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Practice of Urban Cadastral System and Its Challenges in Addis Ababa, Ethiopia

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Abstract

Addis Ababa sub city settings experiencing unprecedented rate of urbanization through expansion. Hence, the objective of this study was to assess practice of urban cadastral system and its challenges. Based on the descriptive research design, the study had applied the mix methods of both qualitative and quantitative approaches. A data collection survey was conducted on customers and employees sampled through simple random sampling techniques. Primary data were collected through structured questionnaire and interview, while the secondary data were collected from documented sources. The data were analyzed using Likert scale measurement. From analysis results, the practice of urban cadastral system is moderate and low level. The practice level of adjudication was moderate; this is a mean of (3.27), whereas demarcation, surveying and registration are low levels that were mean of (3.12), (3.11) and (2.66) respectively. There are challenges found on urban cadastral system, these are: right creation institution not gives fast response for claims related to ownership right, high cost of adjudication process, there is interruption of network, the system not functioning up to few months, shortage of man power and resources. The study concluded that the practice of urban cadastral system in the study area is low level. The urban cadastral system office should improve the constraints.

Key Words: Urban Cadastral System, Adjudication, Cadastral Surveying, Demarcation, Registration,

1. INTRODUCTION

Land is the most an important and valuable natural resource from which mankind derives almost all its basic needs. Due to urbanization, the land today has reached a stage of scarcity in the urban areas. This situation calls for the economical and efficient utilization of this resource, which makes systematic planning and management of land very important (ALGAF, 2006). Land administration system can deliver sound land management towards economic, social and environmental sustainability. The cadastral system in the society is just taken for granted, and the impact of the system in terms of facilitating an efficient land market and supporting effective land-use administration is not fully recognized. In fact the impact of appropriate cadastral system can hardly overestimate. In reality the well-tailored cadastral system is acting as a backbone in the society (Enemark et al., 2009). Urban cadastral system is the most precious resources to generate and distributing valid data during land adm

inistration and management processes, and this can be considered as a keystone for efficient operation of any state(Dawidowicz, A.; Z´ róbekR, 2018). Many European countries like Germany, Austria,, much of Central and Eastern Europe and parts of Scandinavia provided robust models of multipurpose cadastres, which is considered as 'best practice' in the late 20th century (Bennett, et al, 2011, p. 3). Countries reform and modernize their cadastral systems for improved management of land and its resources, promoting political stability and social justice, protection of land use right and tenure for users, promote land markets where land is privately owned, and introduce modern information technology (Osterberg, 1998, pp.2- 3).

Ethiopia's first real property registration proclamation was enacted in 1907. It provided procedures for the registration and transfer of land holding and the issuance of title deeds, as well as property taxation and the like. This proclamation was superseded by immovable property registration articles included in the 1960 Civil Code of Ethiopia which was marginalized by the 1975 urban land and extra housing reform that changed the urban land tenure system. Following the introduction of the 1994 urban land lease holding regulation, the City Government of Addis Ababa launched a cadastral project with the aim of registering all property for taxation purposes. The project brought many improvements in the city administration. However, it faced major problems from the start and throughout its implementation. The absence of clear legal frameworks, focal organizations and the appropriate utilization of technology were some of the major problems. As a result, beginning in early 2009, the city commenced the implementation of a modern real property registration and land (cadastre) system development project. (Zerihun, 2013).

In Ethiopia urban cadaster proclamation was launched in 2014. There are 6.5 million parcels in Ethiopian urban areas and From these parcels only 6% (390,000) were registered.(Ministry of Urban Development and Housing Corporation report, 2022) According to Addis Ababa City Urban Land Holding Registration and Information Agency there was planned 600,000 parcels to be adjudicated and registered in cadaster within 5 years that was started from 2008 to 2012 E.C, but the agency reported on May 2022, up to this time around 100, 000 parcels were adjudicated(16.67%) which is performance below its plan, still it laps two years and it is very delayed, urban cadastre not fully functional(Addis Ababa City Urban Land Holding Registration and Information, 2017), and it leads to sources of different problems that are: the amount of revenue collected from property tax is very low as compared to other sources of revenue, the sales of the houses and application for registration are not treating properly, thus encouraging illegal procedures of transactions, significant proportions of the inhabitants do not have title or certificate of ownership to their property, which inhibit incentive to urban development, land disputes do not get quick and legal solution, squatter settlements or illegal constructions are increasing and not solved legally and planning and implementing development projects is highly affected by lack of sufficient information and resources especially financial problems were faced.(Addis Ababa City Urban Land Holding Registration and Information Agency, 2022).

