivery and costing of these alternatives, budgetary support for land administration at various government levels, and the availability of funds from government and donor agencies to support the initial development of LAS.

These quality improvement guidelines on QA stage will define a set of rules and regulations for the concerned elements of LAS in Pakistan. The implication of these quality improvement guidelines at all these three stages of quality will lead to improve the quality of land administration system in Pakistan within the framework of TQM.

7.6 Summary

The quality situation of existing LAS in Pakistan is deteriorated and needs urgent attention. A quality improvement framework is developed to provide a line-of-action for designing a set of quality improvement guidelines for all the elements of LAS especially the important ones to improve the system's quality. Since, the components of quality process include the development of 'Inspection' through to 'Quality Control' (QC), within the context of 'Quality Assurance' (QA) under the wider management approach of Total Quality Management (TQM). Therefore, the selection of these quality improvement guidelines is carried out within the broad context of TQM. All the quality improvement guidelines are designed on the basis of results obtained from the case study carried out in Pakistan.

Chapter 8

Conclusions and Recommendations

8.1 Introduction

This thesis developed a quality assessment framework for assessing the quality of LA by applying TQM concepts to LA using a stepwise approach of exploratory and explanatory case studies methodology. This chapter draws the conclusions and recommendations of this research based on the theoretical substructure (Chapters 1 to 3), as well as the findings of case studies that came to light in the research results as discussed in Chapters 4, 5, 6 and 7. In this connection, Section 8.2 presents a brief discussion on analysing the findings of this research for each research question. The recommendations for quality improvement of LAS in Pakistan and future research are presented in Section 8.3 at the end of this chapter.

8.2 Research Findings and Analysis

This research uses a stepwise approach of exploratory and explanatory case studies methodology to develop a quality assessment framework for assessing the quality of a standalone LAS to apply the concepts of TQM. The research findings for each research question of this research, as outlined in Chapter 1, are analysed in the following paragraphs.

Question 1: Why is case study research the most suitable methodology for carrying out this research, and how is it applied in a 'systematic' way to design a quality assessment framework?

In previous studies, little attention is given to the rigorous use of case study methodology in analysing land administration systems across different countries in the world. An explanatory case study approach is used in some studies whereas an exploratory case study approach is applied in the others. Similarly, qualitative data is collected in some cases whereas only quantitative data is gathered in the others. This decreased the understanding of actual situation due to inherit advantages and disadvantages in using these data sets in isolation.

This research filled the gap by using a stepwise approach of exploratory and explanatory case studies methodology to analyse the quality of the existing LAS in Pakistan by collecting both the qualitative and quantitative data. This strengthened the research to avoid the respective weaknesses of using qualitative or quantitative data in isolation for describing the existing situation (Chapter 3). The methodology took the institutional and technical aspects of LAS into account and suggested their elements and indicators for collecting the qualitative and quantitative data to evaluate the quality, making a distinction between different organisational levels and the three stages of quality achievement to implement the concepts of TQM in LA. As such, it provided the basis for a structured and systematic approach to assess the quality of LAS within country's environment.

Question 2: What are the relevant elements of the institutional and technical aspects in the existing LAS to develop a quality assessment framework for assessing its quality?

The elements of LAS can be categorised into institutional and technical aspects. The quality situation of these elements affects the quality of LAS directly or indirectly. It is essential to analyse the elements of institutional and technical aspects of LAS before going to do further development in the system. The elements of the existing system need to be analysed in detail through a comprehensive approach. This will give a clear picture of the existing situation.

In this research, the elements of LAS were categorised into institutional and technical aspects. However, it was impossible to separate all these elements completely because most of the elements were combined together at some points. A holistic approach is adopted in this research through a 'LAS Prism Model' to link the LAS quality improvement guidelines, institutional aspect, technical aspect, elements and indicators of the quality assessment framework. This integration further enabled to develop a quality assessment framework to analyse the quality situation of existing LAS (Chapter 4).

Question 3: Which indicators and variables can be used for the elements of the institutional and technical aspects of LAS and how can the quality of a LAS be assessed by using these indicators and variables?

The quality issues of existing LAS need to be assessed by identifying the indicators and variables for all elements of the system. This can be done by using an analytical approach to consider all the necessary elements, indicators, and variables for both the institutional and technical aspects of LAS. This analysis will give a clear picture of the quality situation which will lead to the quality improvement guidelines for improving the quality of the existing system.

The indicators and variables for quality assessment of LAS were defined carefully before going to analyse them in detail. These indicators and variables for the elements of LAS were identified through a rigorous study of the previous studies carried out in the field of cadastre and land administration (Chapter 5). The selection of these indicators and variables guided to determine the criteria for measuring the existing quality situation of the system. The quality situation of the existing system is then analysed in detail through these quality indicators and variables by collecting qualitative as well as quantitative data. This gave a full understanding of the quality situation for the existing system in the country (Chapter 6).

Question 4: What would be the quality improvement guidelines to improve the quality of a deteriorated LAS within the broad context of TQM concept?

In order to apply the concept of TQM to LA, the quality improvement guidelines must be developed through the hierarchical process of quality i.e. the development of the stages of 'Quality Inspection' through to 'Quality Control', within the context of 'Quality Assurance'. The 'Quality Inspection' is mostly concerned with the operational level of LAS, where most of the products or services are delivered at the users' end. The 'Quality Control' concentrates on issues at management level so that the quality of product or service can be measured and evaluated eventually. The 'Quality Assurance' plays an important role at the policy level, where a set of rules and regulation should be defined to ensure the quality of product or services at all levels.

In this research, the elements of LA were analysed carefully to categorise them according to the hierarchical process of quality development. This categorisation helped to formulate the quality improvement guidelines as per quality requirement of each stage within the broad context of TQM. The linkage among all the three stages of quality development process was maintained during this formulation (Chapter 7). The formulation of these quality improvement guidelines at all the three stages of quality achievement process – Quality Inspection, Quality Control, and Quality Assurance stage helped to apply the concepts of TQM to LA.

8.3 Research Recommendations

This research recommends that the development of a quality assessment framework to investigate the quality of existing LAS is a very helpful tool. The assessment is more meaningful when it is based on a step-by-step approach to investigate the objectives and issues of the existing system in a holistic manner. In this way, an appropriately designed and holistic analysis approach, combined with the selection of suitable data collection techniques, is very necessary for examining the quality of LAS. Further recommendations of this research specific to the LAS in Pakistan and for future research are presented in the following subsections.

8.3.1 Recommendation for Pakistan

For applying the concepts of TQM to improve the quality of LAS in Pakistan, different factors can be taken into consideration as pre-requisites. These factors include the data sources for different land related information, the currently operating land information system and available spatial attribute data as well as the management structure involved in upkeep and maintenance of the land records (Ali and Shakir, 2012).

Cadastral information can be collected and cadastral parcel boundaries can be surveyed with less labour, time, and cost as compared to the old fashioned field surveying technique by integrating global positioning system data, remote sensing imagery, and existing cadastral maps through a participatory geographic information system technique. The cadastral maps generated through this approach can be easily re-produced, updated, and retrieved to do different calculations with less time and cost (Ali et al., 2012).

While the adoption of new technologies is no doubt a very flexible tool for handling land information and its management in a much efficient manner, but this is confronted with a lot of challenges in operational utilisation, particularly in the developing nations. Of course, these challenges are not entirely related to technologies; rather, there are a variety of other factors, which are relevant to local problems of the respective countries. In this connection, an in-depth analysis of the existing situation using a stepwise approach as discussed in this research can help in exploring those challenges and finding out suitable solutions.

8.3.2 Recommendation for Future Research

This research has filled a gap in assessing the quality of a standalone land administration system and provided a basis for future research in improving the quality of LAS within the broad context of TQM concepts. However, recommendations for future research would broaden the selection of elements and indicators for developing TQM concepts in LA when the quality assessment framework of this research work is tested in other studies relating to cadastre and land administration systems.

First, the application of this quality assessment framework for LAS in other provinces of Pakistan would be helpful in re-examining the validity of its findings. Further empirical studies using larger sample sizes, greater geographical diversity, and LAS diversity would be helpful in validating specific components of the theoretical frameworks proposed in this study.

