



Digital Transformation in Land Administration: Assessing the Impact of Semi-Automated Land Title Registration in Ghana

Osafo Thomas Benjamin ^{1*}, Adom Nana ²

¹ PhD MBA BSc, Lands Commission, Ghana

² PhD, Anglia Ruskin University, Bishop Hall Lane

* Corresponding Author: **Osafo Thomas Benjamin**

Article Info

ISSN (Online): 2582-7138

Impact Factor (RSIF): 7.98

Volume: 06

Issue: 05

September - October 2025

Received: 01-08-2025

Accepted: 01-09-2025

Published: 26-09-2025

Page No: 703-717

Abstract

Land title registration entails the process of recording and maintaining land information in a land register. The process of obtaining and maintaining a database of land information is usually a challenge in most developing countries like Ghana. The paper aims to examine the semi-automated land title registration process introduced by the Ghana Lands Commission and explore potential enhancements to improve the efficiency of land title registration in Ghana. The case study methodology was adopted to obtain and analyze data mainly from the Greater Accra Regional Office of the Lands Commission. Face-to-face semi-structured interviews, focus group interviews and archival records were used to obtain data for the study. It was realized that the Enterprise Land Information System (ELIS) was internally generated by staff of the LC and applied in the land title registration of the Ghana Lands Commission. However, due to the inadequate coordination between the ICT section and the Divisions it was difficult to develop the ELIS. Also, the intermittent supply of internet and electricity delayed the title registration process. Since the registration system in the country is not standardized it becomes difficult to link relevant data both within the Greater Accra Region and among the 16 regions in the country. There is lack of an effective monitoring system to ensure that relevant staff adheres to office practices associated with the registration process. The over politicization of the leadership of the Lands Commission increases the turnover of the Executive Secretary position which delays the development of a fully digitized registration process in the country. It is recommended that the IT Unit and the Divisions staff should be team players through regular consultations and collaboration in the performance of their duties. The network companies that provide internet should be informed to make it reliable and the power plant should be maintained regularly to avert regular breakdowns to prevent interruptions in the title registration services. The Lands Commission should outsource the development of fully digitized title registration software to experts who have worked in other countries and have been successful. The leadership of the Lands Commission should be de-politicized.

Keywords: Digital Transformation, Land Administration, Semi-Automated, Land-Title, Registration

1. Introduction

Land title registration is a fundamental aspect of land administration, involving the systematic recording and management of land ownership, rights, and associated data (Dale & McLaughlin, 1999). The process ensures security of tenure and facilitates efficient land transactions. Essential details recorded include parcel size, ownership interest, taxation obligations, and the historical chain of title. The registration process varies across jurisdictions, depending on tenure systems and governance frameworks (Toulmin, 2009).

In Ghana, land title registration was historically a manual process, leading to inefficiencies such as errors, delays, and frequent land disputes (Larbi, Antwi, & Olomolaiye, 2004)^[15]. To address these challenges, digital transformation initiatives were introduced, resulting in a semi-automated system aimed at improving efficiency and reducing disputes. However, full automation remains a challenge due to high implementation costs and infrastructural constraints (Dabara *et al.*, 2021)^[3].

The Ghanaian land registration system is managed by four key Divisions within the Lands Commission, established under the Lands Commission Act 2008 (Act 767). These include the Land Valuation Division (LVD), Survey and Mapping Division (SMD), Public and Vested Lands Management Division (PVLMD), and Land Registry Division (LRD) (Government of Ghana, 2008)^[8]. Prior to the enactment of Act 767, these Divisions operated independently under separate regulations, leading to inconsistencies in land data management. For instance, SMD-approved cadastral plans often conflicted with PVLMD transaction records, while Land Use and Spatial Planning Authority (LUSPA) planning schemes were not aligned with cadastral base maps (Kasanga & Kotey, 2001). These inconsistencies resulted in overlapping land claims and disputes, undermining tenure security.

The Lands Commission Act 2008 was introduced to streamline and coordinate land administration activities, reducing duplication and inefficiencies. A reengineering process was initiated to enhance workflow efficiency, integrating digital tools to improve title registration. Despite these efforts, the semi-automated system still faces several challenges, including document loss, registration delays, limited storage capacity, and human resource constraints (Dabara *et al.*, 2021)^[3].

This study seeks to evaluate the semi-automated land title registration process in Ghana, assessing its impact on land administration and identifying potential pathways for full digital transformation. Specifically, it will examine the role of the Client Service and Access Unit (CSAU) in the automation process, the operational challenges of the current system, and strategies for achieving a fully paperless registration framework. This study provides a comprehensive assessment of Ghana's land registration system, examining historical developments, theoretical perspectives, and best practices from other jurisdictions. The methodology, findings, challenges, and recommendations for enhancing digital transformation in Ghanaian land administration were presented.

Overview of the Background of the Land Registration in Ghana

The background of the land title registration in Ghana could be discussed according to the pre and post-enactment of the

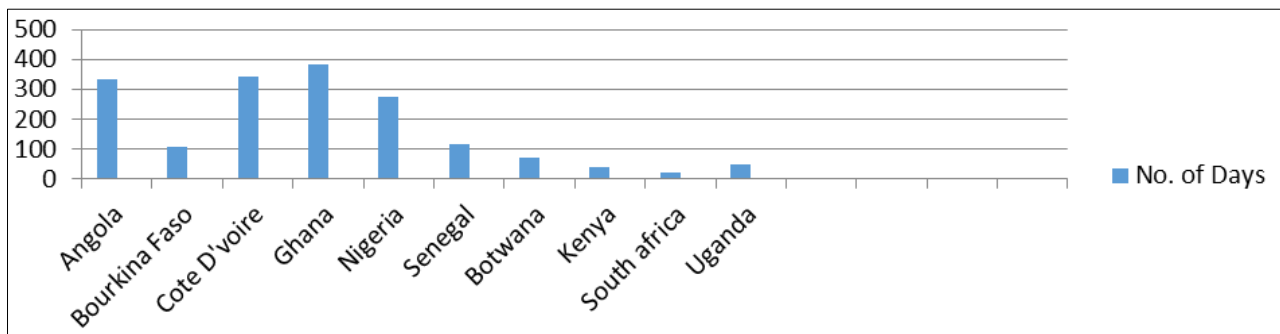
Lands Commission Act 2008 (Act 767) as follows:

Land Registration prior to 2008

Before 2008, land sector agencies involved in land registration in Ghana operated independently, despite their interdependent and complementary roles. These agencies included the former Lands Commission (now PVLMD), Land Valuation Board (now LVD), Survey Department (now SMD), Deeds Registration Department, Land Title Registration (now LRD), and Town and Country Planning Department (now LUPSA). The lack of coordination among these entities led to inefficiencies in the land registration process, creating a system that was cumbersome, ineffective, and prone to duplication of efforts (Kasanga & Kotey, 2001; Larbi, Antwi, & Olomolaiye, 2004)^[15]. Each agency operated under distinct legal frameworks, regulations, and objectives, making seamless collaboration difficult.

The absence of coordination in operations resulted in inefficient land administration. For example, LUPSA relied on base maps from the then Survey Department for planning purposes, but the high cost of acquiring these maps often hindered LUPSA's ability to develop planning schemes. Consequently, many settlements were unplanned, leading to unauthorized developments across the country (Toulmin, 2009). The decentralization of services further complicated land registration, as clients had to visit multiple agency locations—some of which were only available in Accra—to complete their registration. The manual processing of land records introduced additional inefficiencies, such as document misplacement, defacement, and fraudulent alterations by unscrupulous officials, leading to numerous land disputes and costly legal battles (Dabara *et al.*, 2021)^[3]. Moreover, physical storage limitations within these agencies meant that land records were often poorly managed. Documents were scattered across offices with inadequate filing systems, making retrieval difficult and increasing the likelihood of document loss. These inefficiencies contributed to extended registration periods, making Ghana's land registration process one of the slowest compared to its African and global counterparts (Government of Ghana, 2008)^[8].

