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Usage and Challenges of Human Resources Information System in the Tanzanian Public Organizations

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Abstract: The use of Human Resources Information System (HRIS) has recently become an important feature of Human Resource Management (HRM) in the emerging economies including Tanzania. In this paper, we review the usage and challenges of Human Resources Information System (HRIS) in Tanzania. Based on systematic review of policies, legislation and scientific literature, we examine the practice, new developments and challenges facing the uptake of HRIS in Tanzania. A systematic qualitative synthesis using nomothetic-based content analysis is used in the paper to analyse the collected information for the purpose of advancing argument on HRIS usage effectiveness. Our findings show that HRIS has been useful in HRM in Tanzania particularly in recruitment and selection, updating and maintenance of employee data, generating HR reports, employees' deductions, direct deposit distributions, career planning; and training, and development. Despite the relevance and promising contributions of HRIS to effective HRM in the public sector, we document five important challenges associated with the usage of HRIS which include: (1) unsteady financial capacity to acquire, update and maintain the HRIS; (2) inadequate ICT and HRIS expertise among the HRM workforce; (3) inadequate coordination of government machinery in the performance of their statutory responsibilities; (4) instability of internet connectivity and (5) inadequate top management support. On the basis of challenges identified, we recommend the following recommendations: - Firstly, the government should increase budget allocations to Ministries, Department and Agencies (MDAs) and Local Government Authorities (LGAs) to ensure adequate procurement of facilities and development of skilled workforce in HRIS and Information Technology (IT). Secondly, we recommend strengthening of coordination between different departments responsible for HRIS management in order to speed up information flow to system users for complete and accurate output and timely updating of employees' data.

Keywords: Ghost Workers, Human Resources Management, Human Resource Information System, Local Government Authority, Payroll, Salary Administration

1. Introduction

1.1. HRIS in a General Perspective

Human Resource Information System (HRIS) has been defined in different ways depending on usage context and authors' areas of emphasis. For example is definedas an integrated system necessary to collect, record, store, manage, deliver and present data for human resource and hence promotes effectiveness of human resource system [1]. Or as a computerized integrated system for managing information used in decision making in an organization [38]. Of importance in the two definitions regarding HRIS is the centrality of information technology (IT) aided data gathering, storage, processing and use for effective Human Resource Management (HRM). It underscores the importance of information technology for effective management of human resource (HR) functions and applications. Thus, HRIS merges the fundamental HR roles and processes with Information and Communication Technology (ICT) application to create well-functioning electronic databases for storing information, entering and updating data and analysing and reporting tools

[19]. HRIS serves the following principal functions: - First, it facilitates acquisition, storage, manipulation, analysis, retrieval, and dissemination of human resource information in an organization and second, it enables employers to keep track of their employees through the information populated in a database or, more often, in a series of inter-related databases in an organization [13, 15, 31].

The introduction of HRIS has brought about technological revolution in HRM by replacing paper-based record system which was much slower, untimely and inaccurate in output production. Globally, many organisations have adopted and are highly dependent on HRIS use to facilitate HRM effectiveness, administrative efficiency, strategic positioning and improvement of organizational-performance [1, 2, 13, 27, 33]). Moreover, HRIS enhances organisational decision-making processes through fast, accurate and complete information which ultimately improves productivity [3, 16]. In general, HRIS's major objectives in almost all organizations include facilitating access to information, reduction of operational costs by ensuring a higher speed and accuracy in the processing of information. In view of the fact that information is a vital aspect of management, it becomes useless having employees with incomplete, up to-date, and accurate career information [39].

1.2. HRIS in the Tanzanian MDAs and LGAs

Tanzania like other emerging economies, has decided to use HRIS to replace the paper-based record system [16]. The usage of HRIS in Tanzania dates back to 2011 when the Government introduced HRIS in its ministries, departments and Agencies (MDAs) and Local Government authorities (LGAs). The aim of introducing HRIS in the MDAs and LGAs was to reduce manual performance of administrative activities and enable HR officers to maintain complete, accurate and up to-date employees' information by using computerised application software [9]. Available evidence indicates that the reality on the ground differs from the expectations. Fraud in the public payroll, employment of unqualified public servants in the government agencies, delayed public sector promotions and poor management of employee training and development plans are examples of unexpected malfunctions of HRM in the public sector [25, 9, 20]. These weaknesses were disclosed in the nationwide auditing of public servants report of 2016 presented by the Minister of State in the President's Office responsible for Public Service Management and Good Governance. The persistence of challenges raises concerns on the effectiveness of HRIS usage in the public sector organizations.