Second, subsequent research needs to be engaged in the development of more valid and reliable operational definitions for the proposed concepts, overcoming the limitations posed by the data source used in this study. For example, more stakeholders e.g. from the private sector could be considered as no private sector was found to be involved other than government agency i.e. BOR. The data of these private stakeholders would be obtained in order to score the responses for inter organisations rather than intra organisation.

Third, the relationships found in this study would be investigated in different countries to test whether they go in the same or different directions.

Fourth, more case studies could be conducted on different kinds of LA across different countries by considering other assessment tools and standards such as Land Governance Assessment Framework (LGAF) (World Bank, 2010) and Land Administration Domain Model (LADM) (Lemmen, 2012) in order to continuously improve the concepts of TQM in LA. Thus, these concepts could better meet the requirements of different LA systems.

Finally, the influence of external factors such as the involvement of private sector, adoption of new technologies, social norms and values, etc. could be studied in order to explore that how external factors affect the use of TQM concepts in LA.

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Appendices

Appendix 1: Registers Maintained by a Patwari

i. ***Akhier Tasdiq Register Haqdaran Zamin**:* During the process of creating the new Haqdaran Zamin document, the Tehsildar or Naib Tehsildar create this document to verify all mutations that have been incorporated into the new document by the Patwari.

ii. ***Copy of Mutation order**:* Each Patwari will be provided with a Register so that he can issue a furnish copy of Mutation order to the concerned parties.

iii. ***Fard Badar**:* This is a statement for the correction of clerical mistakes made in copying the entries of the Register Haqdaran Zamin. The Fard Badar consists of a foil and counter foil.

iv. ***Fard Malkiyat Document:*** The Fard Malkiyat Document is a copy of a page of Register Haqdaran Zamin

v. ***Fard Taqseem Aab**:* In the areas where the lands are irrigated by means of Karez or other similar source, a statement of distribution of water (Fard Taqseem Aab) is prepared which shows how water resources are distributed in the area.

vi. ***Field Book Mahaal:*** Field Book is a part of the record of right and contains for each Khasra, its length and breath, calculation of area and classification of soil. The field book is prepared at the time of settlement and consolidation of holdings. Each entry in the book is to be signed by the Kanungo.

vii. ***Index Manzoor Shudah Dakhil Kharij Mashmula Misal Haqiyat or Misal Miyadi**:* This register contains all the attested and accepted Mutations. Whenever a new Jamabandi is made a copy of that register is attached with the Jamabandi.

viii. ***Index Radiefwar Malikan and Marthehan**:* This form is meant to locate the owners and mortgages in an estate through an alphabetical index and also to find out their rights in various holdings (Khewats).

ix. ***Index Survey/Khasra Number:*** This form shows which Khasra (parcel) number falls in which Khatuni number in a revenue estate.

x. ***Interrogatories:*** If during Mutation process Patwari finds that he needs to record the statement of another person, for disposal of the case residing outside the limits of the Tehsil. Then Patwari issue an interrogatory letters to the concerned person.

xi. ***Memoranda Invoice**:* Along with every mutation, A memoranda is sent in the form of an invoice.

xii. ***Naqsha Haqooq Chahaat-o-Nul Chahaat**:* A statement of rights in wells and tube wells contains information on the location, type, size and ownership of Well and tube wells in the area.

xiii. ***Parcha Khatuni**:* Whenever a new Jamabandi is prepared a copy of parcha Khatuni is given to all the land owners for verification.

xiv. ***Receipt of Mutation fee:*** In case of collection of mutation fees in advance the corresponding person will pay the Mutation fee to the Revenue Officer and he will issue a receipt to the concerned person.

xv. ***Register Dakhil Kharij:*** *Register Dakhil Kharij* also known as Mutation Register keeps track of every mutation (Intiqal). This register consists of foil and counter foil. The counter foil is the kept by the Patwari for his records while the foil copy is forwarded to Tehsil office.

xvi. ***Register Gardawari:*** A new register Gardawari(containing the corps records), into two parts, will be brought into use whenever a new quadrennial register Haqdaran Zamin has been prepared, original copy being intended for the use of Patwari and the second for use in Union Council office.

xvii. ***Register Haqdaran Nakhlistan****:* In certain areas, ownership of date trees is considered to assess revenue. This register details complete information regarding number, type, and ownership of date trees.

xviii. ***Register Haqdaran Zamin (Misal Miyadi)****:* The Register Haqdaran Zamin - Misal Miyadi shows the right holders of land including details on owner, cultivator, land, soil, rent etc. It is created every four years from incorporating recent Mutations.

xix. ***Register Jinswar****:* As soon as the field inspection of a harvest is finished in any village the Patwari will complete the crop abstract (Jinswar) before commencing work in the second village. When the field Kanungo has seen the abstract and signed it as correct the Patwari will enter a copy in his Jinswar register and dispatch the abstract to the office Kanungo of the Tehsil.

xx. ***Roznamcha Waqiati****:* In this register Patwari should maintain any incident occurred along with the date, method and the source by which the event came into the notice of Patwari. If possible he should attest that through corresponding Lambardars.

xxi. ***Shajra Nasab (Part A)****:* This register contains basic information about the manner of revenue collection in the particular revenue estate and an index to understand the symbols in the genealogical tress prepared in the (Part B).

xxii. ***Shajra Nasab (Part B)****:* This part of the form includes the actual Shajra Nasab (Genealogical tree) of the landowning families in the Revenue Estate.

xxiii. ***Shajra Nasab:*** Shajra Nasab is an inheritance or genealogical tree drawn pictorially. An amended copy of the Shajra Nasab or genealogical tree of owners complete to date shall be filed with every mutation. Any change in the inheritance or genealogical tree is made to the *Patwari*. The changes will be drawn pictorially. It consists of two parts:

xxiv. ***Summary of Attested Mutations:*** The Patwari prepares the lists contain all the attested Mutations including all the approved Mutations and the all the unapproved Mutations. The lists should be prepared from Parat Patwar. And after checking it with the Register Dakhil Kharij it is forwarded to Tehsil Office.

xxv. ***Tatimma Field Book Murabba Bandi****:* This register contains all the records in which we have partition of land according to Murabba Bandi.

xxvi. ***Tatimma Field Book Mustateel Bandi:*** This register contains all the records in which we have partition of land according to Mustateel Bandi.

xxvii. ***Tatimma Field Book****:* The case of Mutation in we have permanent change in the partition of land all such records are maintained in this register after re measurement of land.

xxviii. ***Tatimma Shajra****:* A supplementary map

Appendix 2: Questionnaires for Exploratory Case Study

a. Questionnaire for Land Owners and Law Professionals

Name:
Occupation:
Contact Number:
Email:
Address:
Date:

No.	Questions	Aspect
1.	Are you satisfied with the current system of land management and administration system?	Institutional
2.	Is there a room for corruption and unofficial changes in land record due to Patwari?	Institutional
3.	Are the procedures of land transaction, mutation, transfer, and subdivisions quite old and out-dated?	Institutional
4.	Does Board of Revenue (BOR) perform its duties efficiently?	Institutional
5.	Is there increase in land related disputes in present system?	Institutional
6.	Area the official procedures in present system are complicated due to which delays occur in court decisions?	Institutional
7.	Does insufficient knowledge and information about land record cause delay in most of land disputes?	Technical
8.	Does Patwari provide correct and in-time information in all land disputes?	Technical
9.	Can a Patwari manage the whole record of his area effectively?	Institutional
10.	Is there a chance to reduce the land dispute resolution time if you get in-time information about the land?	Technical
11.	Are the BOR officials cooperating during land related disputes?	Institutional
12.	Does a common citizen know about the procedures and fees of Board of Revenue?	Technical

b. Questionnaire for Land Administration Personals

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

No.	Questions	Aspect
1.	Can a Patwari manage the whole record of his area effectively?	Institutional
2.	Are the changes in Record-of-Right taking place after every 4 years?	Technical
3.	Is the Lat/Long information contained in a cadastral map?	Technical
4.	Does the present land information exist in paper form in registers?	Technical
5.	Can a Patwari perform his duties rightly due to work load?	Technical
6.	Do the procedures for land record preparation and keeping are complicated and involves several levels of administration?	Institutional
7.	Do the Record Rooms are made at District level only?	Technical
8.	Are you satisfied with the court procedures in present system of land management?	Institutional
9.	Does Board of Revenue (BOR) publish any pamphlets for a common citizen to know about court procedures in case of land disputes?	Technical
10.	Is the delay in land mutation processes are due to complicated procedures by following a long chain of officials involved?	Institutional
11.	Is the annual fund provided by the government to repair record rooms is utilised in a right way?	Institutional
12.	Does the Government provide any funding to Patwaries for stationary etc?	Institutional

