CHALLENGES FACED IN LAND SYSTEMS OF UGANDA: A CASE OF LAND TRANSFER AND OWNERSHIP

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CHALLENGES FACED IN LAND SYSTEMS OF UGANDA: A CASE OF LAND TRANSFER AND OWNERSHIP BLOCKCHAIN LAND TRANSFER AND MANAGEMENT SYSTEM

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ABSTRACT:
The study investigated the competence of the lands system of Uganda. The main objectives were to find out the most recurrent problems with the land systems of Uganda, and the problems encountered while carrying out a land transaction, find out the number of people affected by land disputes in Uganda, together with the most recurrent type of land disputes in Uganda, find out the causes and impact of the disputes, find out the actions that are currently being taken to solve the disputes and the possible solutions to the problems.
The study is a descriptive study; a sample of fifty (50) Ugandan's who own titled land formed the participants for the study. A questionnaire titled: "Questionnaire" was used for data collection. Data collected were analysed using frequency counts, percentages and sums using SPSS.
The findings of the study revealed that "lack of transparency", "transfer of land takes long/delayed process", "slow and costly procedures", and "corruption/staff demands for bribes" are the major challenges faced at the lands registry; the findings also revealed that "fraud/dishonesty among involved parties", "delay in processing of land titles", "takes long and is costly to deal with the registration office", and "duplication of land titles" are the other problems experienced during a land transaction.
A practice of filing court cases is currently being done to solve some of the land disputes, however, these efforts are not worthwhile because the disputes are recurrent. A better way to cut on these cases is by implementing a blockchain system to promote security, transparency, cut out the need to rely on corrupt and untrustworthy intermediaries and fraudsters; hence this system will directly impact on the disputes because they will be avoided.
Based on the findings it was recommended that the government of Uganda, represented by the ministry of lands should adopt the idea of block chain management for the lands system that would reduce the need to rely on untrustworthy and corrupt intermediaries; as a result of the distributed database and interface that is open to every public eye, and it would also ensure security because of the system capability to allow transactions to progress only once the involved parties have validated it.

KEYWORDS: Blockchain, Cryptokyaapa, Blockchain Management in Land Transfer and Ownership

1. INTRODUCTION

In spite of the various solutions that have been put in place, land disputes are still a major and recurrent problem in Uganda. Ranging from land grabbing, fraudulent transactions, boundary disputes, government resettlement policies, among others. These disputes have different impacts for example loss of land by the rightful owners to someone who has a higher influence in the society, filing of court cases by a "plaintiff" against a "defendant" where various court cases have been piling up over the years, with a total of 26,428 cases from the year 2007 to date [1], deaths for example in the case of northern Uganda, Amuru District [1] [2]. Aside the land disputes, there are other problems with the lands system of Uganda including corruption, lack of transparency, costly land transaction process, among others. The relevance of this study was to gather factual information pertaining the problems with the lands system of Uganda and as team we faced a few challenges such as the fear of litigants to give us information about their land ownership. The purpose of this survey is indicated below, together with the objectives and the sampling information.
A **blockchain** is a continuously growing list of records called *blocks*, which are linked and secured using cryptography. Each block typically contains a cryptographic hash of the previous block, a timestamp, and transaction data. By design, a blockchain is resistant to modification of the data. For use as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for inter-node communication and validating new blocks. Once recorded, the data in any given block cannot be altered retroactively without alteration of all subsequent blocks, which requires consensus of the network majority. We decided to build our land application on top of Hyperledger Fabric blockchain platform in order to have the benefit of using their infrastructure such as peer to peer networks.

2. RELATED WORK

[4] In 2015 the government of Uganda, represented by the ministry of lands housing and urban development (MLHUD) embarked on the journey to undertake effort to modernize land administration by taking on the DeSINLISI ("The Design, Supply, Installation and Implementation of National LIS Infrastructure") project whose main objective was and is to design and implement a National Lands Information System (NLIS) to be managed at the MLHUD headquarters in Kampala and the district offices.
This kind of system suggests the reliance on a central database which is hidden somewhere at the land registry offices and accessed by only a privileged few such as registrars, system administrators and the like, who can easily tamper with the server records at will, for instance, if someone makes a change to it, there is no way of preventing such occurrences, whether or not all involved parties approve of it.
Making changes to the information on the system without the consent of the involved parties is a potential cause of the recurrent land disputes because of the birthed disagreement between the parties.
On the public side, the system only allows for external parties to view details, and the rest of the activities are managed by the intermediaries such as system administrators.

Another downside of this system is that when the server crashes or it is hacked, an issue of reconstruction will inevitably arise and a lot of time may be wasted in waiting; precisely, such a centralized system is unreliable.