There were researches done on cadaster. One of the researches by Tsegaye Desalgne Yenawonden , and Shreedhara Veditherakal entitled "A Study on the Challenges and Prospects to Establish Cadastral System using Research Methodology in Finote Selam City, Ethiopia" which focus on the challenges and prospects of establishing cadastral system.(Tegaye et'al, 2021). This research topic differs from the above topics that this study focus on the practice of urban cadaster in Addis Ababa. The other researches on cadaster was "Determinants of the Land Registration Information System Operational Success: Empirical Evidence from Ethiopia" has done by Shewakena and others (Shewakena, et'al, 2021) which focus on explores the factors that influence the acceptance

and actual use of national rural land administration information system (NRLAIS to gauge its operational success in Ethiopia. But in this study practice of urban cadastral system that focus on each process that must be implemented which describes adjudication, demarcation, surveying and registration and examining the challenges faced during the above process in detail.

The objective of this study was evaluating the practice of urban cadastral system and its challenges using the evaluation standards in Addis Ababa, Ethiopia

2. Materials and Methods

Study Area

Addis Abeba, the capital city of Ethiopia, is located at an altitude of 2300 meters above sea level and lies between 8°50' and 9°00' North latitude and 38°40' and 38°54' East longitude. The city has been divided into eleven sub-cities (Addis Ababa Administration Office report, 2021). From these sub cities five sub cities were selected such as Yeka, Bole, Lideta, Arada and Akaki-Kality. The total Area of the study area is 26938.60 hectare.

Population

Addis Ababa city administration with total population of 3,864,054 (CSA Projection, 2022). The sub city borders with. About 2.2% of the population comprises those under the age of 1 year; 7.2% of the population comprises those under the age of 5 years and 34.6% are in the reproductive age (15-49 years). (Amanuel, 2022).