The inefficiencies of the pre-2008 system underscored the urgent need for reform in Ghana's land administration framework. The Lands Commission Act 2008 (Act 767) was introduced to integrate these independent agencies under a unified system, streamlining operations to enhance efficiency and reduce redundancies. Despite this effort, challenges persist, particularly in transitioning to a fully automated system capable of mitigating the legacy issues of manual land registration (Dabara *et al.*, 2021)^[3]. The study analyzes these challenges and explores the potential for a fully digitalized land registration framework in Ghana.

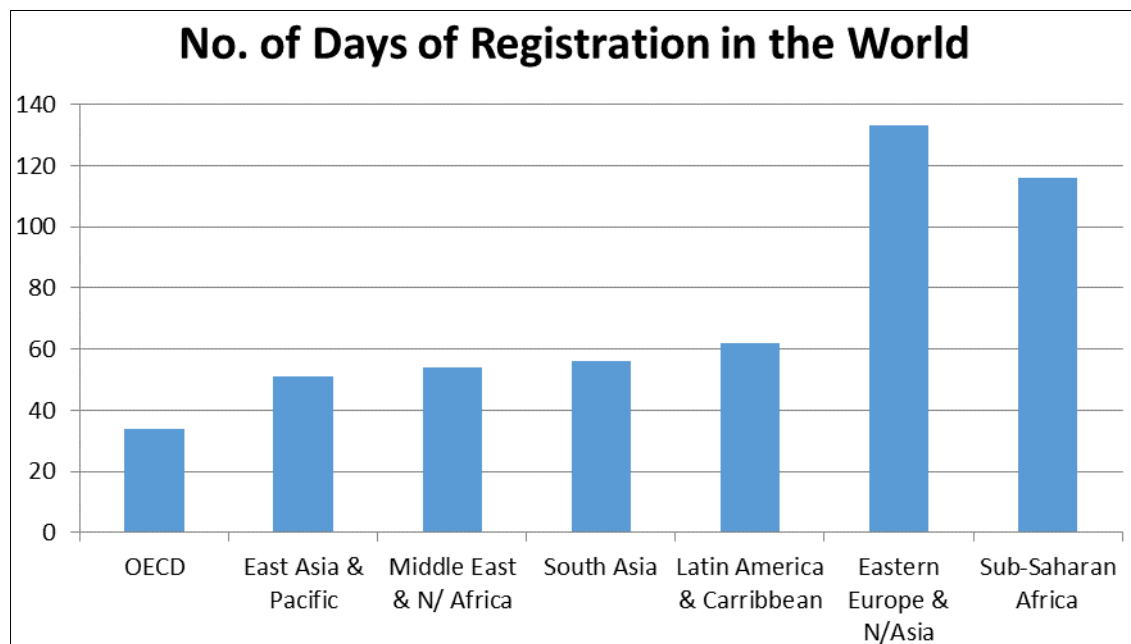


Source: World Bank (2013) ^[22]

Fig 1: No. of Days of Registration in Africa

Figure 1 indicates that Ghana recorded the highest number of days of registration in most parts of Africa. The lowest no of

days was recorded by South Africa.



Source: World Bank (2013) ^[22]

Fig 2: No. of days of Registration

Figure 2 also indicates that the number of days for registration was high in Eastern Europe and North Asia as well as in Sub-Saharan Africa where Ghana is located. On the other hand, it was low in the OECD, East Asia, and Pacific countries.

Post enactment of the Lands Commission Act 2008

The enactment of the Lands Commission Act 2008 (Act 767) consolidated four key land sector agencies under a single administrative framework, excluding the Town and Country Planning Department, which operated under a separate legal framework and ministry (Government of Ghana, 2008) ^[8]. This restructuring facilitated improved coordination among land administration bodies, setting the stage for a more efficient land registration system. According to the World Bank (2010), an effective automated land registration system necessitates the involvement of skilled professionals, including land surveyors, ICT personnel, software developers, engineers, and land administrators.

Despite these legal and administrative reforms, the integration of information technology within the Ghana Lands Commission remained underdeveloped. As of 2016, the only officially appointed ICT officer was stationed at the

Head Office in Accra, while regional ICT staffs were engaged on a part-time basis. This lack of a dedicated IT workforce significantly impeded efforts to fully automate the land registration system (Dabara *et al.*, 2021) ^[3]. In 2010, the United Nations, in collaboration with the World Health Organization (WHO), initiated a program to assist developing countries, including Ghana, Nepal, and Samoa, in automating their land registration systems (United Nations, 2010). However, the project was hindered by a lack of ICT expertise among Ghana Lands Commission representatives, leading to their early return from a software development training program in Italy. The initiative was ultimately abandoned due to the withdrawal of financial sponsorship by the funding agencies.

To address workflow inefficiencies and streamline the registration process, the Lands Commission engaged Airbus to re-engineer its operational procedures. This collaboration successfully reduced institutional role duplications and laid the foundation for automation (Larbi, Antwi, & Olomolaiye, 2004) ^[15].

As part of the government's broader digital transformation agenda, several initiatives have been implemented to advance land registration automation. These include the establishment

of the Client Service and Access Unit (CSAU) and the recruitment of additional ICT personnel across various regions. The CSAU serves as a central hub where representatives from the four core Divisions—Public and Vested Lands Management Division (PVLMD), Survey and Mapping Division (SMD), Land Valuation Division (LVD), and Land Registry Division (LRD)—collaborate to enhance efficiency (Government of Ghana, 2008) ^[8]. Despite these advancements, interdepartmental communication challenges persist, with internal memos often experiencing delays, hampering workflow efficiency.

Additionally, inadequate client training on the digital registration system has led to widespread reliance on intermediaries, who often charge excessive fees for their services. This lack of accessibility undermines the objectives of the automation process and increases the financial burden on landowners (Dabara *et al.*, 2021) ^[3]. Moreover, inconsistencies in land registration systems across different regions exacerbate administrative challenges. While Greater Accra and parts of the Ashanti Region operate under the Land Title Registration system, the remaining 14 regions and parts of Ashanti still use the Deeds Registration system, as governed by the Lands Act 2020 (Act 1036) (Government of Ghana, 2020) ^[9]. Furthermore, the CSAU has not yet been introduced in all regional offices of the Lands Commission, leading to disparities in registration procedures. This fragmented system creates complications for clients, who must navigate multiple registration frameworks depending on their location.

The complexity of the land registration process discourages many landowners from formalizing their property interests, increasing the risk of land disputes and tenure insecurity. Addressing these challenges through comprehensive digital reforms and a standardized national registration system is essential for enhancing land administration efficiency in Ghana.

Theoretical Framework

The theoretical framework for assessing the impact of semi-automated land title registration in Ghana is grounded in several key theories related to digital transformation, land administration, and institutional change. These theories provide a conceptual foundation for understanding the processes, challenges, and outcomes of integrating digital technologies into Ghana's land administration system.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989) ^[4], explains how users come to accept and use new technologies. It posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system, which in turn influences actual usage (Venkatesh & Davis, 2000) ^[21]. In the context of Ghana's land administration, the successful adoption of a semi-automated land title registration system depends on how stakeholders, including landowners, surveyors, and government officials, perceive its efficiency and usability. Challenges such as inadequate training and resistance to change may hinder

adoption (Dabara *et al.*, 2021) ^[3].

Institutional Theory

Institutional theory, as discussed by North (1990) ^[16], focuses on the role of formal and informal institutions in shaping economic and administrative processes. In land administration, institutional frameworks, including laws, policies, and organizational structures, influence the efficiency of land registration systems. The consolidation of Ghana's land sector agencies under the Lands Commission Act 2008 (Act 767) was an institutional reform aimed at improving coordination and reducing inefficiencies (Government of Ghana, 2008) ^[8]. However, lingering bureaucratic challenges indicate the need for further institutional strengthening.