3. METHODOLOGY

a. Research Methodology

The study is a descriptive study; a sample of fifty (50) Ugandan's who own titled land formed the participants for the study. A questionnaire titled: "Questionnaire" was used for data collection. Data collected were analyzed using frequency counts, percentages and sums using SPSS.
Based on the findings it was recommended that the government of Uganda, represented by the ministry of lands should adopt the idea of block chain management for the lands system that would reduce the need to rely on untrustworthy and corrupt intermediaries.
A structured questionnaire titled "Questionnaire" was used, precisely indicating its purpose and giving simple instructions for the respondents. The questionnaire was divided into four sections, one section, "A" about demographics, "B" about land transactions, "C" about land disputes and finally "D" about possible solutions to the land problems in Uganda. The respondents were provided with checkboxes on which to tick where applicable and space to write if their desired checkbox was not provided.

Section A had 2 questions on demographics:

- *The first question was on gender requiring a male/female response.*
- *The second was an open question on one's occupation.*

Section B had 5 questions on land transactions:

- *The first question was on whether one has engaged in a land transaction and required a yes/no response. This question was divided into 1 sub-section and was to be answered by respondents who had previously ticked on "yes" with 3.1 on the role the respondent played in the transaction.*
- *The rest of the questions in this section were to be answered by respondents who had previously indicated that they have ever been involved in a land transaction as a buyer, as follows:*
- *Speed of the whole land transaction process, which required the respondent to tick on only one of the 5 options.*
- *Cost the whole land transaction process, which required a yes/no response.*
- *Difficulty experienced with the lands registry, which required a yes/no response. Its sub required a respondent to state the difficulty experienced.*
- *Any other problems encountered in land transaction, which required a yes/no response. Its sub required a respondent to state the problems faced.*

Section C had 1 question, with 5 sub-questions:

The fourth one was on whether one has been involved in a land dispute and required a yes/no response. This question was divided into 5 sub-sections and was to be answered by respondents who had previously ticked on "yes;" with 4.1 on the role they played in the disputed, 4.2 on the type of land dispute, 4.3 on the cause of the land dispute, 4.4 on the impact of the dispute, and 4.5 on the actions taken to solve that dispute.
One of the interviews was conducted with a lawyer and it did not require a guide because only one question was asked, as follows: "In summary, what is the procedure of acquiring titled land in Uganda".
Another interview was with a systems administrator who took us through how the system is used.
The other interview was with a registrar who gave us information on the statistics of the land cases in Uganda.
The analysis of the collected data was carried out using both SPSS for the descriptive statistics, using frequencies, and percentage and MS Excel for the visualization (generation of the bar graphs). The responses that were subjective were grouped using keywords and they were analysed together with the already known responses.

4. RESULTS

The results shown below are according to the objectives mentioned in Sec. 1.2.

4.1. Find out the most recurrent problems with the land systems of Uganda, and the problems encountered while carrying out a land transaction.

b. Solution Methodology

We leveraged the power of blockchain technology for our application. A **blockchain** is a continuously growing list of records called *blocks*, which are linked and secured using cryptography. Each block typically contains a cryptographic hash of the previous block, a timestamp, and transaction data. By design, a blockchain is resistant to modification of the data. For use as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for inter-node communication and validating new blocks. Once recorded, the data in any given block cannot be altered retroactively without alteration of all subsequent blocks, which requires consensus of the network majority. The solution/application was built on top of IBM Hyperledger Fabric which provides developers with backend infrastructure and resources to develop blockchain apps. The team specifically used Hyperledger Composer to speed up the development alongside Angular 5 for the front end interface of the application. The land titles, agreements and transactions are saved to the blockchain as blocks that are unmodifiable, open for auditing, and secure due to linking through cryptographic hashes.

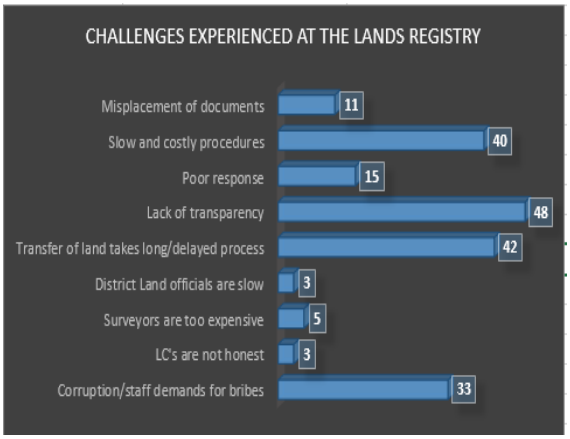

Figure 2 Bar graph representing Challenges experienced at the lands registry

According to the survey study, 74% of the respondents/sample experience difficulty with the service response provided by the lands registry, with "lack of transparency" as the most prominent challenge followed by "transfer of land takes long/delayed process", "slow and costly procedures", "corruption/staff demands for bribes", "poor response", "misplacement of document", "surveyors are too expensive", "district land officials are slow", "LC's are not honest" as the other challenges.

