**Secure Cloud-based Payroll Automation System**

**Research Proposal**

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Chapter 1: Introduction

### Background of the problem

Payroll automation emerged in the 1980s to solve human error on manual payroll systems (*Kelsey Basten*, 2017). The novel introduction of computer science as a degree program in universities such as the University of Cambridge in 1953 – Cambridge Diploma in Computer Science led to revolutionized computer systems and payroll management systems. Accuracy and timeliness were the most intricate part of these new systems. However, payroll process has evolved and changed over the years with employers remitting part of income to pay off bank loans on behalf of their employees.

Statement of the Problem

The current system inadequately handles the flexibility of evolved payroll function that deals with temporary labor and secondary salary deductions. The current salary increments approval model of the system has a lot of human involvement that poses a security threat to this functionality. The current system implements a distributed architecture that inadequately leverages the flexibility of communication between entities

Significance of the Study

A comprehensive inclusion of evolving payroll operations such as temporary labour compensation and secondary salary deductions on payroll automation systems will efficiently handle these equally important operations to make effective payroll automation systems. A quantitative analysis of the approval model of salary increments will result in a design for a robust approval model that leverages encryption and decryption between the payroll and human resource systems.

Purpose of the Study

The purpose for this study is to identify the evolved operations and changes in the payroll process to develop satisfactory and sufficient payroll automation systems and improve the security of specific functions such as salary increments and the overall system’s security.

Research Question

What are the emerging payroll process operations that are yet to be incorporated into payroll automation systems?

What are the operations conducted by the user i.e., the employer that can be substituted by computer programs that take the role of the user to improve security of such payroll functions.

Definitions of Terms

Payroll process: Its the activities that include allocation, calculations of deductions and bonuses and ultimately compensation of salaries that also includes compensation of contracted and temporary employees.

Encryption and decryption: the art of hiding a message in a form that is not obvious to an unauthorized personnel.

Cloud: this is computer substrate that is available over the internet usually offered by cloud service providers such as Amazon Web Services, Google Cloud Platform, among others.

Assumptions

A public university (employer) is a representation of any organization with employees and uses a payroll automation system to compensate its employees.

#### Delimitations

The researcher will be limited to a 1 month period of conducting the research. Additionally, the researcher will be limited to one public university as the organization i.e. the place the research will be conducted.

### Conclusion of Chapter 1

Payroll automation has come a long way to help employers and organizations accurately and timely manage the compensation of their employees. However, over the years it has evolved and novel operations such as temporary employee compensation and secondary salary deductions have made it necessary for developers to include them in payroll automation systems. Furthermore, security issues associated with human interaction with the system have also emerged that require to be dealt with.

# Chapter 2: Review of the Literature

Payroll automation has influenced effective management of the payroll process by providing for accurate calculation and allocation and timely compensation of salaries. However, payroll automation has not sufficiently taken care of the evolving payroll function.

Some of the payroll function that are yet to be adequately integrated in payroll automation systems include the calculation and compensation of earnings of temporary employees, calculation and deduction of secondary contributions such as employee’s society periodic contributions.

Temporary employees consists of the workforce that an employer hires for a short period usually less than a month. Most payroll automation systems assume this functions. Therefore the employer is forced to compensate this category of employees manually. This might appear tolerable, however, the compensation to the temporary employees is part of the employer’s expense. This information has a very high probability of getting lost which will result in that expense not being accounted in the financial books of an organization. Other than the fact that it will have detrimental effect in the long run, it also creates a loophole that can be exploited hence the importance of including this in the payroll automation system. Furthermore, tracking of this part of the payroll function will provide the employer of statistical information that can be used to inference the amount of expenditure on temporary employee compensation that will be useful to them.

Most employees are members of society associations that they have committed to contribute small funds for the purpose of a common goal of financial support among themselves. Current payroll systems have allowed employers to remit loan repayments to banks on behalf on their employees. Society associations also lend loans to its members. The inclusion of secondary contributions is not expensive since the current payroll systems provide for this through employee’s statutory deduction function; the current function does not require modification just inclusion of them.

Some payroll processes still require unnecessary human interaction with the systems such as approval of salaries. This poses a security threat that is associated with the users of the system, who can take advantage of this functionality. Automation of such processes in a way that is also secure and can be trusted will adequately address the associated security problems.

# Chapter 3: Research Methods

## The Qualitative Paradigm

It is crucial to uphold organization’s policies and make appointments with the relevant office so as to seek permission to conduct the research. In addition, courtesy is vital between the researcher and the administrator of payroll processing. This relationship must persist knowing that the knowledge not covered is contingent on the researcher being respectful to the subjective truth that may arise in the interaction with the payroll process administrator. The relationship between these factors favors a qualitative approach to answering the research questions.

## Research Design

We want to develop an approach to identify the inadequacy of inclusion of emerging payroll functions, therefore, a grounded theory method will be used.

### Participants and Sampling

The research will be conducted in a public university that represents an employer with various categories and types of employees. Theoretical sampling will be used to purposefully finds a few relevant participants i.e. administrator and staff from the Information Technology Department, payroll management section.

### Instruments

Data will be collected from the payroll management staff of the public university using a semi-structured interview with a couple of questions but focusing on the research question, “What are the emerging payroll process operations that are yet to be incorporated into payroll automation systems?”. Additional data from published resources may supplement this data.

### Research Procedures

The researcher will first familiarize themselves with the payroll process; it’s history and fundamental payroll functions. All required approvals must be gotten before embarking on selecting a sample. On sample selection, the researcher should allow the participants to select a good time and place to have the interview to assure the participants that the interview will not affect their working hours. The interview sessions will be recorded for future transcription and analysis.

### Plans for Data Analysis

Initial verification will be done by spending enough time interviewing the participants to get rich descriptions and explanations on which the theory will be based. Most interview questions will be prepared to ensure data collected for the study is relevant, this will also curb bias in the interview.

### Ethical Considerations

Approval from the organization’s administration will be required before commencement of the research on the sample.

### Plans for Presenting the Results

The results of the grounded theory will be included in the final research report.

## Summary

The study is designed to identify emerging payroll functions that have yet or inadequately implemented in current payroll automation systems. Interview with the administrator of payroll process management will focus on how the current system tries to include evolving payroll functions. The study also sorts to improve the approval model for salary increments and other system security issues that are associated with the user. The data will be analyzed and a payroll automation systems that sufficiently tries to include these functions and necessary security policies is implemented.

### References

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