

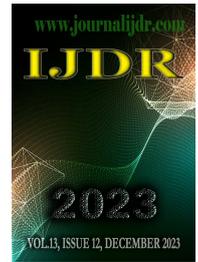


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RESEARCH ARTICLE

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## LOCAL GOVERNMENT PAYROLL MANAGEMENT INFORMATION SYSTEM MODEL: A CASE OF MAYUGE DISTRICT

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### ABSTRACT

The salary payment of local government workers constitutes a significant percentage of total government expenditure in Uganda, simply because the government remains the largest or biggest employer. The government payroll system, therefore, requires a robust control mechanism to detect and prevent the occurrence of ghost workers and payroll fraud, as the irregularity denies the state of huge sums of monies going into private pockets which could have otherwise been channeled into some critical sectors of the economy. The main objective was to develop a payroll Management information System model for Local governments and this was achieved, the research adopted design science methodology, data was collected using face to face interview where many loopholes were discovered in the existing system like double entry, no proper checking of entered information and also possibility of higher authority being in position to access accounts of the district officials and make changes. An improved model was developed to curb all the irregularities in the findings, the model was tested by use of a prototype and hence there is need to develop a fully functioning system from the developed model but should be piloted in one district before rolling it out to all local government administrative units.

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## INTRODUCTION

Globally most governments have adopted payroll management information system to curb fraud that normally takes place in the salary department and this is not limited to governments only but also to private sector but still there has been serious fraud through these systems hence most administrators are wondering what can be done to eliminate or reduce this vice. An effective and efficient human resource management information system of payroll management information system can support employers if well managed and interactively designed so that all activities are monitored and duties are segregated (Kritika, Shukla, & Nitasha, 2015). Research by Bernik (2007), brings it out clearly that payroll Management information System has been used for a long time right from the 1960s and there has been improvement coupled with the recent boom in ICT, digitization of employee records is the order of the day and no single organisation can run away from except embracing and enhancing it to provide self-service, real-time information, report generation and interactive work from anywhere environment (Lai, 2017). Generally governments must extend services to their people and most of their works are labour intensive and require so many people to accomplish hence there is need to develop a proper system to manage the payroll

to avoid misuse of government or organisation funds and at the same time such a system needs to have clear roles for each user. Many organisations or government technical team have not take time to design such a system but try to duplicate what other similar organisations are using, so it is copy and paste and this has led to failure of such organisation's system or being mismanaged and the end result is fraud because the needs of these organisations are never the same (Kannyiri & Mumuni, 2015). The government of Uganda under the local government administration introduced Integrated Personnel Payroll System (IPPS) in 2009 which was intended to eliminate fraud which has been rampant in government payroll, when paper based system was being used Mafabi, (2017) emphasises that paper based system of record keeping is not sustainable in the this era of ICT especially to manage employee records right from sourcing, recruitment through to exit, hence the use of ICT has enhanced the recruitment process (Emanghe & Amoram, 2020). There has been a public service reform program that the government of Uganda introduced in right from 1980s and 1990s which was to achieve public sector efficiency and that of 2000s to improve on effectiveness in public financial management initiatives and modern management practices ESID, (2016) which included the introduction of IPPS to strengthen accountability and improve on service delivery but this has not been achieved because in the research of Kiwawulo, (2022)

discovered that there still exists ghost workers in the payroll and this was also reported by the Auditor General in his report of 2012, 2013 and 2014. Mayugedistrict being part of the local government embraced the use of IPPS with the hope of eliminating ghost workers in the administration of employee benefits like salary payment, employee attendance and other benefits management but this has not yielded much and it has been found that ghost workers still exists in the IPPS.

**Problem statement:** Despite of the effort the government of Uganda has put in to eliminate fraud within the local government payment system, Mayuge District Local governments still finds itself with ghost workers, fraud and mismanagement of district funds, this has been caused by the system's failure to manage duplication of records and lack of integrity, (Businge, 2011; kiwuwa, 2014; Kiwawulo, 2022; URN, 2021). The reforms of 2000s has yielded limited fruits which included the introduction of IPPS for proper accountability (ESID, 2016)

**Objective:** The objective was to develop a payroll Management information System model for Local governmentsMayuge district.