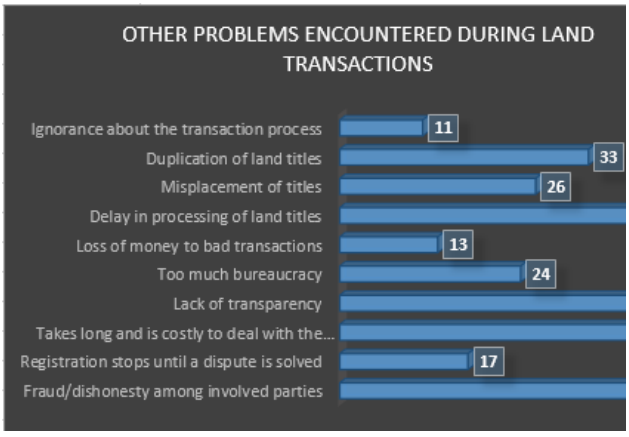

Figure 3 Bar graph representing other problems experienced during a land transaction

In addition to the challenges experienced at the lands registry, 62% of the respondents agree that they have encountered other problems during land transactions with "fraud/dishonesty among involved parties", "delay in processing of land titles", "takes long and is costly to deal with the registration office", "lack of transparency", "duplication of land titles", "misplacement of titles", "too much bureaucracy", "registration stops until a dispute is solved", "loss of money to bad transactions", and finally "ignorance about the transaction process" as the main problems.

4.2. Find out the number of people affected by land disputes in Uganda, together with the most recurrent type of land disputes in Uganda

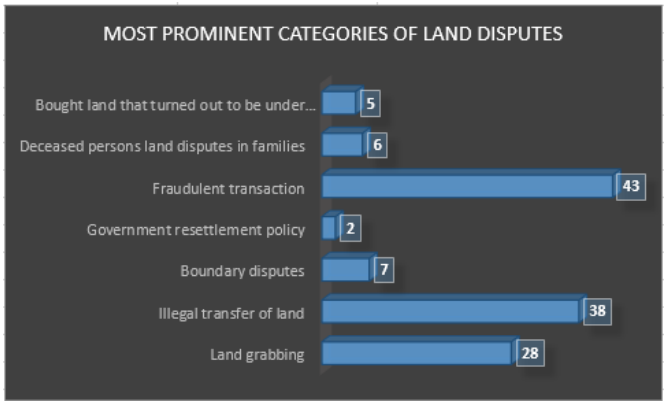

Figure 4 Bar graph representing the major categories of land disputes in Uganda

72% of the respondents have been involved in land disputes before, as buyers, sellers, owners, observers, court officials and lawyers and they were able to categorize the disputes they have been involved in as "fraudulent transaction", "illegal transfer of land", "land grabbing", "boundary disputes", "deceased persons land disputes in families", "bought land that turned out to be under dispute" and "government resettlement policy".

4.3. Find out the causes and impact of the disputes.

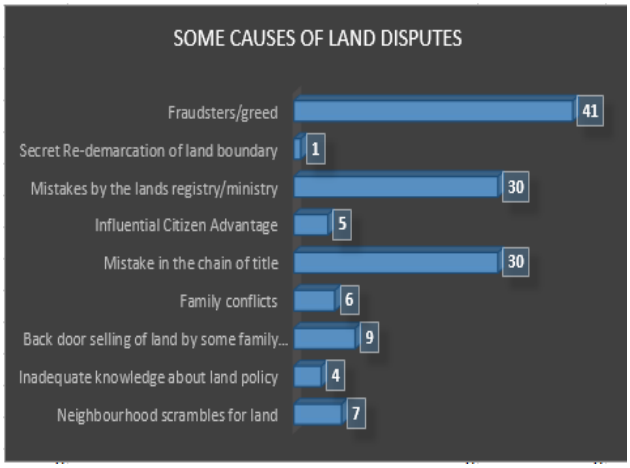

Figure 5 Bar graph representing some causes of the land disputes

Some of the causes of the above mentioned land disputes were identified as "fraudsters/greed", "mistakes by the lands registry/ministry", "mistakes in the chain of title", "backdoor selling of land by some family member", "neighborhood scrambles for land", "family conflicts", "influential citizen advantage", "inadequate knowledge about land policy", and "secret re-demarcation of land".