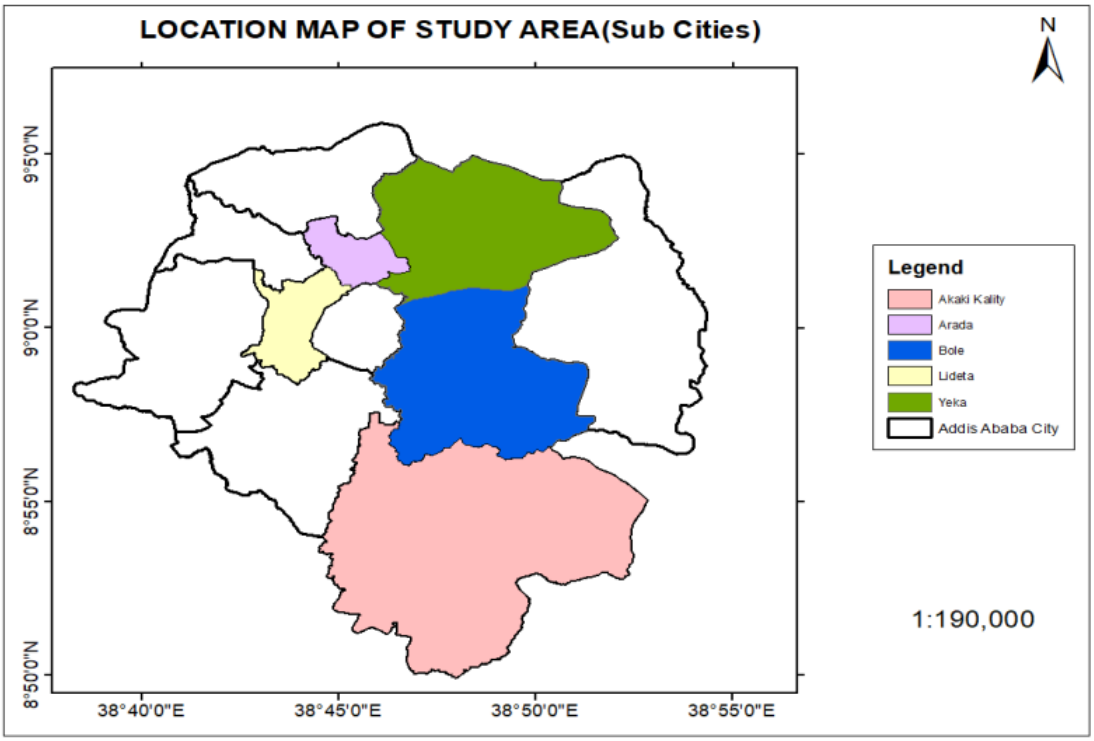

Figure 1: Study Area Map

Research Design and Sampling:

This research was used quantitative and qualitative research approach. To know populations behaviors and experience as well as their attitudes, it was best using qualitative research approaches.

The reasons that is why using quantitative approach was to know the quantitative of the sample size from the population and to describe variables in numerically in the process of data presentation and analysis and to answer questions about relationships among measured variables with purpose of explaining, predicting and controlling phenomena. The target population of this study was Addis Ababa 5 sub-cities urban cadastral System office customers and employees, Theses sub cities were Yeka, Bole, Akaki-Kality, Arada and Lideta ,the amount of target population of this study is whole Land Holders and employees. There are 300,000 land holder and 750 employees. And the total target populations were 300,750. From these target population, 400 samples were selected to draw conclusions or predictions about the target populations under this study. (Leedy, P.D. and Ormrod, J.E., 2005)

Data Source and Collection

A data collection survey was conducted on customers and employees sampled through simple random sampling techniques. Primary data were collected through structured questionnaire and interview, while the secondary data were collected from documented sources.

Data Analysis

The data were analyzed using Likert scale measurement. The respondent's responses were analyzed using mean scores together with means and percentages to assess the urban cadastral system practices. The mean value specifies to what degree the sample group averagely agrees or disagrees with the statement. Accordingly, as the mean value is lower, the more respondents disagree, and as the mean value is higher, the more respondents agree. The interpretation of the mean percentage scores will be adopted from (Ali, 2010), as shown in Table 3.1. It will be adopted to describe the level of urban cadastral system process being practiced.

Table 3. 1. Standards for the level of urban cadaster system practice

Range of Mean Values	Range of percentage Mean Values	Level of urban cadastral system Practice
Less than 2.50	Less than 50%	Very Low
2.50-3.20	50 -64%	Low
3.25-3.95	65-79%	Moderate
4.00-4.45	80-89%	High
4.50-5.00	90-100%	Very High

Source: (Ali, 2010)

The quantitative data are presented by using the tables, graphs and pie charts, for qualitative data use description, narration and long quotation data presentation methods.

3. Results and Discussions

3.1. Practice of in Urban Cadastral System

To operate the urban cadastral system four major activities are required, such as adjudication, demarcation, surveying and registration. Levels of practices were measured in the following five criteria's. These measurements are very high, high, moderate, low and very low.

3.1.1. Practice of Adjudication in urban cadastral system

Adjudication is the process of final and authoritative determination of the existing rights and claims of people to land. The process of adjudication should simply reveal what rights already exist, by whom they are held and what restrictions or limitations there are on them. Then, the practice of adjudication was showed Table 2.