## LITERATURE REVIEW

**Human resource management system (HRMS):** HRMS is a part of the Management Information System, is a group of several systems that contain and provide a lot of information that supports the management of a company (Suharto&Sulistyo, 2018). Bamberger et al, (2014), added that aneffective HRM system is a hybrid system consisting of both commitment and control HR practices, and has much more significant positive effects on firm's performance. According to Umokeh, (2010).The problem of ghost workers has led to increase in government recurrent expenditure. Ghost workers menace in Nigeria bureaucracy has gone so deep that the nation is losing billions in the three tiers of government. Human resources managers at the Federal, State and Local Government levels are mainly culpable, so also are the approving and accounting officers. These officials are not clueless of the origin of ghost workers and how to plug the loopholes. Rather, they will fully embrace such loopholes or in the least, pretend such loopholes do not exist because they and their cohorts are the beneficiaries. Micah & Moses, (2018) Stated that Ghost workers and payroll fraud refers to all processes of employee impersonations that have salary cost implication on the concerned government, It includes all illegal, unauthorized, unqualified, fictitious and non-existing staff that makes salary claims from the government cofferswhich implies that underage, overage, backdated employments, inherited employments, unqualified staff and unauthorized staffs even though they report for work daily, are categorized as part of ghost workers and payroll fraud in the public service. In most instances, these fraudulent public officeholders forge the necessary documents and authorizations to add an employee on the payroll.

According to Shani and Tesone (2010), some benefits of an effective payroll Management information System on Human Resources Management (HRM) are; (1) saving on cost and time, (2) contribution in making a strategic decision, (3) improving the quality of strategic decision making, and (4) increase in the commitment for employee development. Besides the benefits of the administration and the strategic use of payroll Management information System above, Beckers and Bsat (2002) revealed five reasons why companies need to implement the payroll Management information System follows: (1) payroll Management information System can improve competitiveness by improving the practice of the HR, (2) payroll Management information System produces a number and various operational HR which are greater, (3) it can shift the focus of conventional HR to the management of strategic human resources, (4) it considers employees as the assets of the company, and (5) it can reengineer the entire function of HR. Payroll Management information System would cut HR costs by automating information

and reducing the need for large numbers of HR employees; by allowing managers to access relevant information and data, conduct analysis, make decisions, and communicate with others without consulting an HR professional; and by allowing managers to access relevant information and data, conduct analysis, make decisions, and communicate with others without consulting an HR professional (Beadles II, Lowery & Johns,2005).

**Payroll management system model design and development process:** According to Kovach and Cathcart, (1999), the first and most important step in the design process of a payroll management system is specifying the system requirements, especially the target users and the decisions the system is designed to support. These specifications include decisions about the type of data to collect, the amount of data to collect, and how and when to collect the data. The next step is business system design. This step involves answering questions about who will use the system, how they will access it, how it will be updated, and more. The technical system design also includes software system development and programming. The system is then tested at selected locations and evaluated. Once the system is up and running, it is reviewed, changes are made, and the process starts all over again. In addition to the choice of what information to include, the design of the payroll Management information System must also account for organizational and user characteristics. The aforementioned information value guidelines should be utilized to guide the selection of data to include in a PMS. The PMS staff's structure and composition, the link between the PMS technology strategy and that of the larger organization, and the impact of the PMS staff's efforts on personnel and the broader organization's culture are all examples of organizational and user characteristics. Carr, &Verner, (1997) characterized model development using prototyping as a four step, iterative procedure involving users and developers: 1) user's basic needs are identified (requirements), 2) a working prototype is develop ,3) the working prototype is then implemented and used;4) the prototyping system is revised and enhanced.

## RESEARCH METHODOLOGY

The study Adopted a design science research approach, this type of research deemed appropriate because it allows the researcher to construct and evaluate IT artifacts, constructs, models, methods, and instantiations, by which important payroll management system problems could be addressed(Peffers, et al, 2007).Face-to-face interview technique was preferred for gathering requirements from key stakeholders, because this allows for a deeper understanding of the current system according to the users'perspective in order to identify the requirements for the design of a new model since this is the dominant technique in the field of qualitative research that gives the researcher the advantage to ask more complex questions, observe as well as listen to the respondents than in other techniques.

