**PAYROLL MANAGEMENT AND PAYMENT RECONCILIATION SYSTEM FOR SOCIAL PENSION PROGRAM WITH INTEGRATED DATA QUALITY ASSURANCE.**

**INTRODUCTION**

The social pension for itinerant senior citizens is a government initiative designed to address the needs of elderly individuals, particularly those in vulnerable sectors. This program focuses on providing financial support to senior citizens who have not had the opportunity to benefit from programs like the Social Security System (SSS) or the Government Service Insurance System (GSIS). It aims to ensure that even the most marginalized and economically disadvantaged seniors, especially those without formal pension coverage, receive the assistance they need to live with dignity and security in their later years.

Meanwhile, the process of disbursing social pensions remains entirely manual, with no technological systems in place to streamline or expedite the procedure. As a result, disbursement officers frequently encounter significant challenges, leading to delays and sometimes the failure to complete disbursements within the designated time frame. One major issue arises during the identity verification process, which often takes longer than expected, particularly when beneficiaries lack the necessary documentation. In some cases, disbursing officers also face difficulties in verifying the legitimacy of individuals attempting to claim benefits despite not being included on the official list. These challenges are inherent in the current manual system and are unlikely to improve without the integration of technology to automate and simplify the process.

In addition to the problems mentioned, grievances are also increasing due to various reasons, such as those who did not receive grants or received but not enough. There are also beneficiaries who receive double which is very worrying for the agency because it greatly affects, not only the overall accomplishment of the agency but also to the thrust of the public to the agency. The disbursing officers will also have difficulty in liquidating the payroll especially since the COA is focusing on program operation.

To solve these problems, the agency needs a centralized database system with strict policies (database contains and roles). through this, the process will be accelerated, the integrity of the data will be protected, and possible problems will be mitigated in the present. The proposed Comprehensive Payroll Management and Payment Reconciliation System will address key issues in the social pension program, such as data inconsistencies, delays, and challenges in tracking beneficiary statuses. By automating data validation, the system will ensure accurate beneficiary information, reduce errors and fraud, and streamline payroll processing and payment reconciliation for timely disbursements. Real-time monitoring and regular data updates will keep beneficiary information up to date, improving payroll accuracy. Scalable technologies like Redis, Celery, and Docker will handle growing data loads, while security measures like role-based access control and data encryption will protect sensitive information.

**STATEMENT OF THE PROBLEM:**

1. Lack of data quality assurance in the newly endorsed beneficiary from the LGU would result in data inconsistencies like duplicate and fraudulent entries that could result in larger problems like increase in grievances due to lower or higher entitlement.
2. Manual data processing is susceptible for delay in government’s deliverables due to limited timeline particularly in the disbursement and liquidation processing.
3. The agency experiencing the problem is tracking their beneficiary status that hinders in the preparation of the listing of beneficiaries for payroll preparation.

**OBJECTIVE:**

1. To develop a system that would eliminate the data inconsistencies in a systematic way like utilization of an algorithm that uses mathematical computation to detect possible duplicates.
2. To have a centralized and efficient system that would automate the payroll processing and payment reconciliation.
3. To have a periodic data updating of beneficiary status with tracking feature that would provide the most recent information about the beneficiary for the Program holder and Finance Management Office.

**METHODOLOGY:**

**SOFTWARE**

1. Use CodeIgniter 3 based web application
2. Python Flask Restful as a backend data streamer
3. Use Restful with Redis and Celery to accommodate processing of large amount of data.
4. Docker with Prometheus server status exporter and grafana dashboard.
   1. The application will

**HARDWARE**

OCP SERVER

Parallel algorithm,

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