Table. 2. Adjudication practice result

Adjudication Activities	Mean	%	Level of Adjudication Practice
Public awareness about urban cadastral system	3.27	65.4	Moderate
The public awareness well addressed	2.98	59.55	Low
Clear and precise process how land holders apply for adjudication and registration	3.76	75.1	Moderate
Know how about the objective of urban cadastral system	2.97	59.35	Low
Know how the benefits of establishing urban cadastral system	2.97	59.35	Low
Adjudication starts and finish date	2.94	58.75	Low
Duration of application for adjudication	3.63	72.5	Moderate
Adjudication committee formed with the participants	2.97	59.45	Low
Clear system for claim connecting with land rights during Adjudication	2.97	59.45	Low
Assumption of status quo	4.55	91	Very High
Getting notice for demarcation, surveying and registration period	3.30	65.9	Moderate
Presence of the parties during demarcation	3.08	61.55	Low
Dispute during demarcation and surveying	3.01	60.25	Low
Difference between surveyed and documented area	3.59	71.75	Moderate
Clear system to lodge grievance during such difference occurred	2.89	57.7	Low
Getting public notice after adjudication completed	4.15	83	High
All the rights, restrictions and responsibilities are recorded	2.88	57.5	Low
Duration of application for registration	3.73	74.5	Moderate
Parcel area recorded correctly in real estate cadaster system	3.80	76	Moderate
Getting title certificate on time	2.98	59.6	Low
Fairness of payment for title certificate	4.03	80.5	High
Quality parcel file and file management	2.98	59.55	Low
Good institutional organization structure	2.95	59.05	Low
Staff for regularization and file management	2.96	59.15	Low
Strong integration from other land sectors (land bank, urban renewal and land tenure administration)	2.50	50	Very Low
Competent urban cadastral system	2.94	58.8	Low
Prize for excellent expert	2.95	59.05	Low

Clear system accountable expert during his/her fault	3.96	79.25	Moderate
Average	3.27	65.46	Moderate

Source: Own survey data, 2022

Table 2.shows that adjudication practices within the organization to be moderate with an overall mean of 3.27. In the above table level of public awareness practice was moderate that is 3.27 (65.46%) but public awareness not well addressed for respondents. Adjudication committee formed with the participants of practice level was low and there is a problem related to formation of adjudication committee. The respondents had no got title certificate on time and there was long deleyance to receive the certificate. Practice level of (3.8) parcel area recorded correctly in real estate cadastre system is moderate. While level of strong integration from other land sectors (land bank, urban renewal and land tenure administration) is very low. Level of staff for regularization and file management practice is low. Level of competent land registration expert practice of mean (2.94) is low. There is no good institutional organization structure. The interview result indicates the same as the survey found were the respondents replied that this adjudication practice at a moderate level.

3.1.2. Practice of Demarcation in urban cadastral system

Demarcation is an operation which includes both legal and technical aspects. "Boundaries of parcels can be defined by physical demarcation on the ground or by a mathematical description usually based on a co-ordinate system. The accuracy and cost of cadastral surveys is dependent on the accuracy needed for boundary descriptions". (FIG, 1991).

Table 3. Demarcation practice result

Demarcation Activities	Mean	%	Level of demarcation Practice
Clear system for claim connecting with land rights during Adjudication	3.50	70.65	Moderate
Giving notice for demarcation period	2.90	57.9	Low
Presence of the parties during demarcation	2.89	57.75	Low
Parties are fully volunteer to show the general positions of the boundaries correctly	3.20	64	Low
Irregularity of parcels to mark it	4.0	80	High
Parcel boundaries defined	2.86	57.2	Low
Dispute during demarcation	3.78	75.6	Moderate
Applicants get notice after adjudication completed	2.92	58.35	Low
Adjudication has start and finish date	3.01	60.2	Low
Availability of demarcation instruments	2.89	57.75	Low
Average	3.12	62.47	Low

Source: Own survey data, 2022

Table 3 Shows that the mean (3.50) indicates clear system for claim connecting with land rights during adjudication practice level is moderate. Practice of giving notice for demarcation period is low, that indicates there is lack of awareness for demarcation activities. There is low practice that parties are fully volunteer to show the general positions of the boundaries correctly. And there is high irregularity of parcels to mark it, it indicates there is difficult to define the

boundaries of the parcel. parcel boundaries defined are not clearly defined(mean=2.86) and it results there is dispute between parties during demarcation that of practice level is low. There is also lack of demarcation instruments and it indicates low level. The interview result indicates that the same as the survey found were the respondents replied that demarcation practice at a low level. Generally, the practice of demarcation is located at low level.