## RESULTS AND FINDINGS

**Results from the study of the existing system:** From secondary data sources, the researcher established that IPPS lacks integrity and verification checks on the payroll master file which is used for processing monthly payments, some interfaces like salary update, shift from normal payroll to pension are not automated, Lacks leave module, whereby it's difficult to know whether someone is absent or on leave or a ghost worker, lacks an attendance module, to capture those who work and those who do not but continue to receive government salary, allows cross entry of supplier number from other district which creates a gapentering ghost workers, Lacks a communication interface ,where employees can communicate directly to Administrators,no access control tools where officials at the ministry can access Human resource and CAO's account and modify information. All the above are fertile grounds for adding ghost workers and fraud in the system. This information helped to guide the

researcher on the design of the new model, as in what features should be included in the new model to do away with ghost workers and fraud.

**To design a payroll Management information System model for Local governments/ the proposed model design:** Model Design is the process of describing the components, interfaces and architecture of a model that meet or satisfy the required specifications. It defines how the model operates and interacts with external users with the intention of describing how the model is in nature and what it does which in general captures the model's behavior. The developed model was designed basing on the following designs as illustrated in the diagrams below. The context design defines the interaction of various users with the system. The system administrator who is the data manager (Human resource officer in charge of salary and pension) logs in the system and the system authenticates his/her login. On logging into the system, he can feed in employee particulars, upload documents and is also able to view reports about employees from the system. The head of department verifies the employee and then sends to CAO for approval. The employee logs in and the system authenticates his/her login. The employee has rights to change his/ her login details as well view his/her particulars only.

This phase involved identifying entity and relationship types, identifying and associating attributes with entity or relationship types. Determination of attribute domains, checking the resulting model for redundancy, validation of the conceptual model against user transactions is then done before a review of the conceptual data model with the user. From the context diagram, a Data Flow Diagram (DFD) of the model was crafted. A DFD showed the main processes of the model that depicted what kind of data was input to and output from the model, where the data was to come from and go, and where the data was stored. Below is the contextual diagram for a proposed payroll management system for local government. Architectural design gave a high level view of the main components of the model and the services they provide and how they communicate with one another. This made it easy for stakeholders to understand the model.

**New designed model:** The model shows the flow of activities by system users. The activities begin with either the employee or the system administrator who is the human resource logging in into the system from the user interface. If the log in is successful for both the admin and employee they proceed to their different activities else will be taken back to the login interface.