Land Administration Domain Model (LADM)

The Land Administration Domain Model (LADM) provides a standardized framework for land information management and supports the integration of digital systems in land administration (ISO, 2012). LADM emphasizes the importance of interoperability, data consistency, and stakeholder collaboration in land registration processes. Ghana's transition from a manual to a semi-automated land registration system aligns with LADM principles but faces obstacles such as inconsistent data management and lack of a unified digital platform (Larbi, Antwi, & Olomolaiye, 2004) ^[15].

E-Government Theory

E-Government Theory, which explores the digital transformation of public sector services, is relevant in assessing the semi-automation of land title registration. According to Heeks (2006) ^[12], successful e-government initiatives require technological, organizational, and institutional alignment. Ghana's government has pursued digital transformation initiatives to improve service delivery, but disparities in land registration systems across different regions indicate gaps in policy implementation (Government of Ghana, 2020) ^[9].

The integration of digital technology into Ghana's land administration is a complex process influenced by institutional structures, user perceptions, and technological frameworks. By applying theories such as TAM, Institutional Theory, LADM, and E-Government Theory, this study provides a comprehensive understanding of the factors affecting the success of semi-automated land title registration. Addressing challenges such as interoperability, stakeholder training, and policy harmonization will be crucial in achieving full automation and efficiency in land administration.

Conceptual framework of the Automated Land Title Registration

Based on the discussion in the literature review a framework for property registration has been developed as indicated below:

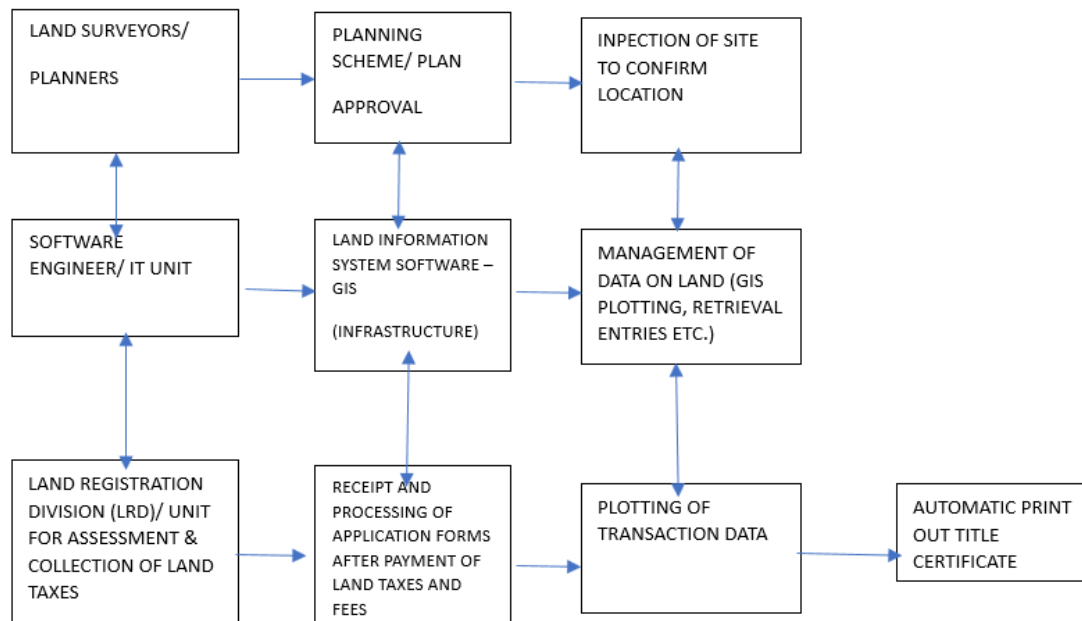


Fig 3: Land Title Registration Framework

As presented under Figure 3, the Land title registration commences from the development of a planning scheme in an area. This planning scheme is based on a base map prepared by land surveyors. The planning scheme is prepared by the planners under the local authority.

Additionally, the ICT staff and software engineers provide the structure or infrastructure for the management of the land information obtained. They provide software for the electronic title registration in the country. The software enables applicants to apply for title registration, the staff members are able to record, retrieve and plot land transactions and also use digital signatures in the title registration process. Payment of fees are also digitized.

The Land Registration unit of the Lands Registry are responsible for the processing of the land title registration and release of completed land title registration certificate to the client.

Based on Figure 3, when someone or an institution acquires a site, a cadastral plan is prepared by land surveyors based on the planning scheme. The site plan and other relevant documents like the indenture could be submitted to the relevant authorities for the assessment and collection of land transaction taxes. The process up to this stage can be considered as the pre-registration process. Consequently, land title registration forms are completed and submitted to the title registration unit. The forms are processed based on the information presented on the forms. The main thing that will be considered during the processing of the forms are as follows:

- Whether the site plan does not conflict with a prior registered land
- Identification of the transferor and the transferee
- Whether the land transaction tax has been paid

After the above issues have been satisfied, the land surveyors will inspect the land and verify the location of the land on the ground. Once the location is confirmed on the ground, the site plan is plotted with the aid of the GIS software that is employed for the title registration. All information concerning the piece of land is attached to the plotted site such that it can easily be accessed especially when a search

report request is made by the client. The site plan number could be used to access the information relating to the land. After the site plan has been plotted the system can generate a title certificate which could digitally be signed by the authorize staff and the title certificate electronically sent to the applicant. This means that the title registration could be done online without the applicant visiting the Lands Commission premises.

The Estate surveyors and lawyers help to implement laws concerning land in the country. Again, the estate surveyors assess the value of properties for the payment of property tax to the Government while the lawyers prepare title deeds for land owners. The activities of the relevant Divisions and Units in the Land Registry are interdependent and complementary and collaboration will result in an effective and efficient land registration system in a community. This will enhance the security of title to land, reduce the period of registration and enable the provision of insurance that the government could provide to guarantee the registration process. It will also increase the generation of revenue for the government.

Methodology

To achieve these objectives, the study employs a case study methodology, incorporating semi-structured interviews, secondary data analysis from the Lands Commission, and archival document reviews. Key stakeholders, including representatives from the four Divisions, IT and Special Project units, and clients, were engaged to provide insights into the effectiveness of the semi-automated system. The data collected were analyzed to identify operational gaps, system inefficiencies, and potential areas for technological enhancement.

Data collection of an internal researcher

Insider researchers are those who choose to study groups that are within their discipline or profession (Breen, 2007; Unluer, 2012). As a Senior Officer at the Lands Commission, the study institution, the author assumed the role of an internal researcher. Being an internal researcher, he had both advantages and disadvantages to the research work. The

researcher must take advantage of the benefits and overcome the constraints to be able to present credible research (Unluer, 2012).

The internal researcher understands the culture (how the group works) of the group under study, has natural social interaction with respondents, and has greater intimacy that guides the provision of correct and accurate data. Furthermore, they know how to approach respondents and have greater knowledge of the discipline which takes the outsider a long time to attain (Bonner & Tolhurst, 2002).

Despite the advantages that accrue to the internal researcher described above, he or she encounters some challenges. The internal researcher encounters the challenge of being subjective due to its relation with the respondents. Furthermore, unconscious presumptions about the research could be considered as bias in the research process (Delyser, 2001). However, Porteli (2008) stressed that research that relates to human beings requires the views of the stakeholders as well as the researcher to present a more balanced means of answering the research question. The researcher should also not judge data presented by respondents but should be able to separate their roles as professionals from that of a researcher to avoid being biased (Gerrish, 1997). Since respondents have confidence in the researcher, they usually provide sensitive information about the institutions. However, it is the responsibility of the internal researcher to apply his or her role as a researcher in the field and adhere to relevant ethics of confidentiality, anonymity to protect the institution and respondents as described under previous sections. This relates to obtaining data from the field and not being judgmental of data obtained from the field.