A cadastral survey is a survey that defines and quantitatively sets land boundaries for legal purposes, usually between pieces of property. Cadastral surveys document the boundaries of land ownership, by the production of documents, diagrams, sketches, plans (plats in USA), charts, and maps. The most advantage of a cadastral survey and record of rights is that together they give a true and exact description of the legal situation of rights in land at any moment.

3.1.3. Practice of Surveying in urban cadastral system

Table 4. Practice of surveying result

Surveying Activities	Mean	%	Level of Surveying Practice
Giving notice for surveying period	3.49	70	Moderate
Problem during surveying process	4.1	82	Very high
Difference between surveyed and documented area	3.27	58	Moderate
Accountability for below quality surveying	3.40	68	Moderate
Are all parcels have clear and defined boundaries	3.07	61	Low
Enough surveying control points	2.86	57	Low
Availability of surveying instruments	3.78	76	Moderate
All surveying instruments well-functioning	2.92	58	Low
All parcels surveyed efficiently	3.01	60	Low
All state lands surveyed	2.89	58	Low
Enough computer in the office to process data	3.50	71	Moderate
Availability of data processing software	2.90	58	Low
All computers well-functioning	2.89	58	Low
Adjudication has start and finish date	3.40	68	Moderate
Political and cultural constraints on urban cadastral system	3.5	71	Moderate
Average	3.11	62	Low

Source: Own survey data, 2022

Table 4 indicates that the period that given notice for surveying practice level is moderate. There is very high problem during surveying process that accounts mean of 4.1(80%). Difference between surveyed and documented area level of practice is low, that mean there is less difference surveyed area and documented area. All parcels have a not clear and defined boundary that indicates the level of practice of defining the boundaries of parcel is low level that of mean was 3.07(61%). There is lack of enough surveying control points, which indicates there is difficulty for surveying work. Then practice level of expanding control points is low (2.86) as mean shows. There is availability of surveying instruments as moderate level, but all surveying instruments are not well functioning that indicates low level. This implies that it affects surveying and a result of efficient surveying work is low level. In urban cadastral system there is moderate level 3.5(71%) on enough computer in the office to process data, while some computers are not well

functioning, it indicates low level of enough availability of computers. There is also lack of availability of data processing software; this indicates that takes long time to process data, this practice show level that mean of 2.90(58%). There are political and cultural constraints on urban cadastral system. The interview result indicates that the same as the survey found were the respondents replied that surveying practice at a low level. Generally, the practice of surveying is located at low level.

3.1.4. Practice of registration in urban cadastral system

A "register" of rights is a record of formal acts of registration of legal rights. Land registration generally describes systems by which matters concerning: ownership, possession or other rights in land can be recorded (usually with a government agency or department) to provide evidence of title, facilitate transactions and to prevent unlawful disposal and the information recorded and the protection provided will vary by jurisdiction.

Table 5. Practice of registration result

No	Questions		Mean	%	Level of Registration Practice
1	All adjudicated parcels are applied for registration within given period		2.50	50	Very Low
2	All applicants fulfilled the requirements of registration		2.52	50.35	Low
3	All rights, restrictions and responsibilities recorded correctly		2.40	48.85	Very Low
4	Difference between surveyed parcel area and documented area		2.50	50.05	Low
5	Shortage of man power for registration		3.27	65.4	Moderate
6	Easy way to update RECS		2.58	51.5	Low
7	Enough computers for registration purpose		2.22	44.4	Very Low
8	Existing computers well-functioning		2.5	49.9	Very Low
9	All parcels have unique identification code		2.59	51.85	Low
10	Political and cultural constraints to establish the system		2.79	55.75	Low
11	Interruption of network in the RPRS		3.3	65.95	Moderate
Average		Average	2.66	53.09	Low

Source: Own survey data, 2022

Table 5 shows that level of practice all adjudicated parcels are apply for registration within given period is very low as means shows (2.5). Level of practice of recordation of all rights, restrictions and responsibilities is low. And difference between surveyed parcel area and documented area is low level (2.5), this means that there is less difference between surveyed and documented area.There is moderate level of man power for registration; this indicates that there is availability of experts for registration activities. Practice of easy way to update real estate cadaster system (RECS) is low (2.58). Almost there is no enough computers for registration purpose that show practice level of this is very low (44.4%). There is a moderate (3.3) interruption of network in the real property registration system (RPRS).