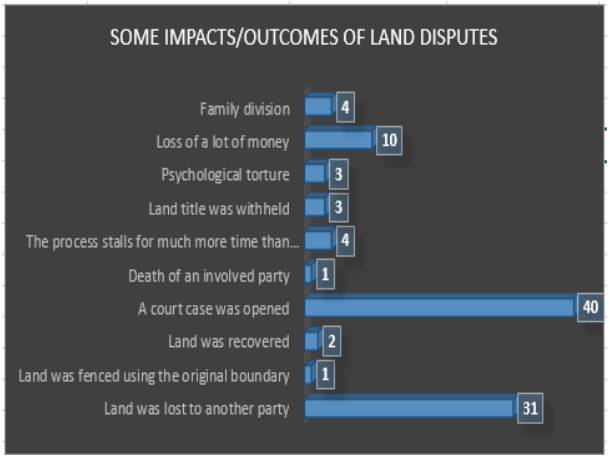

Figure 6 Bar graph representing the impacts of the land disputes

The outcomes/impacts of the were identified to be "a court case was opened", "land was lost to another party", "loss of a lot of money", "family division", "the process stalled for much more time than anticipated", "psychological torture", "land title was withheld", "land was recovered", "land was fenced using the original boundary", "death of an involved party".

4.4. Find out the actions that are currently being taken to solve the disputes.

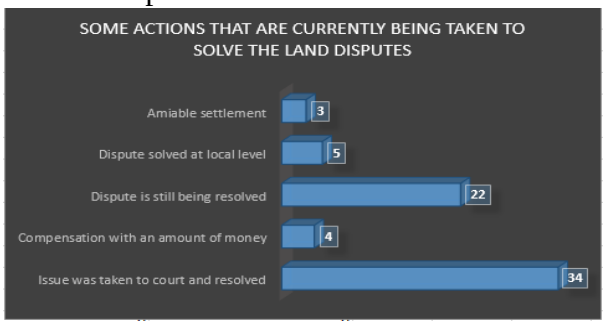

Figure 7 Bar graph representing the actions that are currently being taken to solve the disputes

The actions that are currently being taken to solve the land disputes include "issue was taken to court", "dispute is still being resolved", "dispute solved at local level", "compensation with an amount of money", and "amiable settlement".

4.5. Find out the possible solutions to the problems with the lands system.

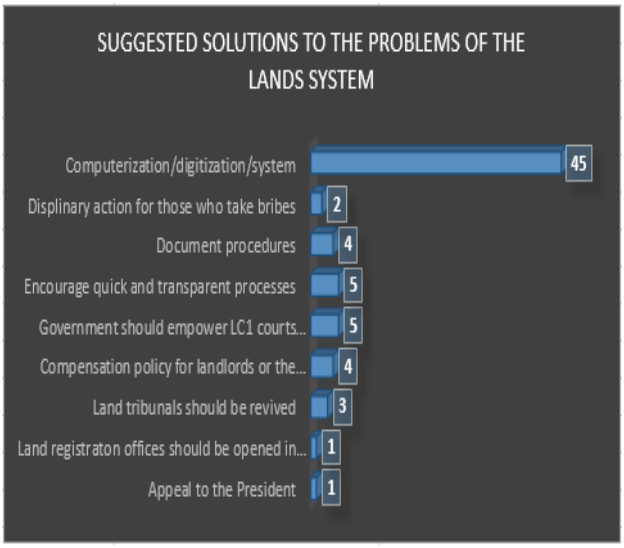

Figure 1 Bar graph representing the solutions as suggested by the respondents

5. CONCLUSION

With an acceptable mean value of 22, the most recurrent problems experienced at the lands registry are “lack of transparency” as the most prominent challenge followed by “transfer of land takes long/delayed process”, “slow and costly procedures”, and “corruption/staff demands for bribes”.
With an acceptable mean value of 29, the other challenges faced during a land transaction are “fraud/dishonesty among involved parties”, “delay in processing of land titles”, “takes long and is costly to deal with the registration office”, “lack of transparency”, and “duplication of land titles”.
With an acceptable mean value of 18, the main categories of land disputes in Uganda are “fraudulent transaction”, “illegal transfer of land”, and “land grabbing”.

Cryptokyaapa, a land transfer and management system is a result and solution of the survey done and problem analyzed respectively and provides customers with a secure, open and quicker means of managing their land titles and doing land title transfers with low risk of fraud.

With an acceptable mean value of 14, the main causes of these land disputes are “fraudsters/greed”, “mistakes by the lands registry/ministry”, and “mistakes in the chain of title”.
With an acceptable mean value of 10, the outcomes/impacts of the land disputes are usually “a court case was opened”, “land was lost to another party”, and “loss of a lot of money”.
With an acceptable mean of 14, the actions that are usually taken to solve the land disputes are “issue was taken to court”, and “dispute is still being resolved”.

With an acceptable mean of 8, the major suggested solution to the problems of the current lands system of Uganda is computerization/digitization/implementation of a system that has transparent processes, is

cost efficient, open to the public, saves time and is secure.

6. FUTURE WORK

The team intends to increase on the functionality of the block chain management system for land ownership and transfer for example the use of digital signatures, among others.

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