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Land Administration and Automation in Uganda

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1. Introduction

This chapter examines automation and land administration in Uganda with the goal of assessing the introduction of automation and whether it has contributed to more efficiency and reliability in the operation of land administration in Uganda. From the findings we make recommendations about the appropriate level of automation that can fully solve the challenges of land administration in Uganda.

Land administration refers to management of land issues that involve keeping custody of the land title records, documentation and ensuring land transactions are secure to promote investments. The land administration system in Uganda prior to automation was paper-based and premised on the Torrens system that guarantees land title by registration. The land administration system was regionally based, providing separate registry offices countrywide and one in Kampala, the capital city of Uganda. The managerial and technical functions were vested in the Land Registrars.

Since land is an important factor in production and the government's desire for more investments to meet the needs of the growing population, this relatively stable paper-based system was deemed incompatible with the complex and increasing number of the land transactions. The solution to these cumbersome and manual procedures was embracing automation of the processes. Automation in this context called for the use of computers, information technology and adopting online service channels that have been a dominant theme in land administration circles worldwide. It is argued that countries that have adopted automation of their land administration have had a complete transformation of the way in which land registries operate. This led Uganda to embrace the initial automation by computerizing some transactions in the 1990s in order to meet modern service level expectations. This computerized land registration system saw the conversion of existing paper-based registers, to being maintained electronically and providing online delivery of title registration functions.

These developments have improved the efficiency of land administration operations and made records more accessible to all stakeholders. However, the system does not fully allow for online transaction links to the key players in land transaction such as lawyers, banks, investors, sellers and buyers. Therefore, future plans will require that land administration in

Uganda is fully automated, with the possibility of online title registration system that enables subscribers to submit land title transfers, and discharge of mortgage for registration in electronic form over the Internet, thereby enhancing/adopting e-dealings access by the licensed law firms, banks, other transacting parties and administrators. It is anticipated that obtaining digital certificates and existing office procedures and document management systems must be aligned to the electronic environment.

2. Automation

Automation has gained widespread usage in recent years in various processes of both public and private organizations. Indeed there is agreement among scholars that automation application is usually pursued judiciously in organizations (Qazi, 2006). Sheridan (2002) offers varied conceptualizations of automation, such as data processing and decision making by computers, while Moray, Inagaki and Itoh (2000) perceive it to be any sensing, information processing, decision making and control action that could be performed by humans, but is actually performed by machines. As Sheridan and Parasuraman (2006), and earlier Kaber and Endsley (2000), contended, human-automation interaction explains the complex and large scale use of automation in various fields. Further, it explains the ability of humans to interact with adaptive automation in information processing, hence enhancing the achievement of optimal performance within an organization.

The literature argues that automated assistance is usually adaptively applied to information acquisition, information analysis, decision making and action implementation aspects, (Lee and Moray, 1994). However, the choice of a framework for analysing and designing automation systems is grounded in the theoretical framework and addresses aspects such as the role of trust, system acceptability and awareness measures (Lee and Moray, 1992). While automation is deemed to perform higher level problem–solving tasks, often the human capacity limitations lead to errors thereby intensifying the challenges of adopting of automation Frank (1998). This constraint subsequently determines the level of automation in allocating the functions to be automated, in particular, the level of the desired autonomy that represents the scale of delegation of tasks to automation and the associated implications for reliability, use and trust (Lee and See, 2004; Lewandowsky et al., 2000).

One driver of adopting automation is its ability to enhance operational efficiency of processes and the associated positive changes in the productivity of the organization. Notwithstanding this increased output rate, automation is often problematic, especially if people fail to rely upon it appropriately (Adam et al., 2003). The support for this contention is that technology is shaped by the social setting on the one side and trust that guides the assurance and reliance of the stakeholders on the other. This is in line with the fact that automation characteristics and cognitive processes affect the appropriateness of trust (Itoh, 2011).