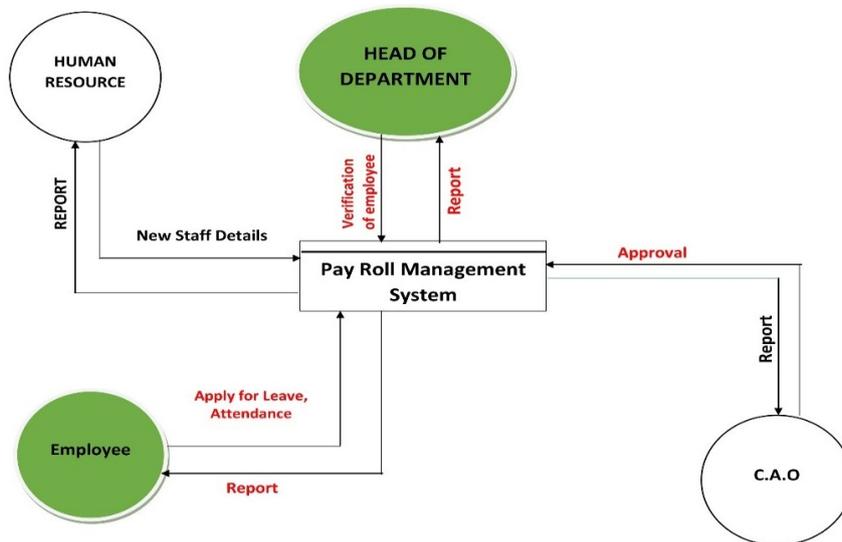


Figure 1. Conceptual design

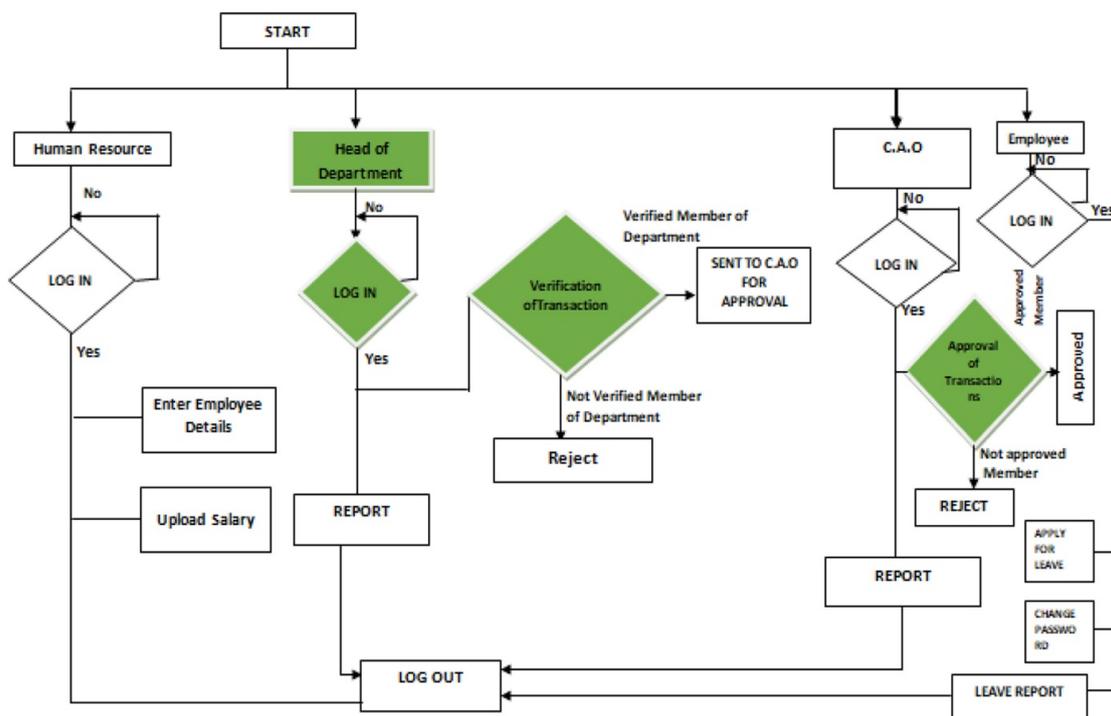


Figure 2. Complete system model

The admin who successfully logs in can add an employee, update employee particulars as well as view reports. Then the head of department verifies the employee details and then sends to CAO for approval. An employee who successfully logs in just views his/her particulars and the whole process is terminated by the logging out of the system.

There are various processes in the developed model such as the login process, login verification, verification of employees by heads of department and approval of all transactions by CAO, leave application and report generation. Data stores include the login info data store and employee information data store. Reports about employees are the basic output.

**Data flow diagram:** The data flow diagram describes the flow of data within the system. It shows various processes from the model.

**State diagram:** This describes the behavior of a pay roll management system considering all the possible states of an object when an event occurs as seen below:

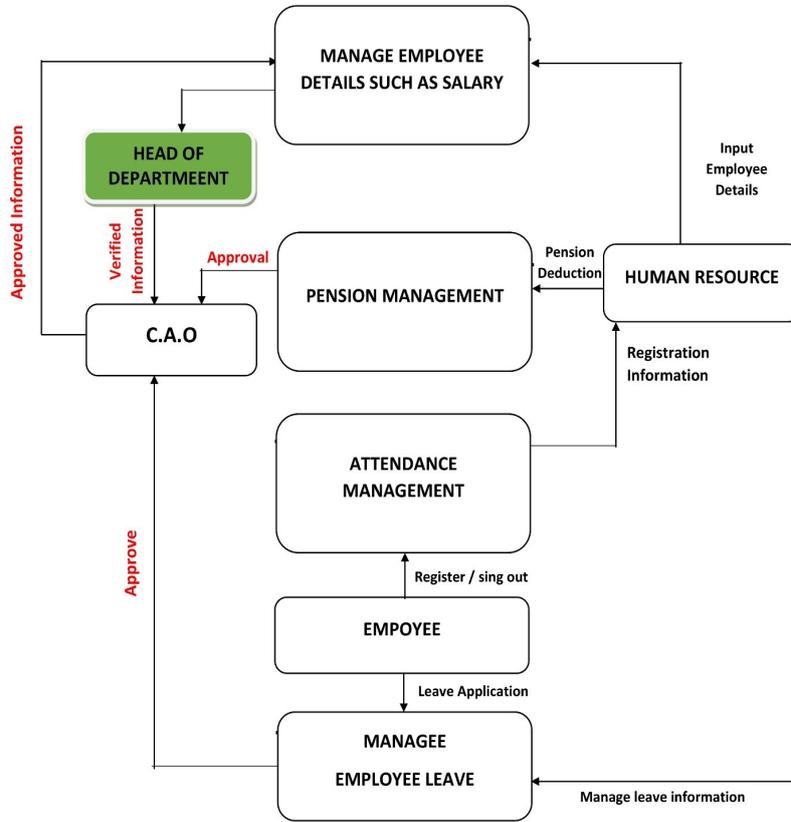


Figure 3. Data flow diagram

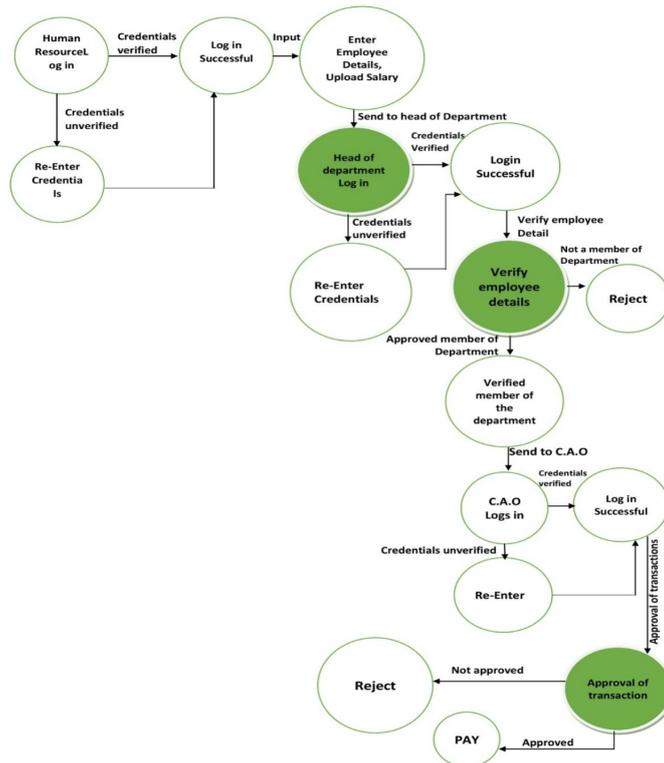


Figure 4. State diagram

## CONCLUSIONS

There were numerous challenges faced in the existing system that needed to be addressed and these have given rise to development of an improved model. In this information age every organization needs to embrace information systems most especially in Human resource management for competitive advantage. The research discovered that the IPPS had very few modules like payroll management, pension management, establishment control, training management and electronic document management system but lacked other modules that could bring about proper control against fraud and lacked segregation of duties in the system which is a key element in proper management of information system hence the new model has captured other modules and brought in segregation of duties and access control, the model was tested and validated and the objective was fully achieved.

## RECOMMENDATIONS

Validation was done by use of a prototype but there is need to develop completely functional system and pilot it in a single district before rolling it out to other local government administration and this should be done concurrently with the existing system to avoid any inconveniences that may arise in the process of change over. This research has only looked at the local government but it could also be carried out in other ministries within Uganda.