As presented in previous sections the research involved relevant staff members in the four main Divisions (LVD, PVLMD, LRD and SMD) and the IT section of the Lands Commission. Though the author has been a staff in the institution for about 25 years, he works in only one of the Divisions and not very conversant with the operations of the other Divisions and the IT section. He had to contact the Divisional Directors and the Head of the Divisions to help him identify the relevant respondents who could give him appropriate information for the research.

Since the author is a staff of the institution, the respondents had confidence in him and granted him detail and adequate data for the research. Additionally, since the author had background knowledge about the profession, based on the themes developed from the literature review, he was able to ask relevant interview questions that could help achieve the aims of the research. He however had challenges with some of the technical issues related to the Land Surveying and the IT. It therefore took a considerable period to interview the

respondents for appropriate data for the research.

To repose the confidence that the respondents had in the author, as stated under the ethics consideration section, he kept the respondents unanimous and sensitive information gathered confidential to protect both the respondents and the institution. Sensitive data obtained were discussed with only the assistants. In the case of focus group discussions, data were shared among the respondents and members were asked to keep data confidential.

The author separated his role as a professional from that of a researcher and considered the exercise of data collection as being on the field to collect data for research work and not to undertake a professional assignment. Data collection was not judgmental as the respondents could express their views based on their cultural background.

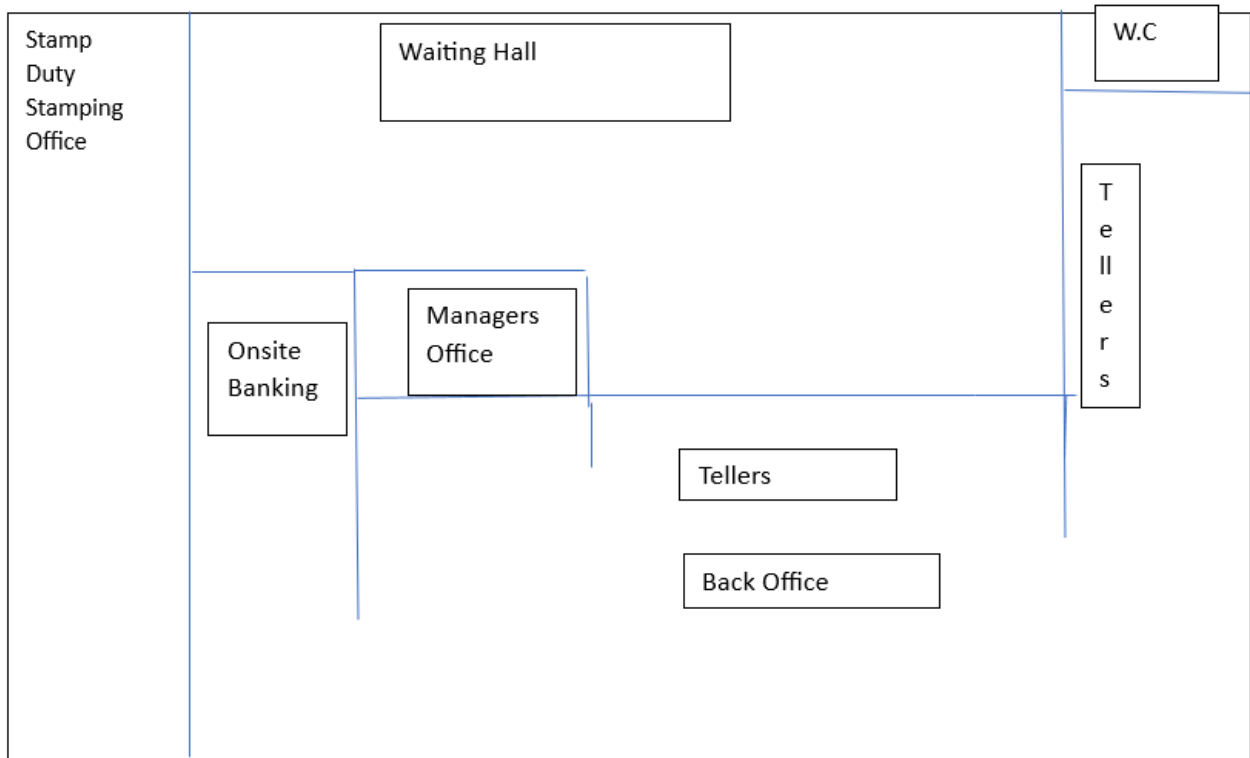
Data presentation and Discussion

(Current state of the Land Registration System in the Greater Accra Region of Ghana)

According to a respondent at the IT unit, the automation of the services provided by the Lands Commission comprises processing of cadastral plan approvals, Stamp Duty for collection of revenue for the Government, provision of the search report, recording of land transaction, publication of the transaction and provision of title certificates.

The introduction of the automation system became necessary due to the delays associated with the manual system. According to him, the IT unit provides the infrastructure for the automated registration process. The infrastructure simplifies the registration processes and reduces the period of registration. Opportunity is made available for clients to apply for services offered by the Lands Commission online or at their premises. It has been realized that both staff and clients prefer online services since it is simple and convenient. It can be done at the convenience of their homes or offices.

The process of all services rendered by the Lands Commission commences by visiting the Lands Commission website onlineservices.lc.gov.gh. The service enables you to enter or input personal information of the applicant like the name, date of birth, and TIN no. provided in the Ghana Identification Card as well as details of the title or land document. After the completion of the form online the client is expected to proceed to the Client Service and Access Unit (CSAU) to present the land document. Representatives of staff of all 4 Divisions are represented at the CSAU making it easier to coordinate their activities. The CSAU also helps clients access all the services of the Commission under a one-stop-shop. The plan of the CSAU has been presented below:



Source: Lands Commission (2023)

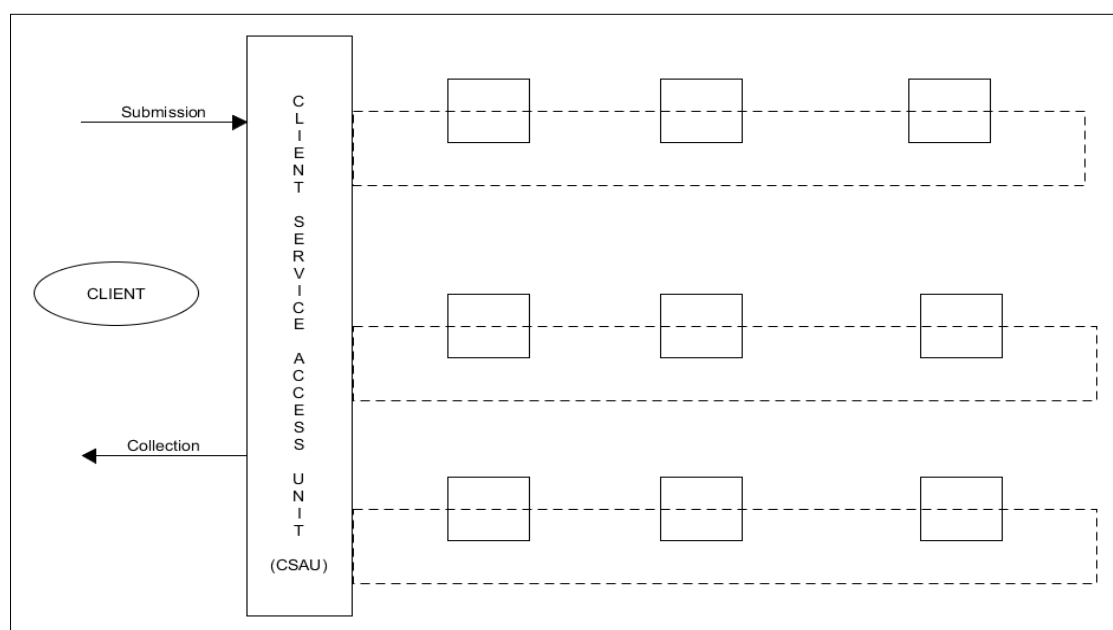
Fig 4: Plan of the CSAU building

The CSAU structure contains mainly a registration hall, a stamping office, and a banking hall as indicated under Figure 1. The banking hall contains a counter and a back office. Eight (8) cages have been erected on a counter. Six (6) cages have been provided for receiving documents and the remaining two (2) for collection of documents after completion of jobs. The manager's office abuts the registration hall to be able to monitor the activities in the hall. A banking hall is also provided within the CSAU building for easy accessibility to the bank for payment of fees to facilitate the process of title registration. Additionally, the stamping office of the LVD is also within the CSAU. The unit stamps

all relevant documents based on the provisions of the Stamp Duty Act 2005 as amended.