Endsley and Kaber (1999) look at another dimension of automation by arguing that automation is applicable to different aspects of organizations, but to a varying degree, hence creating different levels of task autonomy. Therefore, the debate on automation can only be conclusive if it addresses the issue of whether partial or full automation is the desired goal of the organization. The relevance of full automation achieving the desired performance of that organization is usually at contention, though achieving a reasonable level of

automation, especially for those tasks that are performed by human beings, is certainly the aspiration of every organization.

The automation of individual intellectual capabilities would allow accomplishing a higher level of automation in organizations, since within the information systems domain, managerial decision making is of special importance (Kaber and Endsley 2004). The variety of tasks that are performed by managers is immense, hence justifying automation of some, especially those that are simple, complex and repetitive with a distinct application domain while leaving those that seem not to permit automation. The argument for limiting automation is that managers act in an environment that is characterized by ambiguity and risk, hence the creation of room for discretion or judgment.

The above position finds support in the management automation scenarios advanced by Koenig et al. (2009), however, they castigate the failure to understand the effects of automation. Muir (1992) states that this is due to the problem associated with either under- or over-trusting of the automation process. The answer to the problem lies in embracing progressive automation as a way to introduce automation in a manner that quickly leverages the positive effects of automation, while reducing the potential negative effects through a gradual increase in automation. This will help align the various management automation systems to a simple common model, where users will have a better knowledge and more experience when pursuing a high level of automation in the future. Further, one contribution of progressive automation is its ability to have people build up the appropriate amount of trust in the automation system's structure and behaviour, its components and data.

According to Lee and Moray (1992), the decision to rely on automation by the users depends on both trust and self-confidence. Where there is overriding self-confidence in one's ability to perform a task over one's trust in automation, one is most likely to perform the task manually. The reverse is true in incidences where trust in automation is greater, then reliance on automation will dominate. However, Riley (1996) introduces mediating domains of automation reliability and the level of risk associated with the particular situation. The decision to use automation can depend upon different system management strategies (Lee, 1992) and user attitudes (Singh, Molloy & Parasuraman, 1993).

Another distinction in how to use automation is reliance (Meyer, 2001). Reliance refers to the assumption that the system is in a safe state and operates within a normal range, (Dzindolet 2003).Over-reliance is attributed to factors of workload, automation reliability and consistency, and the saliency of automation state indicators (Parasuraman & Riley, 1997). Inappropriate reliance on automation relative to the automation's capabilities may reflect poorly on calibrated trust, automation bias and complacency, and may also reflect failure rate behaviours (Moray, 2003).

Trust as an attitude is a response to knowledge, but other factors do intervene to influence automation usage or non-usage decisions (Muir, 1997). While trust is an important element in those decisions, it is far from the only one. According to Lee and See (2004) humans use alternate routes by which they develop their trust, namely the analytic methods that assume rational decision making on the basis of what is known about the motivations, interests, capabilities and behaviours of the other party. Cialdini (1993) argues that we tend to trust those people and devices that please us more than those that do not. Further, there is realization of the temporal element to trust building that takes time to acquire, whether through experience, training or the experiences of others.

3. Extent of automation in land administration

In setting the stage for automation there is acknowledgement that automation is applied to various organizations, however, the feasibility of any applicability necessitates understanding the nature of the transactions involved and the managers that perform the tasks (McLaughlin, 2001).

Introduced in 1908, the land administration management in Uganda is based on the Torrens system developed in 18th century Britain. The tenets of the Torrens system are that the government office is the issuer and the custodian of all original land titles and all original documents registered against them. Further, the government employees in their management tasks examine documents and then guarantee them in terms of accuracy (Barata, 2001).

The Torrens system has three principles: the mirror, curtain and insurance principles. While the mirror principle refers to certificates of title, which accurately and completely reflect the current facts about a person's title, the curtain principle ensures that the current certificate of title contains all the relevant information about the title that creates certainty and offers assurance to the potential purchaser about the dealings on any prior title. The whole trust and confidence in the transactions covered by the insurance principle will guarantee the compensation mechanism for loss of the correct status of the land. These combined principles contribute to secure land transactions and the development of the land market in any given country.