3.2. Challenges of urban cadastral system

To get the challenges of urban cadastral system interview based from urban cadastral office

managers and officials. The Urban Cadastral Agency of the study area the process of adjudication was started in June 2014. Up to this time 75,000 parcels were adjudicated and 45,000 parcels have been gotten title certificate.

The 1st challenge during adjudication is the right creation institution not gives fast response for claims related to ownership right raise by landholders. In this case 6432 cases were lodged to the right creation office (land tenure administration office) were solve 4509 cases, the rest of 1923 not given solution. But in the urban holding registration proclamation, the right creation office should be giving the response within 15 days. But the cases took 5 months if such claims rose. This is become the cause of delyance of adjudication process.

The 2nd challenges to urban cadastral system is high cost of adjudication process, in this case the cost of one parcel is about 13,000(nine thousand birr) which is very high. The managers also answered if there is access of network, 30 up to 35 title certificates were issued, but there is interruption of network the system not functioning up to three months.

The 4th challenge of urban cadastral system is shortage of man power and resources. There is highly scarce of man power, especially surveying expert.

The 5th challenge is previously unresolved boundary dispute and weak institutional organization structure and there was communication gap between another land related sector and lack of understanding from landholders.

The 6th challenges of urban cadastral system "fixing" the status quo may be problematic. Implementing urban cadastral system often "fixes," or solidifies, the existing landholding pattern, which may be problematic. If land parcels are fragmented, it may be prudent to consider some form of consolidation before cadastral system establishes. Fixing the status quo by implementing urban cadastral system in a setting of inequitable distribution of landholdings is another possibility.

The 7th challenges of urban cadastral system are fear of land tax or compulsory acquisition. Land holders may understandably resist compilation of a land register for fear that the government will use it as a basis for the assessment or enforcement of a land tax.

The following challenges also were faced during urban cadastral system establishment. These are, lack of standard operating procedures lack of supporting materials and strong project management, poor quality parcel file information and file management and lack of clarity on institutional roles and integration/cooperation. Finally, the managers responded the overall urban cadastral system is very late due to different causes.

4. Conclusions

Establishing of urban cadastral system is very challenging. Based on the evaluation standards that indicated the analysis methodology, the practice of urban cadastral system processes are moderate and low levels. The practice of adjudication in urban cadastral system is moderate level that shows in average mean of 3.27(65.46%), whereas the practice of demarcation, surveying and registration are low level that shows in average mean of 3.12,3.11 and 2.66 respectively. There were many challenges faced during urban cadastral practice. Among the challenges, the followings were the major one: public awareness creation about urban cadastral system to the land holders is low and not addressed for all adjudication neighborhoods. This indicates the land holders could not apply for adjudication with in fifteen days. Lack of clear and precise process how land holders apply for adjudication and registration, start and finish date for adjudication was not properly known, disputes would arise during demarcation, surveying and title certificate was not issue on time.

The urban cadastral system office should be giving programmed and continuous public awareness about cadastral system for all land holders to be adjudicated and check weather this awareness well addressed through meeting, media, and newspaper. It should be set clear and precise process how land holders apply for adjudication and registration. It should be issue title certificate on time and the payment for this title certificate should be fair. Should design for irregularity of parcels to mark it by way of land readjustment

and use qualified aerial photography to define the boundaries of the parcel and it should also fulfill demarcation, surveying and registration instruments and appoint qualified person for the purpose of maintenance for these instruments during work. It also expands surveying control points by using latest surveying instruments like Differential GPS. Finally, the office should analyze the existing challenges and estimate the cost of adjudication of parcels or registration and it continue is existing positions by strengthening its performance.

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Conflict of interest
There is no conflict of interest on the publication of this manuscript

Authors contribution
Both authors have contributed in proposal writing, data collection, analysis and manuscript preparation

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