Representatives of all the Divisions are presented in the cages to provide a one-stop shop of land registration services to the public. These Divisions are the LVD, PVLMD, LRD, and SMD. A back office behind the counter accommodates an additional staff of the various Divisions who collect and process documents related to their Divisions. Payments of relevant fees are made at the onsite bank space.

The Land Title Registration process has been presented under Figure 4:



Source: The Lands Commission (2023)

Fig 4: The Operation of the Client Service and Access Unit

Figure 4 indicates the plan of the operation of the CSAU. The idea of the introduction of the CSAU is to have one-stop-shop of title registration at the lands Commission. Prior to the creation of the CSAU clients have to visit relevant offices of almost all the 4 Divisions of the Lands Commission to have their titles registered. Since these offices are scattered and not at one location there were movements of files and documents across roads and streets making the registration process cumbersome which causes delay in the title registration process.

The introduction of the CSAU therefore assembled all the relevant staff members at the CSAU within the CSAU building. The clients therefore present the title documents at counter of the CSAU and the documents are worked on at the back offices. The documents will be worked on by the relevant Divisions and the outcome of the registration process will be made available at the collection points of the CSAU for collection by the client.

The activities of the staff at the counter and the back offices have been presented under Table 1:

Table 1: The Land Title Registration Process

Activities	Client/Customer	CSAU	Divisional Operations	Period for service	No. of steps
Reception	Submits Application	- Receives application - Vets application - Records the Service - Gives an acknowledgement to Client			
Billing and payments	Pay service bill	- Generate bill for client - Receives application after payment - Forward document to respective Division at back office			
Processing			- Check the service requested - Approve or reject service request - Forward result to CSAU		
Return	Collect result from the CSAU - Completed - Queried - Rejected	Returns the completed document to customer or any query or rejection.			

Source: Lands Commission (2023)

Table 1 indicates the process of Title Registration from the point of submitting application for pre-registration through the application of title Registration to completion and provision of title certificate for collection. The introduction of the CSAU provided One-Stop-Shop of title registration, however the inability of the Lands Commission to fully digitize its activities has resulted in less impact on the period of the title registration in the country. The CSAU mostly uses the manual system of registration, where hard copies of documents are processed. The objective of the introduction of the CSAU to reduce the period of registration has still not been realized. It only creates an avenue for the processing of hard copies of documents rather than to encourage the use of digitalization for title registration.

The Land Title Registration Process

The land registration automation system was internally generated by the staff of the Lands Commission. It is based on the land administration and the tenure system of the country.

The land title registration process consists of two main processes: the pre-registration and the main registration processes.

The Pre-Registration Process

The pre-registration process consists of site plan approval, processing of stamp duty, application for consent and concurrence where appropriate, and planning information from LUSPA.

Cadaster Plan approvals by Director of SMD

The plan approval is done by the Regional Head of SMD on behalf of the Director of Surveys. License surveyors apply for regional numbers from the CSAU to undertake land surveys and present plans for approval. This is the preparation of the cadastral plan which forms the bases of title registration. Cadastral plans are prepared by licensed surveyors and sent to the CSAU which is forwarded to the Regional Head of SMD. The plans are presented both in hard and soft copies. It is presented to the Regional Head of SMD for vetting, approval, and for plotting the plans. All the plans are barcoded to enable relevant information to be traced or identified on the computer for further processing.

According to a staff at the CSAU some of the challenges that they encounter are that some of the site plans are given directly to the Licensed Surveyors from SMD without passing through the CSAU, and thus distort the activities and records of the CSAU. This is because though the SMD officers record in the system that it had been forwarded to the CSAU desk for collection, they give the site plans directly to the licensed surveyors making it difficult to trace the site plans. This bad practice of some of the SMD officers aims at collecting unofficial payments from the clients so that the plans could be given directly to them. To avoid distortion of the CSAU records, plans forwarded to the CSAU section by the SMD Division are checked against physical plans presented to the CSAU so that unaccompanied site plans are canceled from the system as not received. This unofficial practice is common in all the other Divisions like the LVD

(Stamp Duty inspection cases), PVLMD (Search reports), and LRD (Land title certificates).

A staff at the SMD presented during an interview that provision of auto photo maps could help the institution check the accuracy of the plans presented to SMD for approval and also help to prepare the parcel plans. Since the land registration process covers the entire country, auto photo maps for the entire country would be required. Though these are necessary the automation of the land registration program at the Commission could go on as the Commission seeks funds to obtain the auto photo maps. The in-house automation system is not complete as the Commission seeks to develop it further to make easy access to land registration by residents and reduce the period of registration.

Processing and Payment of Stamp Duty

After the approval is given the owner of the site prepares the indenture and submits it to the CSAU for payment of stamp duty. The presentation can be done physically at the CSAU or uploaded on the client's portal. The client is given a unique job number that identifies his document. The assessment of the Stamp Duty is based on the type of interest held in the land by clients. These are in the form of leases, assignments, and conveyance. The assignments and conveyances usually require field inspections as the lands may have been developed. If they are developed the duty is based on both the land and the structure on the land. It is usually difficult to identify the status of the land in the office and hence demands inspection. This form of assessment usually delays the process since the office has to arrange for field inspection with the client, the property inspected, and time to prepare the inspection report for approval and assessment of Stamp Duty. The leases are based on annual ground rent which usually do not require the valuation of the development on the land. Leased documents, therefore, do not usually require field inspection and therefore facilitate stamp duty assessment. Where the property requires an inspection before stamp duty assessment could be done, it could take an average period of 3 months while it takes about one week for non-inspection cases. The processing of the Stamp Duty is mainly manual and delays the title registration process.

Granting of Consent and Concurrence by the PVLMD and Land Use Comments by LUSPA

All Government, stool lands and vested lands are referred to the PVLMD during the pre-registration process. The PVLMD of the Lands Commission grants government lands to applicants. The Commission also manages vested Lands on behalf of the Stools. In the case of stool lands, the Lands Commission grants consent on grants from stools and concurrence to subsequent grants of stool lands. Planning comments from LUSPA on the land use of the subject land must be obtained and presented at the CSAU before the registration process could start.

After the relevant pre-registration process has been undertaken, the document is released to the client to commence the actual registration process.

The Main Automated Title Registration Process

According to the ICT staff, the main registration process commences with the collection of registration forms from the LRD representative at the CSAU. Official searches are done by the IT staff in three Divisions: PVLMD, LRD, and SMD. The searches could take about three months. According to the

staff of SMD interviewed, the searches are conducted from the records of SMD, PVLMD, and LRD Divisions. A composite search report is usually provided to indicate the status of the parcel of a respective parcel of land. The service is sorely requested online. Clients could upload their plans on their portals and records information sent to them online after payment of fees. The search reports are generated manually and are associated with challenges. Some of these challenges are: inaccurate information, defacing of records, deletion of records and delays in the provision of the search reports.

If there are no conflicting issues, SMD prepares parcel plans which are sent to LRD for further processing after inspecting the land to make sure that the parcel plan reflects the actual parcel of land on the ground. The LRD could then publish the transaction in a public newspaper for three conservative times. If there are no queries from the public, 21 days after the last publication, then LRD can plot the transaction and issue land title certificate to the applicant.