However, so far there is no any review that has been undertaken to synthesise the usage of HRIS and identify challenges observed in the HRIS usage. In that view, we critically reviewed the existing literature on HRIS usage and challenges facing its uptake in Tanzania. The paper therefore provides unique information that can be used by policy makers and practitioners to improve HRIS implementation in Tanzania and other settings in the emerging economies.

2. Usage and Challenges of the HRIS

Evolution and usage of HRIS in Tanzania

There are three distinct phases in the Human Resource Management (HRM) in Tanzania. These include paper-based, transition phase to web-based (HRIS), and web based system (HRIS). During each phase, HRM is determined by availability of suitable ICT and ability of an organization to procure such technology. The paper-based system was introduced during the colonial period and lasted until the first four decades after independence. In this phase, ICT was as not advanced as it is today and therefore papers were used to keep personnel records in government and non-government organizations. The paper-based system was characterized by slowness, inaccuracy and incompleteness in the output [12]. During the period of 1980s and 1990s, fraud in the public payroll, unqualified civil servants, delayed employee promotion and poor employees training and development plans were critical HRM challenges the public sector [9, 19]. In 1988 for example, the government of Tanzania conducted a public service censusto identify 'ghost workers' in the government payroll. A total of 16,000 ghost workers were identified out of around 350,000 employees [30].

The second phase –the transition phase from paper-based to web-based system (HRIS) started in 1990s and partially ended in 2010. During this period, computerized HRM became an important tenet in the Public Sector HRM in many countries. Due to this technological shift, the government undertook institutional and structural reforms to pave a way to the new HRM innovation. Twomain reforms took place between 1990 and 2000. Firstly, in 1991, the government launched the Civil Service Reform Program (CSRP) to ensure a smaller, affordable, well-compensated, efficient and effective civil service. Along with these reforms, the Personnel Control and Information Systems (PCIS) project was launched in 1995 and procurement process for Lawson – an Oracle database run on Windows-based system kicked off in 1999. The projectintended to integrate personnel data into one database and client-server architecture [40]. Secondly, the government launched the Public Service Reform Program (PSRP) in 2002 that intended among other things, to support modernization of information and communication systems in government offices and improve the quality of information. In this phase, two new laws were enacted to operationalize the reforms, namely, the Public Service Act (No. 8) of 2002 and the Records and Archives Management Act (No. 3) of 2002 [34, 35]. The two pieces of legislation were essentially meant for serving two different but related purposes. Whereas the Public Service Act establishes the component agencies of the Public Service, the Records and Archives Management Act gives the archives clear powers to oversee records management across the public service [40]. In this phase, paper-based records remained an essential component of the HRM and the same challenges were observed. In 1994, the government conducted national pay day exercise and the results of the exercise revealed 13,360 cases of ghost workers [30].

The third phase–'web based system (HRIS)' commenced in

2011 when the Government introduced HRIS in its ministries, departments and agencies (MDAs) and LGAs. The aim was to reduce manual performance of administrative activities and enable HR officersmaintain complete, accurate and updated employees' information by using computerized application software. HRIS usage has been transformed significantly from a desktop platform to a web-enabled platform popularly known as 'Lawson version 9' [16, 36]. A web-enabled HRIS is currently installed in 194 LGAs and other government institutions and is managed by designated Human Resources officers' in HR departments.

The use of HRIS in the MDAs and LGAsinclude updating and maintaining employee data, recruitment and selection, employee reports, monthly salary deductions for pension and other statutory contributions, direct deposit distributions, career planning, training and development [16, 20]. Its operational scope involves employer (e.g. MDAs and LGAs), public services, HRIS database, Treasury, and other stakeholders [37]. Unlike the paper based system, HRIS offers quick and more effective implementation of human resource management functions such as human resource planning, promotion, termination, recruitment and selection, leave etc. In other words, the system has increased efficiency and effectiveness in decision making processes related to HR activities [8, 24].