Practitioners in land transactions argue that the Torrens system ensures that the rights in land are transferred cheaply, quickly and with certainty. For manually managed systems, this is conceivable in cases of low volumes of transactions; otherwise, large volumes of transactions necessitate automation. It is argued that the benefits of an automated system will lead to efficiency, accuracy, integrity and cost containment. This will overcome the challenges of retrieval of documents and the inability to manage and store large amounts of data efficiently (Ahene, 2006).

The management tasks in land offices include capturing the precise parcel of land, the owner, limitations of the right of ownership and any right or interest which has been granted or otherwise obtained. Another management task is the cancellation and creation of certificates of title, land notifications and transfers, subdivisions, showing all outstanding registered interest in the land, such as mortgages, caveats and easements

In the management of land transactions there is legal examination of all the associated data entry on documents to make sure that the documents are correct and in compliance with the law affecting land transactions. The objective of the examination is to ensure that the document complies with all applicable law and therefore, this process involves making judgments upon the relevancy of the law and ensuring certainty of the transaction.

Another management task within land transactions are those roles performed by the survey staff which involve reviewing and making the associated data entries, and comparing and interpreting the existing land survey evidence with the new ones to ensure that the land surveyed on the new plan does not encroach upon adjacent lands (Barata, 2001).

In reference to the existing documents, the management task involves processing of searches of the records in the land office that are classified as public records which can be searched by anyone wishing to transact in land matters. Request for searches are usually received

from agents, particularly lawyers and bank staff, that seek to verify the documents to conclude the transactions of their clients. To obtain a title search you must know the legal description, land identification numbers or the title number for the property you want to search. The primary purpose of the name search facility is to enable creditors and other parties with statutory rights to determine what interests in land are owned by the person affected by instruments.

While the above management tasks are simple, with increasing volumes of transactions, the land office in Uganda was characterized as inefficient and riddled with unethical behaviour. This outcry by stakeholders led to the adoption of the automation of the processes of the land office in two phases. The first step of automation was initiated by the government through the Ministry of Land and Urban Development. The approach involved capturing of the records in a digital format to create a reliable computer database to allow prompt searches and retrieval of information. The second phase saw the introduction of automation-based decision making. These two phases meant that automation included data entry, indexing and scanning of Mailo land records. These fully automated interventions in the land registry helped generate computer-related information on land ownership, information on Mailo land transactions such as changes in property ownership and encumbrances thereon. The automation of the land office meant all live paper titles were converted from their paper format into an electronic medium. In addition to each certificate of title being assigned a unique title number at the time of its creation, each parcel of land contained within each title was also assigned a unique code number.

A critical review of the documents produced during the process of automation reveal that the conceptual plan included a progressive computerization of the legal and administrative records, and cadastral maps. The aim was to address the shortcomings of the manual system, restore the integrity of the land registry and ensure modernization of land registry operations to meet the needs of a growing economy. It was quite logical to start the process of the actual computerization of the land registry after getting the filing right and re-organizing all the registry records, reconstructing the torn and damaged records and vetting of all records in the manual system. This helped identify and get rid of any forgeries or problem land titles in circulation.

As a result of automation, most titles, all registered documents with a registration number and all plans can now be searched and retrieved electronically, in comparison to the previous practice of only being able to search through a registry agent.

There are many advantages in the automation of the land office over the manual system, meaning that documents can be searched electronically and in a fast and expeditious manner. The documents can also be easily replicated, averting potential loss from natural disasters and lastly the documents are linked with other documents. This chimes well with Maggs' (1970) assertion that automating land systems is only commercially practical where highly formalized rules are applied to highly standardized data. Where rules and data are not of a highly formal nature and so require a large degree of individual judgment, progress can only be achieved through the substitution of new formal rules and data structures.

4. Methodology

The aim of the research for this book chapter was to examine the automation and efficiency of the land transactions management office in Uganda. In analysing the automation of the

land transactions in the Ugandan land office, we adopt a cross sectional, qualitative and analytical study design in order to examine automation operations in the three districts of Kampala, Mukono and Mpigi. Primary information was acquired via semi-structured in-depth interviews and focus group discussions (FGDs). The main instrument of data collection was a structured questionnaire for the Key Informant Interviews (KIIs) comprising of lawyers, bankers and staff of the land office.