The period of title registration and obtaining search report is largely based on the ability to follow-up on one's application at the back office. Since most of the jobs are done manually it is difficult to fix a period for title registration. The work is dependent on the efficiency and availability of the staff in the performance of that task. Sometimes you need to pay 'facilitation fee' to the staff before the work could be done. This dishonest payment increases the cost of title registration to the clients.

The Second Transaction

If it is a second transaction the process is simpler. Since the detail or information is in the system already, the name on the site plan and document is changed to the new owner's name for the stamp duty to be paid. Since the parcel plan bears no name but the parcel plan number, the same parcel plan could be presented from SMD to LRD after completing the new Land Title Registration Forms. LRD could then make a publication of the transaction in the News Papers and release title certificate if there are no queries from the public.

Mode of payments of bills

The management of title registration is very expensive and the government would have to recoup the money invested to sustain title registration in Ghana. The means of payment of bills should be easily accessible to encourage clients to pay their bills. The Lands Commission has therefore made available the following means of payments:

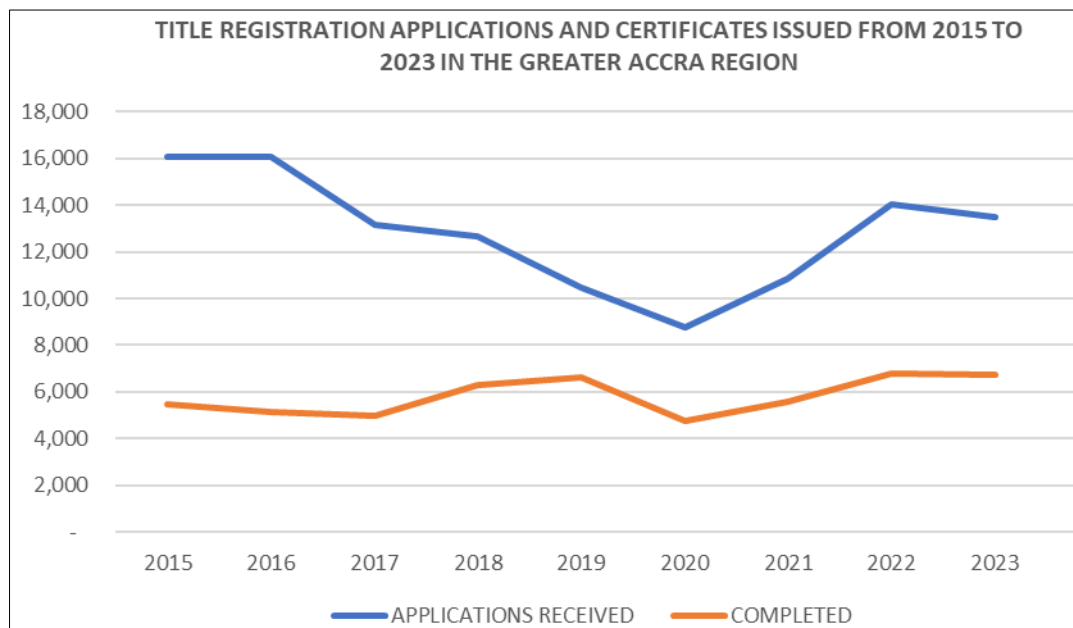
- Cash Payment
- Online payment on Ghana.gov
- Selected 22 commercial banks
- On-site banks

Due to the fact that the Lands Commission has not fully automated the title registration and payment of fees processes, leakages of revenues are regularly identified. It has been realized that most of the culprits are staff members who locally developed the semi-automated system. All the mode of payments has not been very reliable and most clients believe that more efficient and easy payments like the use of visa cards and direct "Momo" transfers should be introduced. The mode of payment of bills related to land title registration at the Land Ministry in Zambia is instant with the use of Visa Cards and "Momo" and could be done at the convenience of the location of the client.

The challenges associated with the semi-automated title registration have resulted in the number of registered title

deeds presented under Figure 5 below:

No. of Applications Registered at LRD (2015-2023)		
Year	Applications Received	Completed
2015	16,068	5,464
2016	16,061	5,111
2017	13,165	4,996
2018	12,643	6,279
2019	10,442	6,639
2020	8,784	4,747
2021	10,829	5,560
2022	14,051	6,767
2023	13,486	6,750



Source: Lands Commission (2025)

Fig 5: Number of Title Registration applications and Certificates issued from 2015 to 2023

Figure 5 indicates that immediately after the introduction of the sub-automated title registration in the Lands Commission of Ghana, many land owners were attracted to apply for title registration. However, due to the low level of registered titles prospective applicants were discouraged to apply for title registration of their interests in land.

From 2015 to 2023 the total number of title registration applications was 115,529 and the total completed cases were 52,313. Analysis of this gives about 45% completed cases which is below average.

The Lands Commission should therefore fully automate the title registration processes to reduce the complexities associated with it. The constraints associated with the registration system is due to the manual work that dominates the title registration processes. Though the capital required to fully automate the processes is high the revenue that will be generated will be enormous.

Discussions on the Sub-Automated Land Title Registration

The pre-registration process of the title registration should be part of the title registration process and should not be separated from the main registration system. There should be a software that will manage the entire registration process in the country. The representative of the SMD raised the benefits of the auto photo maps. The auto photo maps will

present one digital map to cover the entire country on which online plotting could be done. The current hard copy records sheet on which plotting are made should be a thing of the past. These sheets have been used to plot wrong plans of clients and are conflicting with current genuine plans making it difficult for the correct plans to be plotted. Most of the plans are defaced, torn and not fit for purpose. The reliable once should be transferred to the auto photo maps while the unreliable once should be investigated on the ground to ensure that the right information is presented on the auto photo maps. According to Toaha and Khan (2008) ^[19] the graphical model would be linked to the GIS software for plotting and display of maps. It should contain all the tools that are available in the internationally recognized graphic viewer soft wares.

Additionally, the processes of stamp duty should be simplified, cost effective and revenue obtained be secured to avoid further leakages to the detriment of the Ghana Revenue Authority (GRA) of the government. Lease documents should not be inspected since the revenue obtained from it is very small compared to the cost of generating it. The cost of transportation to and from the site especially in the Greater Accra Region where traffic congestion is very high should be avoided. Concerning other transfers (assignments, conveyance) google maps could be used to find out whether

they are developed before visiting the site. A digital temperate should be developed to facilitate the valuation of the properties to reduce time spent on preparing stamp duty valuation reports. The canons of tax which include convenience of payment should be applied to Stamp Duty assessment and payment.

There exist a serious challenge concerning contradictions among the old independent plotting among the PVLMD (formally Lands Commission), Land Title registration Division (Formally Land Title Registration Department) and the Survey and Mapping Division (Formally Survey Department). There should be a linkage among the plotting that were done by these Divisions to ensure that the right information is transferred to the auto photo maps that will be generated in the future. According to (Dekker, 2016) ^[5] there should be linkages among data generated by the units under the land title digitalization to obtain easy access to data to facilitate the title registration. Most of the challenges associated with the complexities in the title registration is due to the conflicting plotting of transactions among the records of the said Divisions and these have to be resolved.

Additionally, the automation of title registration can thrive in a conducive enabling environment. The enabling environment includes reliable and affordable internet and electricity power supply. These two facilities are problematic in the country and restricting the smooth operation of the title registration process. The respondent of the CSAO presented that the internet could go off for about a week and during the period no registration could be done. Before the registration system could be efficiently managed there should be easy access to the system or software. Non-easy access to the public power supply also limits the effective operation of the title registration. The operation of the stand-by plant is very expensive and could increase cost of title registration to the applicants. Sometimes the servers also develop problems and both the online and face-to-face services become inaccessible to clients. According to Dekker (2016) ^[5], the registration system should be accessible to all users. It should not be restricted in terms of cultural boundaries, and legal and privacy issues. In Ghana, the online services are restricted to main users in some parts of the Greater Accra region. All the prospective users in the other 15 regions have no access to the online automated system.