Appendix 3: Research Matrices for Analysing the Indicators

a. Research Matrix for Analysing Indicators of Institutional Elements

Elements	Indicators	Variables	Data source	Methodology		
				Interview	*Visit*	*Data*
	○ Reduction in land disputes	• Number of land disputes in different periods • Percentage of presently solved and unsolved land disputes	▪ Courts		√	√
	○ Equal access to land offices	• Do all citizens have equal access to land offices for getting their land records?	▪ Land owners ▪ Real estates ▪ Banks	√	√	
	○ Increased land values	• Does the land value is increased with the passage of time in term of investment in property sector?	▪ Land owners ▪ Real estates	√	√	
Tenure security	○ Increased access to formal credits	• Are the financial institutions willing to mortgage land? • Do the land owners apply for credits against their property? • If yes then this number is increasing or decreasing?	▪ Land owners ▪ Banks	√	√	
	○ Owners' perception about tenure security	• How much the owner feels secure his right in the present system?	▪ Land owners	√	√	
	○ Role of Islamic tenure system	• How much the Islamic tenure system is practiced in	▪ BOR officials	√	√	

Elements	Indicators	Variables	Data source	Methodology		
				Interview	*Visit*	*Data*
		the present LAS?				
Land policy	○ Types of formally and informally recognised rights	• What are the types of rights formally recognised in land such as state land, private land, communal land etc? • What are the types of rights informally recognised in land such a Waqf land, customary land etc?	▪ BOR officials	√		√
	○ Percentage of the province & population covered by formal system	• What per cent of the province and population covered with formal rights?	▪ BOR officials	√		√
	○ Characteristics of population without formal rights	• Are there unregistered parcels, if yes then what is their number and in which register these information are noted and entered?	▪ BOR officials	√		√
	○ Existence of land policy	• Existence of a govt. policy for land administration (y/n) • Does the policy exist at National level or provincial level? • Which institutions are involved in the development of land policy?	▪ BOR officials	√		

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
	○ Access to land rights	• Is it clear who has access to obtaining rights to land? • Do the regulations address the equity and fairness on access to rights to land (land reform)? • Are the procedures for establishment, transfer and abolition of rights to lands clear and well accepted? • Is it clear when the government might interfere in private rights to dispose of their land?	▪ BOR officials	√		
	○ Land use policy	• Is there a policy at various government levels clarifying about how to use the land?	▪ BOR officials	√		
Legal framework	○ Legal framework for: ○ Land rights, ○ Land use, and ○ Land value	• Does the legal framework provide enough clearness and transparency regarding the whole complex of holding rights to land? • Can legal and administrative arrangements enforce these issues in a way that comply with good governance?	▪ BOR officials ▪ BOR staff ▪ Land owners ▪ Real estates	√	√	

Elements	Indicators	Variables	Data source	Methodology		
				Interview	*Visit*	*Data*
		• Are there enough opportunities for the government to acquire private land for public development purposes? • Are the rules for the governmental management of state lands clear and adequate? • Is the whole complex of valuation and taxation of land for gathering revenues well defined and enforced? • Is the impact of taxation on the use of land and land markets taken into account? • Do the valuation methods fit to the societal needs? • Do the people comply with the rates that convert land value into the levied tax amount?				
	○ Registration mechanism	• Is the registration of land compulsory or mandatory in the present system? • The present system is either deed or title	▪ BOR officials	√		

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
		registration?				
	○ Legitimisation of Govt. regulations	• Does the legal framework provide sufficient legitimization of the government's regulations?	▪ BOR officials	√		
	○ Legislation governing LA	• Present status of the legislation governing land administration (scattered, out-dated, updated etc.)	▪ BOR officials ▪ Lawyers	√	√	
Land dispute resolution	○ Level of disputes over land	• What is the level of disputes in land i.e. low or high?	▪ Courts		√	√
	○ Types of land disputes	• What type of land disputes are there and how they solved?	▪ BOR staff ▪ Lawyers	√	√	
	○ Time taken to resolve land dispute	• How much time it takes to resolve different type of land disputes?	▪ Courts ▪ Lawyers ▪ Land owners	√	√	
	○ Means for conflict resolution	• Are there appropriate means for conflict resolution in place (courts, mediation, and traditional means)?	▪ Lawyers ▪ Land owners	√	√	
	○ Procedures for land dispute resolution	• Procedures in land disputes resolution are clear and known by the users?	▪ Land owners ▪ Lawyers	√	√	
Strategic plans	○ Strategic targets	• List of strategic targets • Are the	▪ BOR officials	√		√

Elements	Indicators	Variables	Data source	Methodology		
				Interview	*Visit*	*Data*
		strategies are appropriate to reach and satisfy objectives				
	○ Review of objectives & strategies	• Review of objectives and strategies (y/n) • Regular review process (y/n)	▪ BOR officials	√		
	○ Strategic & development plans for IT adoption	• Did you develop a strategic/ development plan for GIS adoption? • Is your GIS development plan published? • Did you receive outside assistance in the planning/ design phase of the program?	▪ BOR officials	√		
	○ Analysis of users need & their role	• Is the users requirements including their role is properly analysed while developing strategic plans?	▪ BOR officials	√		
Organisation and mandates	○ Existence of land board ○	• Existence of independent land board (y/n) • Which is land administration authority? • Which ministry controls this authority?	▪ BOR officials	√		
	○ Organisation structure	• Whether land administration authority works under central or	▪ BOR officials	√		

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
		provincial government? • Is the organisational structure well designed for the execution of the work processes?				
	○ Mandates allocation	• What is the mandate of the land administration authority? • Are the mandates clear and manageable? • Are the mandates overlapping? • Does the allocation of mandates reflect a well-balanced approach to decentralisation? • Are the linkages between the mandated organisations well defined to ensure good institutional co-operation? • Are the business objectives for mandated organisations clear and specific? • Does the mandate include meeting the demands of the customers and other stakeholders? • Are the work processes for	▪ BOR officials	√		

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
		realization of the mandate well defined and manageable?				
	○ Customer relation	• Is the management of customer relation is clearly defined in mandates?	▪ BOR officials	√		
Human resource development	○ Human resource capacity	• Is the existing human resource capacity is enough?	▪ BOR officials	√		
	○ Human resource development facilities	• Does BOR have enough facilities for developing its human resource?	▪ BOR officials	√		
	○ Efforts taken for human resource development	• How much is being carried out for developing human resource capacity?	▪ BOR officials	√		
Land administration processes	○ List of processes	• List of main processes carried out by the land administration authority?	▪ BOR staff	√	√	
	○ Clarity & simplicity	• Is the system clear and simple to understand by the general public and administrators ? • Is the present system fair in development and	▪ Land owners ▪ Real estates ▪ BOR staff	√	√	

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
		operation?				
	○ Reliability	• How reliable is the process and the record itself?	▪ Land owners ▪ Real estates ▪ Banks	√	√	
	○ Security	• How significant is the access to land record for the creation of disputes?	▪ Land owners ▪ BOR staff	√	√	
	○ Timeliness	• Is the system providing up-to-date information in a timely fashion? • What is the time interval defined to update different land related information and at which level e.g. land register, cadastral map etc?	▪ BOR staff	√	√	
	○ Land registration process	• What is the procedure for sale deed registration and how much time it takes to register? • Provide a copy of the registration form? • How much steps are involved in the land transfer and how much time it takes?	▪ BOR staff ▪ Land owners ▪ Real estates	√	√	
	○ Land surveying process	• Which survey technique is used for the land survey i.e. field	▪ BOR staff	√	√	