The questionnaire contained open-ended questions and was developed based on the literature review, as well as drawing from other studies on automation. The key questions that were used related to trust in automation, reliance, usability and confidence. The information obtained formed the basis for the analysis of the findings. The instrument was pilot tested prior to beginning fieldwork to assess the clarity, flow and appropriate context of the questions. Following the pilot test, the questionnaire was refined based on the initial feedback.

While carrying out the study, there should be a population from which a sampling frame can be drawn. The population of the study was drawn from the three district land offices of Kampala, Wakiso and Mpigi that have fully automated their operations. Further, focus was on the institutions that were identified as being key stakeholders to the land transactions, namely the banks, law firms and the administrators of the land offices. Therefore, interviews and focus group discussions comprising lawyers, land office administrators and bankers were conducted to evaluate how the three principle users gauged the automation efforts by the land office.

Using a purposive sampling technique, 11 lawyers were purposively selected from law firms that frequently transact land issues, seven staff from the legal departments of seven banks and 15 staff of the land administration. The purposive sampling was based on the frequency of land transaction by the law firms and the banks in the last six months preceding the study. To capture different perspectives and experiences, the staff of the land offices had varying roles and levels of participation in activities and decision-making processes.

The data collection fieldwork in Kampala commenced in July 2011 and lasted through to August 2011 in the other two districts. To deal with the ethical considerations of the study, the firms and institutions were briefed about the study and appointments were made in order to have meaningful and well-planned discussions without disrupting their normal work. The participants were briefed and verbal consent was sought from all participants. The exercise started with giving the respondents background information about the study.

5. Findings on automation and land management

The proponents of automation argue that when organizations undertake automation it impacts positively on employee productivity and improves efficiency and decision making, besides allowing better management control of operations. At the same time, the opponents of automation are critical of it because it lessens the responsiveness of the bureaucrats to citizens, puts technological elite in charge of processes and shifts power to managers, among others. These diametrically opposed positions are therefore considered when analysing the impact of automation in the organizations that have adopted or intend to adopt it. The findings follow the objective of this study which was to examine automation and the efficiency of land administration in Uganda.

The results of the study show that there has been successful automation in land administration in the three districts following the adoption of a comprehensive computerization, with online access to the system minimizing the need for the paper-based system.

The study sought an assessment of the experiences of the employees with automation of land management. The response was varied as the consequences to the clerical and managerial level staff were differentiated. Most of the clerical staff thought that their own interest in the job had been eroded. However, when responding to how automation has influenced the productivity of the employees, they revealed a registered increase in output. This is quite conceivable since automation released the employees from the clumsy, tedious and dusty manual tasks, thereby allowing them to learn new skills that are ideal for enhancing the production of better quality work at a fast rate. Automation has changed our perception of our jobs which has resulted in improved quality, quantity and accessibility of data and hence, improved services from the land office. This was against the findings that indicated an initial high sensitivity and fear of learning the new systems. The automated institutional infrastructure so far has reduced the internal resistance to operate the computerized system to its full potential. While this has been achieved, there remains the fact that the transactions of the stakeholders are not automated and in this the non-linkage to key offices, such as law and banking firms, is a limitation on the availability of the information. This means they have to come to the land office to undertake transactions instead of doing it online through networked systems.

Secondly automation has, besides improving productivity, impacted on efficiency. As indicated by the responses of participants it has been positive because there has been a substantial reduction in the transaction time from years in some instances to just a month or two from the time of lodging the transaction. This can be attributed to far easier searches and retrieval of land records in digital format through the automated system. The quick, easy information retrieval and search procedure means that the partial automation of the tasks has facilitated the public sector managers to continue making decisions in line with the set procedures and rules. This implies that while full automation has eased the retrieval of information, the decision making processes still require judgement based on the procedures and hierarchy, and this impacts upon the level of adoption of automation and the efficiency of public managers' action. Indeed the respondents reported cases of a similar approach and therefore, no indication of a drastic reduction in red tape. This argument points to what is discussed in the literature about the level of automation in that certain decisions have to be made by the managers hence, limiting the much anticipated benefits of automation.

