## **1.2 Statement Problem**

At present, there is no unified system being implemented in the Philippines on Vaccination Certificates. Local Government Units (LGUs) have different strategies on their issuance of vaccination certificates. Most of them issue paper-based cards while some LGUs have web applications for their constituents to access the records. Security of these records is also in question as there are reports of people having tampered certificates to be used on various purposes. A news article from Philstar dated July 23, 2021 reports local LGUs warning the public against fake COVID-19 Vaccination cards.

## **1.3 Objectives of the Study**

This study aims to design and develop an application that will integrate blockchain and IPFS to ensure the integrity of vaccination data.

Specifically, the study seeks to address the following objectives:

1. To apply concept of Merkle DAG for file storage and implement a cryptographic algorithm to secure uploaded files.
2. To apply Proof of Authority (PoA) blockchain in maintaining transactional records.
3. To validate security aspects of the proposed application against the following:

- Slither - a static analysis framework designed to provide rich information about Ethereum smart contracts.

- Open Web Application Security Project (OWASP) Standards