## REFERENCES

- Adaja J. & Audu J. 2015. *Integrated Personnel Payroll And Information System (IPPIS) Panacea For Ghost Workers Syndrome in Nigerian Public Servk'2*. *International Journal of Public Administration and Management Research (UPAMR)*, 2,(5) 55-64
- Bamberger, P. A., Biron, M., & Meshoulam, I. 2014. *Human resource strategy: Formulation*,
- Beadles II, N. A., Lowery, C. M., & Johns, K. 2005. *The impact of human resource information systems: An exploratory study in the public sector*. *Communications of the IIMA*, 5(4), 6.
- Beckers, A. M. & Bsai, M. Z. (2002). *A DSS classification model for research in human*
- Business Focus Reporter. (2022, February 3). Local Gov't Ghost Workers Earned Shs1.12bn In 2021 » Business Focus. *Business Focus*.<https://businessfocus.co.ug/local-govt-ghost-workers-earned-shs1-12bn-in-2021>.
- Businge, C. (2011, October 26). *Who is behind the ghosts on the payroll? - New Vision Official*. *New Vision*. <https://www.newvision.co.ug/news/1002904/ghosts-payroll>.
- Carr, M., & Verner, J. (1997). *Prototyping and software development approaches*. *Department of Information Systems, City University of Hong Kong, Hong Kong*, 319-338.
- Emanghe, E. E. & Amoram, J. D., (2020). Integrated Payroll and Personnel Information System (IPPIS) for Sustainability of University Education in Nigeria after COVID-19 Pandemic, *International Journal of Capacity Building in Education and Management (IJCBE)*, Vol. 4, No 1, (PP. 35 -45).
- ESID (2016). *Public Sector Reform in Uganda*; Behind the Façade ESID Briefing No. 23. Manchester; The University of Manchester, 4p.
- Kannyiri, T. B. & Mumuni, A. N., (2015) .Challenges in Managing in managing government payroll system in Ghana, *Asian Academic Research Journal of Social Sciences & Humanities*, vol. 2 (pp. 11 – 34)
- Kinene, E. (2021, November 30). *Government Develops Software, App to Fight Ghost Workers, Corruption in Public Service:: Uganda Radionetwork*. Uganda Radio Network. <https://ugandaradionetwork.net/story/government-develops-software-app-to-fight-ghost-workers-corruption-in-public-service>
- Kiwawulo, C. (2022, February 3). *Why “ghosts” have persisted on gov't payroll - New Vision Official*. *New Vision*. [https://www.newvision.co.ug/new\\_vision/news/1320916/ghosts-persisted-gov-payroll](https://www.newvision.co.ug/new_vision/news/1320916/ghosts-persisted-gov-payroll)
- Kiwuwa, P. (2014, October 11). *146 ghost teachers in Mayuge - New Vision Official*. *New Vision*. <https://www.newvision.co.ug/news/1219186/146-ghost-teachers-mayuge>.
- Kovach, K. A., & Cathcart Jr, C. E. (1999). *Human resource information systems (HRIS): Providing business with rapid data access, information exchange and strategic advantage*. *Public personnel management*, 28(2), 275-282.
- Kritika, M., Shilpa, S. & Nitasha, A., (2015).A review of computerized payroll system, *International journal of advanced research in computer and communication engineering*; Vol 4 issue 1, (pp 67 – 70).
- Micah, L. C., & Moses, T. (2018). *IPPIS and the ghost workers' syndrome in Nigeria's public sector*. *IPPIS and the Ghost Workers' Syndrome in Nigeria's Public Sector*, 5(8), 773-778.
- Peffer, K., Tuunanen, T., Rothenberger, M.A., & Chatterjee, S., (2007). A Design Science Research Methodology for Information Systems Research, *Journal of Management Information System*; Vol. 24 No. 3, (pp. 45 – 77).
- Resource information systems. Information Systems Management*, 19(3), 1-10.
- Shani, A. & Tesone, V.D. (2010). *Have Human Resource Information systems evolved into internal e-commerce? Emerald Group Publishing Limited*, 2(1), 30-48
- Suharto, L., & Sulisty, P. R. (2018). The implementation of human resources information system and its benefit for organizations. *Diponegoro International Journal of Business*, 1(1), (PP. 1-7).
- Umokeh, G. (2010). Ghost workers and it drain on Nigeria finance. *Way forward. Journal of social sciences*, Vol. 2 (4), (PP 22-41).
- URN. (2021, August 9). *Shs 70bn lunch allowance: 1,039 ghost workers unearthed on nurses' payroll*. *Observer*. <https://observer.ug/news/headlines/70797-lunch-allowance-1-039-ghost-health-workers-unearthed>

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