Thirdly the sceptics of automation doubt the rationale for automation, a fact reiterated by many stakeholders who contributed their insight to the study. They argue that even under the manual system, retrieval personnel were always quick if one complied with their rent seeking motives. By proxing that the manual process was slow, one negates the fact that the motivation of rent seeking created the delays, rather than the inability to get the information. The clerical personnel usually made standard statements to the effect that information was not available, could not be traced or that documents were missing with the stakeholders having no avenue by which to prove otherwise. As one respondent noted:
 "*the problem hasn't been really the manual system, rather the attitudinal behaviour of the clerical staff that perform their duties upon extra facilitation or inducement by those seeking the services*" (comment by one legal respondent).

The findings point to the fact that notwithstanding the positive effects of automation, the services of the land administration have been depersonalized. While this is good because it is likely to limit the interface between the service providers and the stakeholders and therefore, reduce the rent seeking motives of the managers, on the other hand it erodes the trust, confidence and networks that have been built by the frequent and regular users of the system. Stakeholders continue to express misgivings about automation, including mistrust about the extent to which automation will free them from forgeries and malpractice as experienced in the past. Automation has removed the avenue by which to obtain preferential treatment by the managers, particularly in matters of urgency. The question is, has this reduced the avenue by which to pursue personal or institutional vested interests. While some would answer in the affirmative, others think that even with automation, the respondents revealed that still a number of officials intervene in a single transaction. Hence, quick access and transparency of the land records is not fostering investments in land as it can facilitate the speeding up of processes of transactions, credits, transfers and mortgages.

One of the findings from the public managers indicates their pleasure with the ability to offer easier access to information and services through the use of the web and integrated database. ''*With automation we can't reach citizens in different environments and we are now handling public requests for information and service in a timely manner*'' *(remarks by public manager)*. However, there is also a fear in the minds of the people about the potential manipulation of these records.

6. Conclusion

The qualitative findings have been presented and the evidence from the respondents point to increased efficiency, productivity and job satisfaction in land administration. The automation of the land administration has been an achievement given the fact that it had been crippled for years and was unable to cope with the increasing volume of transactions. Secondly, automation of the land transactions offers the society a great opportunity in public access to information that had hitherto been under the sole custody of state functionaries, thereby leading to rent seeking practices on a massive scale. The automation of land administration has facilitated citizens' access to it and, by implication, increased tenure security.

While the public managers have gradually gained trust in automation, the daunting task that remains is to build trust among the stakeholders that the information generated through automation will not be subject to fraud and the risk of loss of property. Many people still insist on the old paper documents as a reassurance to the different market actors and state public managers. Associated with this is the fact that while automation benefits have eased decision making, the findings revealed that in order to restore citizens' confidence in land administration, induced by the questionable ethical behaviour of the managers, internal change is required.

What remains to be seen is whether the new system steers clear of corruption or alternatively aims at grappling with the existing system to change its dynamics by bringing about structural and technological change.

The project in the three districts has served as a testing ground for working towards achieving a more efficient nationally managed system. It will enhance efforts to increase

easy public access to land records and the idea of running an automated system parallel to the existing manual system raises the expectation that the automated-based system will demonstrate its superiority over the manual system.

Lastly automation and creating an electronic system containing the possibility for electronic searches, analysis, retrieval and manipulation with an electronic version of the document in a non-revocable electronic form would give the required safeguards.

Like any study, we experienced the shortcoming of unwillingness by respondents to release information due to a fear that it would be revealed. This was overcome by asking the respondents to remain anonymous. Further limitations of the study were the fact that the system is still new and therefore, there is still a lot of old practice, which make assessment of the gains rather difficult. Despite all this the findings reveal there is a general positive attitude to automation.

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