According to (Dekker, 2016) ^[5] there should be security controls by providing codes to limited supervisors to be able to make amendments in the records. Any amendments in the records could be identified by the codes used to access the data. However, since the registration system is still reliant on manual plotting, staff members of the Lands Commission are able to amend records unnoticed. Clients records on plans have been erased and replaced by fraudulent transactions. Most of these cases have landed at the courts and created judgement debts for the Lands Commission or the government to pay.

There should be controls on the activities of the IT staff to regularly check the unit against Siber fraud. The IT staff are able to manipulate the system to allow fraudulent payments of reduced fees which affect the revenues from the land registration system.

Again, the sole control of the IT unit of the registration system does not encourage teamwork in the LC as other staff members appear to have been relegated to the background.

The automation system, however, requires the coordination of the various Divisions or departments of the Registry (Dekker, 2016) ^[5]. This is because data generated in each of the Divisions are relevant to complete the registration system. Furthermore, challenges encountered by each of the Divisions could be resolved by information obtained among the Divisions. The Divisions are therefore dependent on each other to perform their responsibilities, hence noneffective coordination of the Divisions will result in challenges in the operation of the automation system. Effective coordination of the Divisions may be encouraged by the linkages of the data stored by each Division so that the Divisions could automatically access information from others without relying on the staff members to provide the information. According to the staff at the CSAU information provided among the Divisions are mainly manual and some staff will not release the relevant information unless they are contacted by the clients and unofficial payments made to them. According to one client interviewed he had to pay some amount of money to the scheduled officer before his document was worked on and sent to the next level of registration. The unofficial payment was about seven (7) times the official title registration fees.

The CSAU officer who was interviewed complained about lack of security in the area as there were no armed policemen at the CSAU and the onsite bank. As the banks have armed security men at their main bank branches the same has to be provided at the CSAU to protect funds and documents that are presented to them. Additionally, door security codes should also be provided to staff to restrict entry to strong rooms at the CSAU and the Banks. The officer presented that there have been several cases of theft of some important documents in cabinets of the CSAU section which affected their activities. Though CCTV cameras and unarmed security persons are available at the CSAU they needed additional protection in place.

Challenges and Recommendations Associated with the Land Title Registration

- It was realized from interviews conducted that there was no effective collaboration among the four (4) Divisions and the IT unit. Since the IT section provides the infrastructure of the automation system it appears to the staff of other departments or units that they control the land registration system. This does not encourage teamwork and coordination of duties to achieve a common goal of efficient land registration in the country.
- Additionally, the backup system is not reliable and data are occasionally lost. This will make it difficult to process second transactions when they crop up. Information required for future transactions and operations could be problematic as it will be difficult to conduct searches on past transactions.
- Unreliable access to the internet poses a major challenge in the registration process since clients are not able to access their portal to transact business. Online payments could not also be made and the onsite banking premises could be congested to delay payment of fees and the period of registration. Additionally, the CSAU could not operate since most of its services rely on the internet. Sometimes, the CSAU could not function for a maximum period of three weeks due to internet disruptions.

Additionally, the intermittent power supply also influences the registration process. Though there is a stand-by plant on the compound, it usually breaks down and staff at the CSAU and back office are unable to perform their activities since most operations are done on a computer. Furthermore, due to high cost of diesel in Ghana, the Lands Commission spends high amount of funds to purchase fuel for the plant to function. Sometimes the plant could be on for 6 hours and this increases the cost of registering title deeds. If the cost is transferred to clients through the increase of processing fees it may be unbearable for most clients.

- Regular education and training programs for staff of LC especially those at the CSAU and clients about the introduction of new technologies and the use of online services of the registration system are required. This is due to high IT illiteracy rate among the older staff members and clients usually referred to as *Born Before Computer (BBC)*.
- Provision of security at the CSAU block to protect staff, documents and cash that are paid at the on-site banks. Furthermore, a security monitor should be provided to the Head of the CSAU so that the personnel could supervise work done by staff and non-staff more effectively. According to a staff at the CSAU there was internet fraud and the data base of the Lands Commission was hacked. Investigation conducted revealed that some of the staff members of the Lands Commission who developed the software of the title registration were involved. The Government of Ghana lost colossal sum of money due to the internet fraud. According to information from the Ministry of Finance, the Lands Commission is the third non tax revenue collector. If the Cibber Crime problem is not resolved the Government will not get adequate funds to effectively provide the function of title registration in Ghana. There are Cibber protection institutions in the country and the Lands Commission could engage some to secure and protect revenue that is generated from title registration. It was stated in previous chapters that title registration was initiated so that the government could identify property owners to be able to collect property tax from them.
- There are no incentives for clients to use online services to decongest the CSAU hall. In Ghana most, financial Institutions decongested their banking halls by introducing free ATM services. The Government of Ghana could revise its Fees and Charges Act 2022 to provide reduced charges for online services to attract more clients to use the service.
- There should be an effective monitoring system to track the performance of staff for both the manual and the online services. The Evaluation and Monitoring Unit of the Lands Commission in Collaboration with the IT and the Directors of the Divisions could develop a system to track the performance of staff in the Commission. To ensure that staff members are in their offices working, the attendance and closing times of officers could be monitored by the fixing of clocking machines that contain cameras at the main entrance of the offices.
- Adequate provision of computers and accessories, printers, pen drives, and other information technology equipment to facilitate the registration process in the Country. According to a staff interviewed in the CSAU office, there were no adequate provision of the IT

equipment in the office. Additionally, when this equipment breaks down it takes a long period before they are repaired.

- Most of the activities of the title registration apart from the creating of accounts online are done manually at the CSAU. This provides limited period of the usual 8 hours of rendering of services at the CSAU. If online applications and processes of the registration are done online applicants could transact business with the Lands Commission within 24 hours at the comfort of their houses or offices without being present at the CSAU. Staff members could also occasionally work from home to de-congest the offices since there is inadequate office spaces in the Lands Commission.
- Another challenge relates to approving site plans based on the planning schemes in the neighbourhood. It appears that much consideration has not been given to preparation of planning schemes before development activities commence in the neighbourhood. It has been realized that even in few communities where planning schemes exist plan approvals are not based on the planning schemes. There has been experiences where approved plans lie on proposed roads posing problems to accessibility in the locality. Staff of the LUSPA complained that the office do not have adequate funds to pay for base maps from the Lands Commission. Hence most of the communities have no planning schemes. According to the Ghana constitution, planning schemes should be prepared on all stool lands before allocations are made for developments. The Lands Commission and the LUSPA should have discussions to ensure that base maps are made available for preparation of planning schemes not only for stool lands but for other lands so that site plotting will be based on the planning schemes.

Recommendations

The Ghana Lands Commission automation process could be developed and sustained if the relevant units and Divisions collaborate their activities efficiently. This is because their activities are interrelated and interdependent. There should be regular workshops among these units of the Commission so that they can identify the challenges that they experience and provide solutions to them. Since the IT section provides the infrastructure for the automation system, there should be regular consultation among the Divisions and departments of the LC to resolve challenges that they experience.

Furthermore, there should be an effective and reliable backup of data collected so that the LC will not lose data. The servers should be used to store all data generated in the Lands Commission especially those related to title registration. The reliance on hard copies as backups is not reliable and sustainable. This is because the hard copies could be defaced, lost, or tampered with by staff. The automation system was introduced to overcome the challenges of the use of the manual system should not be revisited. The interview with staff revealed that since the backup system of the registration is not reliable the keeping of manual documents is encouraged. The combination of manual and digitized record-keeping delays the registration system and should be discouraged.

The unreliability of the internet poses a big challenge to the automation system since both the staff and clients rely on it for the title registration processing. The IT section should engage 2 or 3 network companies so that when one fails the

other network could be relied upon for the provision of services.