Elements	Indicators	Variables	Data source	Methodology		
				Interview	*Visit*	*Data*
		survey or air survey etc? • What is the time interval between two surveys?				
Coordination and data sharing	○ Institutional & organisational arrangements	• List of institutions and their responsibilities and strategies	▪ BOR officials	√		
	○ Co-operation & communicatio n between institutions	• Are the involved institutions have each clearly defined tasks and well co-operate & communicate each other • How the involved institutions get access to land records • How these institutions share data with each other (local level, central level)	▪ BOR officials ▪ BOR staff	√	√	
	○ Private sector involvement	• Private sector involvement, number and volume of contracts	▪ BOR officials	√		
Financing and data costs	○ Funding authority ○	• Who is providing financial support to land agency?	▪ BOR officials ▪ BOR staff	√	√	
	○ Foreign (external) funding	• Who is taking care of the foreign (external) funding for the land agency?	▪ BOR officials	√		
	○ Tax collection	• How much portion of the land agency costs is recovered from the fees and data sale	▪ BOR officials ▪ BOR staff	√	√	

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
		prices? • Where the land revenue used after collection?				
	○ Fee structure	• Are you agree with the fees and costs structure in the present system? • What measures can you suggest to ensure that the vulnerable sections of population are not excluded because of the cost factor?	▪ Land owners ▪ Real estates	√	√	
	○ Financial resources	• Does the government provide any subsidy for the first time survey (settlement) and other data gathering process? • If yes then how much %age of the total costs is provided by the government? • Does the organisation have sufficient trained staff and financial resources to adapt Geo-ICT? • Are the financial mechanisms appropriate and do they meet the business demands?	▪ BOR officials ▪ BOR staff	√	√	

b. Research Matrix for Analysing Indicators of Technical Elements

Elements	Indicators	Variables	Data source	Methodology		
				Interview	*Visit*	*Data*
Users' needs	○ List of users in: • *Govt. sector* • *Private sector*	• What are the users at Govt. and private sector to use your data?	▪ BOR officials ▪ BOR staff	√	√	√
	○ Access to data	• How simple is the process to access to land data? • How can the land records be made more accessible to everybody? • Is it easy to access land records? • How convenient is this process? • How much time does it take? • How much (formal and informal) payment is involved?	▪ Land owners ▪ Real estates ▪ Banks	√	√	
	○ Availability of required data	• Does the system provide all the essential data according to the users need?	▪ Land owners ▪ Real estates ▪ Banks	√	√	
Technology adoption	○ Present GIS status	• At which level technology is introduced in the present system? • Do you prefer the adoption of latest technology in the present system?	▪ BOR officials ▪ Land owners ▪ Real estates ▪ Banks	√		
	○ Digital data availability	• Is there any effort taken to convert the present manual data in to digital form? • What is the success rate?	▪ BOR officials	√		
	○ Hardware & software	• Does your organisation have sufficient staff and hardware to adopt the new technologies?	▪ BOR officials	√		
	○ Capacity building	• How much effort will be required on institutional and human capacity building by the introduction of	▪ BOR officials	√		

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
		technology? • What sort of capacities need to be developed for an effective implementation of computerised land record system? At what level?				
	○ Education & training	• What kind of educational and training resources are currently available? • Do the educational and training programs have sufficient capacity?	▪ BOR officials	√		
Data organisation	○ Coverage & completeness	• How much data (out of 24 districts) is available with BOR? • How much data (out of 24 districts) is available in digital form with BOR?	▪ BOR officials ▪ BOR staff	√	√	√
	○ Protection	• Whether the data is stored at local or central level • Is any other authority responsible for keeping land data	▪ BOR officials ▪ BOR staff	√	√	
	○ Updation	• Is the data maintaining system centralised or decentralised? • In that case who is responsible for updating the data	▪ BOR officials ▪ BOR staff	√	√	
	○ Availability	• Does the users have easy access to these data	▪ Land owners ▪ Real estates ▪ Banks	√	√	
	○ Sharing	• Does the user agencies share land related data? If yes then at which level?	▪ BOR staff	√	√	
Training and development	○ Facilities for education and training	• Are the education and training facilities sufficient?	▪ BOR officials	√		

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
	○ Collaboration with educational institutions	• Does BOR have any collaboration with educational institutions?	▪ BOR officials	√		
	○ Collaboration with research institutions	• Does BOR have any collaboration with research institutions?	▪ BOR officials	√		
Land information system design	○ Structural definition of the system	• Definition and characteristics of system • Structure of the system is useful and clearly defined	▪ BOR officials	√		
	○ Consultation with foreign (external) agencies	• Does your organisation have consultation with foreign (external) agencies for system design?	▪ BOR officials	√		
	○ Consistency	• Dose the system is consistent to new developments in the field of ICT? • Is there any reference (coordinate) system followed by the land agency for maps generation? • Is the same parcel referencing system is used in the land book, the cadastre, the tax register and in the municipalities or not?	▪ BOR officials ▪ BOR staff	√	√	
Workflows for LA processes	○ Information flow	• Is the internal and external information flow clearly specified? • Is the allocation of tasks and responsibilities to managers appropriate and do they have the necessary power of execution?	▪ BOR officials ▪ BOR staff	√	√	
	○ Good management	• Are the managerial tools in terms of planning control, accountability and liability appropriate?	▪ BOR officials	√		

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
	○ Performance monitoring	• Is the system of performance monitoring appropriate? • Does the organisational culture encourage the sharing of values towards good performance?	▪ BOR officials ▪ BOR staff	√	√	
Quality standards	○ Evaluation	• Is the performance of land agency is monitored both internally and externally on regular basis?	▪ BOR officials ▪ BOR staff	√	√	
	○ National / International standards	• Is the parcel identification reference system unique i.e. two parcels have the same reference when they are located in different administrative districts? • Do the attributes of parcels in the cadastral registers include street addresses and apartment number etc? • Is there any national standard for street (postal) addressing to a parcel? • What types of information are contained by cadastral map (e.g. road, river, canal etc)? • Provide the exact number of legends? • What is the classification method of land/soil for revenue collection and what are these types of land/soil?	▪ BOR staff	√	√	

Elements	**Indicators**	**Variables**	**Data source**	**Methodology**		
				Interview	*Visit*	*Data*
	○ Quality control	• What quality parameters are maintained by your organizations? • Does technology adoption will help to improve quality of the data or services? • If yes then which aspect will be improved?	▪ BOR officials	√	√	
	○ Accuracy	• How much accuracy is being considered in the present system? • Which type of accuracy would you prefer for the introduction of the technology? • The information stored about land in the land registers is up-to-date?	▪ BOR staff ▪ Land owners ▪ Real estates	√	√	
	○ Coverage	• At which scale the cadastral maps are available with land agency? • In coverage Vs accuracy, which one you will prefer in the first phase?	▪ BOR staff ▪ BOR officials	√	√	
Services and products	○ List of services	• List of services provided by the BOR	▪ BOR officials ▪ Land owners	√	√	
	○ List of products	• List of products produced by the BOR	▪ BOR staff	√	√	
	○ Service delivery	• Until now how many land parcels are surveyed and registered in the province? • Do all the services & products are delivered at local level to the users?	▪ Land owners ▪ BOR officials ▪ BOR staff	√	√	
	○ Efficiency	• Does the land agency have sufficient land offices to deliver their services efficiently?	▪ Land owners ▪ BOR staff ▪ Banks	√	√	

Appendix 4: Questionnaires for Explanatory Case Study

a. Questionnaire for Senior Member Board of Revenue (SMBR)

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

Institutional Aspect

1. Existence of a govt. policy for land administration (y/n)
2. Does the policy exist at National level or provincial level?
3. Which institutions are involved in the development of land policy?
4. Is it clear who has access to obtaining rights to land?
5. Do the regulations address the equity and fairness on access to rights to land (land reform)?
6. Are the procedures for establishment, transfer and abolition of rights to lands clear and well accepted?
7. Is it clear when the government might interfere in private rights to dispose of their land?
8. How much the Islamic tenure system is practiced in the present LAS?
9. What are the types of rights formally recognised in land such as state land, private land, communal land etc.?
10. What are the types of rights informally recognised in land such a Waqf land, customary land etc.?
11. What percent of the province and population covered with formal rights?
12. Are there unregistered parcels, if yes then what is their number and in which register these information are noted and entered?
13. Is there a policy at various government levels clarifying about how to use the land?
14. Does the legal framework provide enough clearness and transparency regarding the whole complex of holding rights to land?
15. Can legal and administrative arrangements enforce these issues in a way that comply with good governance?
16. Are the rules for the governmental management of state lands clear and adequate?
17. What is the mandate of the land administration authority?
18. Are the mandates clear and manageable?
19. Are the mandates overlapping?

