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Securing A Hyperledger Based Land Registration System.

A dissertation by

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ABSTRACT.

Sri Lanka faces various problems related to frauds and forgery. Among them, frauds related to land registration and land sales have been increasing everyday due to some loose ends in the existing system for land registration. For the process of registering lands and storing land related information, the government majorly uses a paper-based and centralized system, and this decreases the efficiency and the transparency of the system. However, it could be seen that the government is slowly moving to a digitalized process considering the better maintenance of the service. Then the real problem arises with the security of the data in the digitalized system. Therefore, among many solutions, the Blockchain technology can be a better one to tackle the issues coming up with the existing models. Tamper-proof nature is the key quality in choosing this technology to develop this system. However, even in the suggested blockchain based system has many vulnerabilities and other issues.

In this study the author will be using Hyperledger Fabric platform as the technology to design the framework for land registration and the vulnerabilities of that technology and storage scalability issues will be addressed as the main aspects. The author has designed a more reliable conceptual framework for land registration using Hyperledger Fabric while mitigating possible vulnerabilities and storage scalability issues.

With the framework the author has confirmed the anonymity of the peers participating in the network to avoid possible DoS attacks. A remote database has been used for the system so that the peers will store all ledger data on that remote database instead of storing them in every peer. This will reduce the storage scalability issues.

Keywords: Blockchain, Hyperledger Fabric, Vulnerabilities, Land Registry, Storage Scalability.