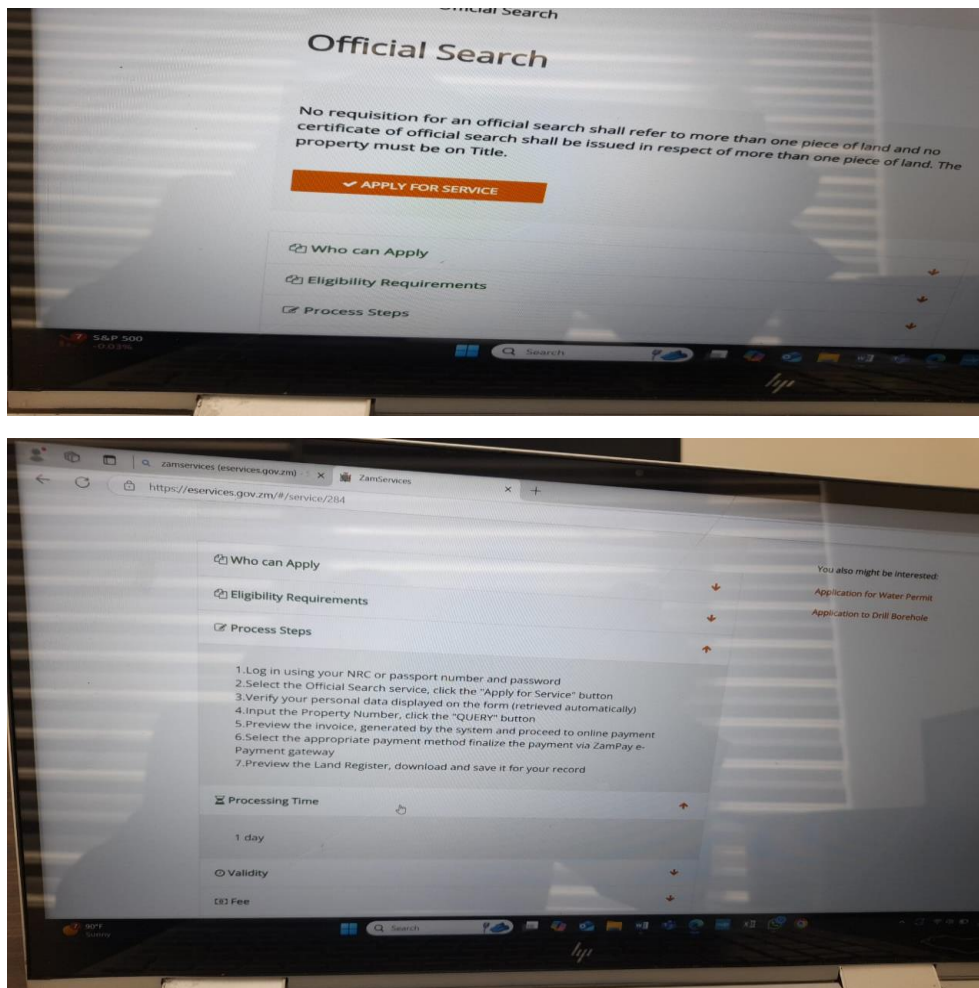
There should be effective linkages among the data collected in the Divisions. Since the Divisions and supporting departments aim at achieving the same goal of reliable title registration their effective performance could solve each other challenges to facilitate the registration process. For instance, data collected by the rating section of the LVD on buildings within the local authorities or assemblies could help the Stamp Duty assessors identify whether lands are developed or not. This could help them assess stamp duty without visiting the site thereby reducing the period spent on title registration. Additionally, the generation of the pool of online database at the LVD should be facilitated to ensure that comparable land values within the country are made available online. This will also facilitate Stamp Duty assessment since relevant land values will be available online for the assessment of stamp duties.

Though the acquisition of IT equipment is expensive, it facilitates the processing of title registration and increases revenue generation. This helps to reduce the cost spent on the equipment. The benefits obtained from the use of IT equipment exceed the cost spent on acquiring the same.

The provision of insurance policies for title registration could be encouraged. When the registration of title is covered by insurance policy the Lands Commission would be attracted to perform their duties more efficiently. This is because any loss incurred by clients during and after registration could be borne by the Lands Commission if the problem was caused by them.

There should be effective means of tracking work in progress so that staff who delay in performing their duties could be identified and queried.

The Lands Commission should introduce or apply the GIS plotting software that could link title information to plotted site plans to facilitate land title registration and provision of search reports for clients. In Zambia, search reports are provided on the spot. All the title information has been linked to the plotted coordinates of the land hence once the site plan numbers are input into the system all information about the land could appear and printed out as search report. There is no need of presenting or submitting site plans before a search report could be produced. A search report could therefore be obtained online once the person creates account and make necessary payments. The interface of the application of automated Search Report of has been presented below:



Source: Zambia Ministry of Lands (2023)

Additionally, property registration could be done online by submitting completed land title registration forms online together with the site plan. The site plans could be verified on the ground by the SMD to confirm the status of the plan on the ground. Once the plan does not conflict with any other transaction the title registration could be processed online and

title certificate with digitized signature prepared and submitted to the client online without visiting the Lands Commission offices. This process could take between one to two weeks to complete the title registration as done in Zambia.

Concerning the preregistration activities, the processing of

stamp duty appears to be the most challenging exercise. All first transactions especially with leasehold documents can be based on similar ground rents dependent on the location without inspecting the site. This is because most first transactions relate to the bare lands. However, second transactions should be inspected for stamp duty payments since most of them especially those transferred by real estate developers are usually developed lands.

Furthermore, if clients are able to conduct searches easily it will help them to identify owners of lands easily so that if they have any challenges they could go to court or arbitration to resolve their issues. This exercise will render the publication of transactions prior to issue of title certificates irrelevant. The publication of the interest in the Newspapers increase cost of transaction and the registration period.

The means of payment of bills should be simplified by adding direct “Momo”. This has been one of the efficient, common and most reliable means of payment in the country. Sometimes the internet could be down and payments could be delayed for a week in some of the offices in the country leaving clients frustrated and some abandoning the registration of their titles. The “Momo” is used by Government departments like the utility services (Electricity and Water Companies) and the private sector.

The Land Use and Spatial Planning Authority (LUSPA) should collaborate with the Lands Commission to ensure that planning schemes are prepared in all communities especially at the fringes of towns for the areas to be well planned and accessible. Copies of the planning schemes should be made available to the Lands Commission so that Planning approvals and site plotting could be based on the planning schemes where they are available. In areas (both stool lands and family lands) where planning schemes have not been prepared, planning comments should be sort from LUPSA before parcels of land could be plotted.

An interview with a respondent at the SMD revealed that auto photo maps should be made available to the Commission for plotting of transactions. The map will help the SMD check the accuracy of maps presented to them by the licensed surveyors. The soft copy of the auto photo maps will be used to plot all transactions that are presented at the Commission. All existing registered transactions and their details will be numbered and transferred onto the map using their coordinates. Noted proposal documents will also be transferred to the Map. However, transactions that are conflicting will remain on the old plan. Property owners whose transactions are conflicting would have to settle the matter at arbitration or the court. Once the issues are resolved then such transactions could be plotted on the auto photo maps.

Conclusion

Land title registration in Ghana especially in the Greater Accra Region has been associated with challenges and have had a great negative impact on real estate investment and associated investments in other sectors. Land is a factor of production on which development takes place hence ones there are challenges, it tends to affect all other sectors of the economy. The advent of technology appears to be a sure means of mitigating the challenges of title registration. Though the Lands Commission has initiated the application of information technology to address some of the challenges there is still room for improvement. There should be the introduction of a comprehensive software that will help the

LC to fully digitized its operations not only in the Greater Accra Region but also in the other 15 regions in the Country. Many African Countries Like Zambia has been able to fully digitized their title registration and Ghana can do same. The challenges and recommendations presented under this paper may be a guide to support the Ghana Lands Commission and other Africa countries to improve on their title registration in their countries.

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