20. Does the allocation of mandates reflect a well-balanced approach to decentralisation?
21. Are the linkages between the mandated organisations well defined to ensure good institutional co-operation?
22. Are the business objectives for mandated organisations clear and specific?
23. Does the mandate include meeting the demands of the customers and other stakeholders?
24. Are the work processes for realization of the mandate well defined and manageable?
25. Is the management of customer relation is clearly defined in mandates?

Technical Aspect

1. List of strategic targets
2. Are the strategies are appropriate to reach and satisfy objectives
3. Review of objectives and strategies (y/n)
4. Regular review process (y/n)
5. Did you develop a strategic/ development plan for GIS adoption?
6. Is your GIS development plan published?
7. Did you receive outside assistance in the planning/ design phase of the program?
8. Are the users' requirements including their role is properly analysed while developing strategic plans?
9. Do you prefer the adoption of latest technology in the present system?
10. At which level technology is introduced in the present system?
11. Does your organisation have sufficient staff and hardware to adopt the new technologies?
12. How much effort will be required on institutional and human capacity building by the introduction of technology?
13. What sort of capacities need to be developed for an effective implementation of computerised land record system? At what level?
14. What kind of educational and training resources are currently available?
15. Do the educational and training programs have sufficient capacity?
16. Definition and characteristics of system
17. Structure of the system is useful and clearly defined
18. Does your organisation have consultation with foreign (external) agencies for system design?
19. Dose the system is consistent to new developments in the field of ICT?
20. Does technology adoption will help to improve quality of the data or services?
21. If yes then which aspect will be improved?
22. In coverage Vs accuracy, which one you will prefer in the first phase?

b. Questionnaire for Member Board of Revenue (MBR)

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

Institutional Aspect

1. Is the whole complex of valuation and taxation of land for gathering revenues well defined and enforced?
2. Is the impact of taxation on the use of land and land markets taken into account?
3. Do the valuation methods fit to the societal needs?
4. Do the people comply with the rates that convert land value into the levied tax amount?
5. Is the registration of land compulsory or mandatory in the present system?
6. The present system is either deed or title registration?
7. Does the legal framework provide sufficient legitimization of the government's regulations?
8. Present status of the legislation governing land administration (scattered, out-dated, updated etc.)
9. Existence of independent land board (y/n)
10. Which is land administration authority?
11. Which ministry controls this authority?
12. Whether land administration authority works under central or provincial government?
13. Is the organizational structure well designed for the execution of the work processes?
14. How much data (out of 24 districts) is available with BOR?
15. How much data (out of 24 districts) is available in digital form with BOR?
16. List of institutions and their responsibilities and strategies
17. Are the involved institutions have each clearly defined tasks and well co-operate & communicate each other
18. How the involved institutions get access to land records
19. How these institutions share data with each other (local level, central level)
20. Private sector involvement, number and volume of contracts
21. Who is providing financial support to land agency?
22. Who is taking care of the foreign (external) funding for the land agency?

23. Does the government provide any subsidy for the first time survey (settlement) and other data gathering process?
24. If yes then how much %age of the total costs is provided by the government?
25. Does the organisation have sufficient trained staff and financial resources to adapt Geo-ICT?
26. Are the financial mechanisms appropriate and do they meet the business demands?

Technical Aspect

1. What are the users at Govt. and private sector to use your data?
2. Does your organisation have sufficient staff and hardware to adopt the new technologies?
3. How much effort will be required on institutional and human capacity building by the introduction of technology?
4. What sort of capacities need to be developed for an effective implementation of computerised land record system? At what level?
5. Does your organisation have consultation with foreign (external) agencies for system design?
6. Dose the system is consistent to new developments in the field of ICT?
7. Is the internal and external information flow clearly specified?
8. Is the allocation of tasks and responsibilities to managers appropriate and do they have the necessary power of execution?
9. Are the managerial tools in terms of planning control, accountability and liability appropriate?
10. Is the performance of land agency is monitored both internally and externally on regular basis?
11. Is the system of performance monitoring appropriate?
12. List of services provided by the BOR?
13. Do you prefer the adoption of latest technology in the present system?
14. Does technology adoption will help to improve quality of the data or services?
15. If yes then which aspect will be improved?
16. In coverage Vs accuracy, which one you will prefer in the first phase?

c. Questionnaire for Director Land Records (DLR)

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

Institutional Aspect

1. Does the legal framework provide enough clearness and transparency regarding the whole complex of holding rights to land?
2. Can legal and administrative arrangements enforce these issues in a way that comply with good governance?
3. Are the rules for the governmental management of state lands clear and adequate?
4. Is the whole complex of valuation and taxation of land for gathering revenues well defined and enforced?
5. How much portion of the land agency costs is recovered from the fees and data sale prices?
6. Is the impact of taxation on the use of land and land markets taken into account?
7. Do the valuation methods fit to the societal needs?
8. Do the people comply with the rates that convert land value into the levied tax amount?
9. Where the land revenue used after collection?
10. List of main processes carried out by the land administration authority?
11. Is any other authority responsible for keeping land data
12. In that case who is responsible for updating the data
13. Is the data maintaining system centralised or decentralised?
14. Does the user agencies share land related data? If yes then at which level?
15. Who is providing financial support to land agency?

Technical Aspect

1. Is the allocation of tasks and responsibilities to managers appropriate?
   (a) Not appropriate (b) Less appropriate (c) Appropriate
2. Is the internal and external information flow clearly specified?
   (a) Not clear (b) Less clear (c) Clear
3. Is the performance of land agency is monitored internally and externally on regular basis?
   (a) Not monitored (b) Internally monitored (c) Externally monitored (d) Monitored both

4. Is the system of performance monitoring appropriate?
   (a) Not appropriate (b) Less appropriate (c) Appropriate
5. Do you prefer the adaption of latest technology in the present system?
   (a) No (b) Yes
6. List of services provided by the BOR
7. List of products produced by the BOR
8. Do all the services & products are delivered at local level to the users?
   (a) No (b) Partially delivered (c) Fully delivered
9. Does the land agency have sufficient land offices to deliver their services efficiently?
10. Is there any effort taken to convert the present manual data in to digital form?
11. What is the success rate?
12. Does the organisational culture encourage the sharing of values towards good performance?
13. What quality parameters are maintained by your organizations?
14. Does technology adoption will help to improve quality of the data or services?
15. If yes then which aspect will be improved?
16. In coverage Vs accuracy, which one you will prefer in the first phase?
17. Until now how many land parcels are surveyed and registered in the province?

d. Questionnaire for Tehsildars

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

Institutional Aspect

1. Do all citizens have equal access to land offices?
   (a) No (b) Yes
2. Do the users have easy access to land data?
   (a) Not easy (b) Less easy (c) Full easy
3. What is the time interval defined to update different land related information in land register?
   (a) 1 year (b) 2 years (c) 3 years (d) More_____
4. What is the time interval defined to update different land related information in cadastral map?
   (a) 1 year (b) 2 years (c) 3 years (d) More_____
5. How significant is the access to land record for the creation of disputes?
   (a) Significant (b) Less significant (c) Not significant
6. Is the system clear and simple to understand by the general public?
   (a) Not clear (b) Less clear (c) Fully clear
7. Is the system providing necessary information in a timely fashion?
   (a) No (b) Yes
8. Is the present system fair in development and operation?
   (a) Less fair (b) Average (c) Fair
9. Are the financial mechanisms appropriate?
   (a) Not appropriate (b) Less appropriate (c) Appropriate
10. Do the financial mechanisms meet the business demands?
    (a) Not meet (b) Partially meet (c) Fully meet

Technical Aspect

1. List of services provided by the BOR
2. List of products produced by the BOR
3. Do all the services & products are delivered at local level to the users?
   (a) No (b) Partially delivered (c) Fully delivered
4. Does the land agency have sufficient land offices to deliver their services efficiently?
   (a) Not sufficient (b) Less sufficient (c) Sufficient
5. Data produced by the BOR is used at government and private sector?
   (a) Government sector (b) Private sector (c) Both

6. Is the allocation of tasks and responsibilities to managers appropriate?
   (a) Not appropriate (b) Less appropriate (c) Appropriate
7. Do they have the necessary power of execution?
   (a) No (b) Yes
8. Is the internal and external information flow clearly specified?
   (a) Not Clear (b) Les clear (c) Clear
9. How much accuracy is being considered in the present system?
   (a) None (b) Average (c) Maximum
10. Do you prefer the adaption of latest technology in the present system?
    (a) No (b) Yes

e. Questionnaire for Patwaris

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

Institutional Aspect

1. Do all citizens have equal access to land offices?
   (a) Yes (b) No (c) Don't know
2. Does the land value is increased with the passage of time?
   (a) Decreasing (b) Stable (c) Increasing
3. How many steps are involved in the sale deed registration procedure?
   (a) 3 steps (b) 4 steps (c) 5 steps (d) More_____
4. How much time it takes to register a sale deed?
   (a) 1 day (b) 2 days (c) 3 days (d) More_____
5. Provide a copy of the registration form?
6. How much steps are involved in the land transfer?
   (a) 3 steps (b) 4 steps (c) 5 steps (d) More_____
7. How much time it takes to transfer land?
   (a) 1 day (b) 2 days (c) 3 days (d) More_____
8. Which survey technique is used for the land survey?
   (a) Field survey (b) Air survey (c) Other_____
9. What is the time interval between two surveys?
10. Whether the data is stored at local or central level?
    (a) Local level (b) Central level (c) Both levels
11. How significant is the access to land record for the creation of disputes?
    (a) Significant (b) Less significant (c) Not significant
12. Is the system clear and simple to understand by the general public?
    (a) Not clear (b) Less clear (c) Fully clear

Technical Aspect

1. At which scale the cadastral maps are available with land agency?
   (a) 1:1000 (b) 1:500 (c) Other_____
2. What types of information is contained by a cadastral map (e.g. road, river, canal etc.)?
3. Provide the exact number of legends?
4. Is there any national standard for street (postal) addressing to a parcel?
   (a) No (b) Don't know (c) Yes
5. Is there any reference (coordinate) system followed by the land agency for maps generation?

(a) No (b) Don't know (c) Yes

6. Is the parcel identification reference system unique i.e. two parcels have the same computer reference when they are located in different administrative district or municipalities?
   (a) No (b) Don't know (c) Yes
7. Is the same parcel referencing system is used in the land book, the cadastre, the tax register and in the municipalities or not?
   (a) No (b) Don't know (c) Yes
8. What is the classification method of land/soil for revenue collection and what are these types of land/soil?
   (a) Soil type (b) Location (c) Both (d) Don't know
9. Do you prefer the adoption of latest technology in the present system?
   (a) No (b) Yes

f. Questionnaire for Revenue Courts

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

<u>Institutional Aspect</u>

1. What types of land disputes are there in the present system?
   (a) Ownership (b) Boundary (c) Other_____
2. Number of land disputes in different periods (last 5 years)
3. Percentage of presently solved and unsolved land disputes
4. What is the level of disputes in land i.e. low or high?
   (a) Low (b) Moderate (c) High
5. How much time it takes to resolve land disputes?
   (a) 1 year (b) 2 years (c) 3 years (d) More_____
6. Are the present procedures in land disputes resolution are clear?
   (a) Not clear (b) Ambiguous (c) Clear
7. Is the present system providing necessary information in a timely fashion?
   (a) No (b) Yes
8. The information stored in land registers is up-to-date?
   (a) Not updated (b) Less updated (c) Full updated
9. Do you prefer adoption of ICT in the present system?
   (a) No (b) Yes
10. How much the computerised land record system will affect resolution of land disputes?
    (a) 20% (b) 30% (c) 40% (d) Other_____

g. Questionnaire for Law Professionals

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

Institutional Aspect

1. Present status of the legislation governing land administration?
   (a) Scattered (b) Out-dated (c) Updated (d) Other_____
2. What is the level of disputes in land?
   (a) Low (b) Moderate (c) High
3. What types of disputes are there in land?
   (a) Ownership (b) Boundary (c) Other_____
4. How much time it takes to resolve land disputes?
   (a) 1 year (b) 2 years (c) 3 years (d) More_____
5. Are the present procedures in land disputes resolution are clear?
   (a) Not clear (b) Ambiguous (c) Clear
6. How reliable is the process and record itself?
   (a) Less reliable (b) Reliable (c) More reliable
7. How significant is the access to land record for creation of disputes?
   (a) Significant (b) Less significant (c) Not significant
8. Is the system providing necessary information in a timely fashion?
   (a) No (b) Yes
9. Is the present system fair in development and operation?
   (a) Less fair (b) Average (c) Fair
10. Do you have easy access to land data?
    (a) Not easy (b) Less easy (c) Full easy
11. The information stored in land registers is up-to-date?
    (a) Not updated (b) Less updated (c) Full updated
12. How much the computerised land record system affects the resolution of disputes?
    (a) 20% (b) 30% (c) 40% (d) Other_____

h. Questionnaire for Land Owners

Name:
Occupation:
Contact Number:
Email:
Home Address:
Date:

Institutional Aspect

1. Do you have easy access to land offices?
   (a) Not easy (b) Less easy (c) Full easy
2. Are the financial institutions willing to mortgage land?
   (a) Not willing (b) Less willing (c) Fully willing
3. Did you apply for credits against your land?
   (a) No (b) Yes
4. If yes then how much times it takes to mortgage land?
   (a) 1 week (b) 2 weeks (c) 3 weeks (d) More_____
5. Does the land value is increased with the passage of time in term of investment in property sector?
   (a) Decreasing (b) Stable (c) Increasing
6. How much you feel secure your right in the present system?
   (a) Unsecure (b) Secure (c) Full secure
7. Do you have any land dispute?
   (a) No (b) Yes
8. If yes then what type of land dispute you have?
   (a) Ownership (b) Boundary (c) Other_____
9. For how long time you are appearing in the court to resolve your land dispute?
   (a) 1 year (b) 2 years (c) 3 years (d) More_____
10. Are the present procedures in land disputes resolution are clear?
    (a) Not clear (b) Ambiguous (c) Clear
11. How reliable is the process and record itself?
    (a) Less reliable (b) Reliable (c) More reliable
12. Is the system clear and simple to understand by general public?
    (a) Not clear (b) Less clear (c) Fully clear
13. Is the system providing necessary information in a timely fashion?
    (a) No (b) Yes
14. Is the present system fair in development and operation?
    (a) Less fair (b) Average (c) Fair
15. Do you have equal access to your land data?
    (a) No (b) Yes
16. Are you agreeing with the fees and costs structure in the present system?
    (a) Not agree (b) Less agree (c) Agree

Technical Aspect

1. How is the process required to access land records?
   (a) Not simple (b) Less simple (c) Simple
2. How convenient is this process to access the land record?
   (a) Not convenient (b) Less convenient (c) Convenient
3. How much time does it take?
   (a) Short time (b) Average time (c) Long time
4. How much (formal and informal) payment is involved?
   (a) Not affordable (b) Affordable
5. How much accuracy is being considered in the present system?
   (a) None (b) Average (c) Maximum
6. The information stored about land in land registers is up-to-date?
   (a) Not updated (b) Less updated (c) Full updated
7. Does the land agency have sufficient land offices to deliver their services efficiently?
   (a) Not sufficient (b) Less sufficient (c) Sufficient
8. Does the system provide all the essential data according to your needs?
   (a) No (b) Partially (c) Fully
9. How can the land records be made more accessible to everybody?
   (a) Introducing Geo-ICT (b) Re-structuring present system (c) Other_____
10. How easy is the procedure for sale deed registration?
    (a) Not easy (b) Less easy (c) Easy
11. How much time it takes to register a deed?
    (a) 1 week (b) 2 weeks (c) 3 weeks (d) More_____
12. How much steps are involved in the land transfer?
    (a) 3 steps (b) 4 steps (c) 5 steps (d) More_____
13. How much time it takes to transfer land?
    (a) 1 week (b) 2 weeks (c) 3 weeks (d) More_____
14. Do you prefer the adaption of latest technology in the present system?
    (a) No (b) Yes

i. Questionnaire for Bank and Financial Institution Officials

Name:
Position:
Contact Number:
Email:
Office Address:
Date:

Institutional Aspect

1. Is your institution willing to mortgage land?
   (a) No (b) Yes
2. Do the land owners apply for credits against their property?
   (a) No (b) Yes
3. If yes then this number is increasing or decreasing?
   (a) Decreasing (b) Stable (c) Increasing
4. How much time it takes to mortgage a land?
   (a) 1 week (b) 2 weeks (c) 3 weeks (d) More_____
5. Do you have equal access to land offices for getting land records?
   (a) No (b) Yes
6. How reliable is the process and the record itself?
   (a) Less reliable (b) Reliable (c) More reliable
7. Is the system providing necessary information in a timely fashion?
   (a) No (b) Yes
8. Do you have easy access to these data
   (a) Not easy (b) Less easy (c) Full easy

Technical Aspect

1. Is the data available for possible commercial use?
   (a) No (b) Yes
2. How is the process required to access the land records?
   (a) Not simple (b) Less simple (c) Simple
3. How convenient is this process to access the land record?
   (a) Not convenient (b) Less convenient (c) Convenient
4. How much time does it take?
   (a) Short time (b) Average time (c) Long time
5. How much (formal and informal) payment is involved?
   (a) Not affordable (b) Affordable
6. How can the land records be made more accessible to everybody?
   (a) Introducing Geo-ICT (b) Re-structuring present system (c) Other_
7. Does the system provide all the essential data according to your needs?
   (a) No (b) Partially (c) Fully

8. Does the land agency have sufficient land offices to deliver their services efficiently?
   (a) Not sufficient (b) Less sufficient (c) Sufficient
9. The information stored about land in the land registers are up-to-date?
   (a) Not updated (b) Less updated (c) Full updated
10. Do you prefer the adaption of latest technology in the present system?
   (a) No (b) Yes

j. Questionnaire for Real Estate Agents

Name:
Occupation:
Contact Number:
Email:
Home Address:
Date:

Institutional Aspect

1. Do have equal access to land offices?
   (a) No (b) Yes
2. Do you have easy access to land data?
   (a) Not easy (b) Less easy (c) Full easy
3. Does the land value is increased with the passage of time?
   (a) Decreasing (b) Stable (c) Increasing
4. How reliable is the process and the record itself?
   (a) Less reliable (b) Reliable (c) More reliable
5. How significant is the access to land record for creation of disputes?
   (a) Significant (b) Less significant (c) Not significant
6. Is the system clear and simple to understand by the general public?
   (a) Not clear (b) Less clear (c) Fully clear
7. Is the system providing necessary information in a timely fashion?
   (a) No (b) Yes
8. Is the present system fair in development and operation?
   (a) Less fair (b) Average (c) Fair
9. Are you agree with fees and costs structure in the present system?
   (a) Not agree (b) Less agree (c) Fully agree
10. What measures can you suggest to ensure that the vulnerable sections of population are not excluded because of the cost factor?

Technical Aspect

1. Is the data available for possible commercial use?
   (a) No (b) Yes
2. How is the process required to access the land records?
   (a) Not simple (b) Less simple (c) Simple
3. How convenient is this process to access the land record?
   (a) Not convenient (b) Less convenient (c) Convenient
4. How much time does it take?
   (a) Short time (b) Average time (c) Long time
5. How much (formal and informal) payment is involved?
   (a) Not affordable (b) Affordable
6. Does the system provide all the essential data according to your needs?

(a) No (b) Partially (c) Fully

7. Does the land agency have sufficient land offices to deliver their services efficiently?
   (a) Not sufficient (b) Less sufficient (c) Sufficient
8. The information stored about land in land registers is up-to-date?
   (a) Not updated (b) Less updated (c) Full updated
9. How can the land records be made more accessible to everybody?
   (a) Introducing Geo-ICT (b) Re-structuring present system (c) Other__
10. How easy is the procedure for sale deed registration?
    (a) Not easy (b) Less easy (c) Easy
11. How much time it takes to register a deed?
    (a) 1 week (b) 2 weeks (c) 3 weeks (d) More_____
12. How much steps are involved in the land transfer?
    (a) 3 steps (b) 4 steps (c) 5 steps (d) More_____
13. How much time it takes to transfer land?
    (a) 1 week (b) 2 weeks (c) 3 weeks (d) More_____
14. Do you prefer the adaption of latest technology in the present system?
    (a) No (b) Yes

Summary

Evaluation and assessment of land administration system (LAS) has been getting more attention over the last few years. Different assessment approaches have been tried across land administration systems at international level to assess the performance of these systems, but the attention is given to only those parameters which are common to all these systems. In some cases, legal and technical parameters are considered while institutional and organisational parameters got more attention in others. There have been a few efforts to standardise the procedures for assessing the performance of land administration systems at international level but no internationally accepted or standardised method is there to assess the quality of a standalone LAS. There is a need to develop a quality assessment framework for assessing the quality of a standalone LAS in a country taking into account all its components and parameters as per quality requirements.

The core objective of this research is to develop a quality assessment framework for assessing the quality of LAS and then apply Total Quality Management (TQM) concepts to land administration using a stepwise approach of exploratory and explanatory case studies. This research identifies the elements, indicators, and variables that are required for assessing the quality of LAS. The case of LAS in Pakistan is presented and discussed in this research through the use of both an exploratory and an explanatory case study. The quality improvement guidelines are then developed within the broad context of TQM for improving the quality of the LAS in Pakistan, which was presupposed as deteriorated.

To be able to achieve the above objectives, the first part of this research identifies and analyses a set of structured theories as a conceptual framework. The framework defines concepts on the two important sets of aspects of LAS namely the institutional and technical. The institutional ones are looked at within three basic categories of institutions namely; the constitutional order, institutional arrangements, and normative behavioural codes. The technical ones are considered at three organisational levels namely; strategic/policy level, management level, and operational level. These concepts are considered as the basis for designing the LAS quality assessment framework. It is argued in this study, that due to the unclear boundary between the institutional and technical aspects of LAS, the combined use of both an exploratory and an explanatory case study is more suitable to explore the issues of the existing LAS first and then explain the quality situation through quality indicators and variables later on.

The second part of this research explores the issues of the existing LAS in Pakistan to understand the present situation and identify the most important

elements of the system. An exploratory case study approach is used in this case to collect both qualitative and quantitative data for analysing the issues of the existing LAS in the country. The qualitative data was collected through interviews (structured and semi-structured) with stakeholders including; land administration agency officials, land owners, real estate agents, and law professionals. The quantitative data was collected using questionnaires circulated amongst the stakeholders. Through analysis of transcribed qualitative and quantitative data from this exploratory case study, the most important elements and other contributing elements were selected to develop the quality assessment framework. This framework includes all elements of institutional and technical aspects, their quality indicators, and variables which were based on the principles of international 'Best Practices' and other research studies carried out in assessing and evaluating land administration systems.

The third part of this research concerns the quality assessment of LAS in Pakistan using the designed quality assessment framework. An explanatory case study approach is adopted in this case to understand the quality situation of the existing LAS in Pakistan by collecting both the qualitative and quantitative data through visits, interviews, meetings, and questionnaires using the designed quality assessment framework. The quality indicators for elements of the institutional and technical aspects of LAS were analysed. The analysis of this data presented a clear understanding of the present status of these quality indicators in the existing LAS of Pakistan. Among those the important ones are the tenure security, land dispute resolution, land administration processes, and financing and data cost on the institutional side while the technology adoption, data organisation, workflows for land administration processes, and quality standards are the important ones on technical side.

The last part of this research develops a set of guidelines to apply TQM concepts to LAS in Pakistan. Since, the hierarchical process of quality includes the development from Inspection through to Quality Control (QC), within the context of systems of Quality Assurance (QA) under the wider management approach of TQM. Therefore, the design of these quality improvement guidelines is carried out within the broad context of TQM. These quality improvement guidelines are categorised within three stages of TQM namely; the Inspection stage, QC stage, and QA stage. All these quality improvement guidelines are developed on the basis of results obtained from the case study carried out in Pakistan. Among those the technology adoption and data organisation are considered under the Inspection stage of TQM. The land administration processes, land dispute resolution, workflows for land administration processes, and quality standards are considered within the QC

while the tenure security and financing and data cost are considered under the QA stages of TQM.

As has been shown for the case of Pakistan, the designed quality assessment framework for LAS can be used to assess an existing standalone system and prioritize elements to be addressed through the quality improvement guidelines. Although the framework can be the starting point of a similar assessment in another country, the country specifics will always lead to adaptation for that situation.

Samenvatting

De afgelopen jaren is de aandacht voor het evalueren en beoordelen van landadministratiesystemen (LAS) toegenomen. Verschillende beoordelingsmethodieken zijn op internationaal niveau toegepast om het functioneren van land administratiesystemen te beoordelen, maar daarbij is uitsluitend aandacht besteed aan parameters die in al deze systemen te vinden zijn. In sommige gevallen worden vooral juridische en technische paramaters gehanteerd, terwijl in andere gevallen juist institutionele en organisatorische parameters benadrukt worden. Er is een aantal keer geprobeerd om de beoordelingsmethode te standaardiseren, maar er is geen internationaal geaccepteerde of gestandaardiseerde methode voor de beoordeling van landadministratiesystemen beschikbaar om een op zichzelf staand LAS te beoordelen. Er is dus behoefte aan een beoordelingsmethode om de kwaliteit van een op zichzelf staand LAS binnen een land te bepalen waarbij de kwaliteitseisen van alle componenten en parameters worden meegenomen.

Het hoofddoel van dit onderzoek is om een raamwerk te ontwikkelen voor het beoordelen van de kwaliteit van een LAS, en daarbij concepten van Total Quality Management (TQM) toe te passen op landadministratie, via zowel een exploratieve als een verklarende casestudie Dit onderzoek identificeert welke elementen, indicatoren en variabelen vereist zijn voor de beoordeling van de kwaliteit van een LAS. Het LAS in Pakistan wordt in dit onderzoek door zowel een exploratieve als een verklarende casestudie gepresenteerd en besproken. Daarna worden binnen de brede context van TQM kwaliteitsverbeteringsrichtlijnen ontwikkeld voor het LAS in Pakistan, dat verondersteld werd verwaarloosd te zijn.

Om de bovenstaande doelen te kunnen bereiken, worden in het eerste deel van het onderzoek een aantal theorieën gekozen en geanalyseerd om tot een conceptueel model te komen. Het model definieert concepten binnen de twee belangrijkste sets van aspecten van landadministratiesystemen, te weten institutionele en technische aspecten. De institutionele aspecten vallen binnen de drie basiscategorieën van instituties, te weten de staatsinrichting, institutionele arrangementen, en normatieve gedragscodes. De technische aspecten worden op drie organisatorische niveaus bekeken, namelijk op strategisch/beleidsniveau, management niveau en uitvoerend niveau. Deze concepten worden beschouwd als basis voor het ontwerp van het LAS-kwaliteitsbeoordelingsmodel. In dit onderzoek wordt gesteld dat vanwege de onduidelijke grenzen tussen institutionele en technische aspecten van landadministratiesystemen de combinatie van een exploratief en een verklarend casestudieonderzoek geschikter is om de problemen van een

bestaand LAS eerst te verkennen, om vervolgens de kwaliteitssituatie te verklaren met kwaliteitsindicatoren en -variabelen.

Het tweede deel van dit onderzoek verkent welke problemen zich thans in het bestaande LAS in Pakistan voordoen en bepaalt de belangrijkste elementen van dit systeem. Een exploratieve casestudiebenadering is in dit geval gebruikt om zowel kwalitatieve als kwantitatieve gegevens te verzamen voor de analyse van de problemen in het bestaande LAS. De kwalitatieve gegevens zijn verzameld door (gestructureerde en semigestructureerde) interviews met belanghebbenden) , waaronder medewerkers van de landadministratie dienst, grondeigenaren, makelaars, en juristen. De kwantitatieve gegevens zijn verzameld met enquêtes onder de belanghebbenden. Via een analyse van de uitgewerkte kwalitatieve en kwantitatieve gegevens van deze exploratieve casestudie zijn de belangrijkste en andere ondersteunende elementen uitgekozen om te komen tot het kwaliteitsbeoordelingsmodel. Dit model bevat alle elementen van institutionele en technische aspecten, hun kwaliteitsindicatoren, en de variabelen die zijn gebaseerd op het principe van internationale 'best practices' en ander uitgevoerd onderzoek naar beoordeling en evaluatie van een LAS.

Het derde deel van dit onderzoek betreft de kwaliteitsbeoordeling van het LAS in Pakistan en maakt gebruik van het ontwikkelde kwaliteitsbeoordelingsmodel. Een verklarende casestudie is in dit geval gehanteerd om de kwaliteitssituatie van de bestaande LAS in Pakistan te begrijpen door het verzamelen van zowel kwalitatieve als kwantitatieve gegevens middels bezoeken, interviews, bijeenkomsten en enquêtes en gebruikmakend van het ontwikkelde kwaliteitsbeoordelingsmodel. De kwaliteitsindicatoren voor elementen van de institutionele en technische aspecten van een LAS worden geanalyseerd. De analyse van deze gegevens verschaft een duidelijk inzicht in de huidige status van deze kwaliteitsindicatoren binnen het bestaande LAS in Pakistan. Belangrijk zijn: grondbezitszekerheid, grondconflictenoplossing, landadministratie processen, financiering en gegevenskosten aan de institutionele kant, terwijl technologieabsorptie, gegevensstructuren, workflow van landadministratie processen, en kwaliteitsstandaarden de belangrijkste aan de technische kant zijn.

In het laatste deel van dit onderzoek wordt een set van richtlijnen ontwikkeld om de TQM concepten op het LAS in Pakistan toe te passen. Immers, het hiërarchisch proces van kwaliteit bevat de ontwikkeling vanaf Inspectie tot aan Kwaliteitscontrole binnen het kader van Kwaliteitsborging onder de bredere management benadering van TQM. Dus, is het ontwerp van de kwaliteitsverbeteringsrichtlijnen uitgevoerd binnen de brede context van

TQM. Deze kwaliteitsverbeteringsrichtlijnen zijn ingedeeld naar de drie stappen uit TQM, te weten Inspectie, Kwaliteitscontrole en Kwaliteitsborging. Alle kwaliteitsverbeteringsrichtlijnen zijn ontwikkeld op basis van de resultaten van de genoemde casestudie in Pakistan. Hierbij worden de technologieadaptatie en de gegevensstructuren tot de Inspectie gerekend. Landadministratieprocessen, grondconflictenoplossing, workflow van landadministratieprocessen, en kwaliteitsstandaarden worden gerekend tot de Kwaliteitscontrole, terwijl grondbezitszekerheid en financiering en gegevenskosten tot de Kwaliteitsborging gerekend worden.

Zoals voor de case van Pakistan is aangetoond, kan het ontwikkelde kwaliteitsbeoordelingsmodel voor een LAS gebruikt worden om een gegeven op zichzelf staand systeem te beoordelen en om elementen die aangepakt moeten worden te prioriteren middels de kwaliteitsverbeteringsrichtlijnen. Hoewel dit model het begin kan zijn voor een soortgelijke beoordeling in een ander land, zullen specifieke kenmerken van dat land altijd om een aanpassing van het model vragen.

Biography

Zahir Ali was born on the 15th of January 1975 in Karnal Sher Killi, a town in the Swabi district of Khyber Pakhtunkhwa province, Pakistan. From 1997 to 2000, he studied in the Physics Department, University of Peshawar, Pakistan and obtained Master degree in Physics. In October 2000 he joined the Pakistan's national space agency Pakistan Space & Upper Atmosphere Research Commission (SUPARCO) and got Master of Philosophy degree from Physics Department, University of Peshawar, Pakistan during his job. From December 2006, he enrolled for the doctoral study in ITC with a joint PhD scholarship offered by Higher Education Commission (HEC) of Pakistan and the Netherlands Organization for International Cooperation in Higher Education (NUFFIC), the Netherlands. His research interest is about the analysis of institutional and technical aspects of cadaster and land administration system for designing a framework to improve the quality of these systems as per new developments in the field of Geo-ICT.

Publications

During the course of this research, a number of research papers and articles have been made which are based on the work presented in this thesis. They are listed here for reference.

Ali, Zahir, Tuladhar, A.M. and Zevenbergen, J. A. (2010)*"Developing a Framework for Improving the Quality of a Deteriorated Land Administration System Based on an Exploratory Case Study in Pakistan".* In Nordic Journal of Surveying and Real Estate Research, Volume 7 (Issue 1). pp. 30-57.

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