3. Challenges Facing Usage of the HRIS

3.1. Unsteady Financial Capacity

The cost of installing and maintaining HRIS is high. The system encompasses electronic databases for storing information, software for entering and updating data, and reporting and analysis tools. For the system to function properly, it requires purchase and installation of relevant hardware (e.g. desktop PCs for accessing and inputting information locally, Uninterruptible Power Supply - UPS, Printers), software and support components (e.g. Server-side software such as HTML, Java, Perl; Intranet communications protocol; Relational database/Information processing software for records, payroll) [40]. A critical challenge here is that the Government has not invested sufficient funds to procure the required quantity of computers and accessories for maximum utilization of the HRIS. Both MDAs and LGAs are affected by limited investment in HRIS [24, 25]. For instance, there is insufficient number of computers and their accessories compared to the number of trained system users in many MDAs and LGAs [24, 25]. In Mwanza Municipality, for instance, there is a deficit of five (5) computers connected to HRIS, and therefore, system users have to share the few computers available [25]. The thrust of installing one HRIS in the Public sector was to minimize cost. It is argued that it is costly and difficult to sustain two (or more) systems under chronic shortage of financial resources at the central level [12]. The same challenge is also faced by other developing countries. Insufficient computers are a challenge faced by public sector employees in the development of management information systems in River Nile State – Sudan [15]. It is reported that, one of the major obstacles in acquiring maximum potential of HRIS is insufficient finances to purchase hardware and software for application programs, along with costs of maintenance and updating [17]. Reports that the major reason for lack of enthusiasm in adoption and implementation of HRIS is the immense funds needed for HRIS adoption and implementation [7]. In the same vein, cost of instituting and maintenance of the HRIS is the major barrier in HRIS adoption and implementation [5, 22].

3.2. Inadequate ICT and HRIS Expertise

Expertise entails special skills or knowledge acquired through training, studyor practice. In HRIS, expertise on Information and communications technology (ICT) is highly needed to manage the system effectively [24]. The system serves different purposes including among others; human resource planning and records management [10]. Insufficient ICT expertise and manning levels were reported to be the major challenges facing usage of HRIS in Tanzania. The National ICT Policy identifiestwo main challenges in the adequacy of ICT human capital: 1) non recognition of ICT professionalsand 2) inadequacy of ICT proficient human resource base to accelerate the nation's socio-economic development efforts in the information age [37]. In addition, the slow pace of employers in training and developing employees in the ICT field has widened the expertise gap [40].

The scope of inadequacy of expertise encompasses two groups of employees. The first group includes system users who have direct access to the HRIS. These are mainly human resource officers (HROs). According to HCMIS User manual, it is only the HROs who have been given access to HRIS can maintain their employees' information and make all necessary changes as needed [36]. It is therefore recommended that these HROs should be knowledgeable on more than one functional area, particularly, ICT and HR functions. The actual situation in the field indicates that the majority of the HROs have limited knowledge on the use of the system. In Mwanza Municipality for instance, the average rate of system use is around 43.3%. This low use of HRIS has to a large extent been attributed to insufficient knowledge in the system use. In addition, evidence shows that none of the system users had knowledge on using Personnel Administration form 21 (PA21), Personnel Administration form 34 (PA34), and Allowance form TZ042); and very few could use Payroll form 15 (PR15) which is a special form for uploading multiple deductions and Personnel Administration form (PA52.4) which is a very essential form for hiring new employees [25].

The challenge of expertise inadequacy was also reported in other employing ministries, departments and agencies (MDAs). The majority of MDAs have a few trained HROs who have direct access to the system. These include the health sector and Local Government Authorities (LGAs) [12, 9]. Some HROs were not trained on HRIS usage but only learnt about HRIS through the use of user guideline/manual that were sent to them. The available evidence informs that lack of training leads to some HROsnot using HRIS [16]. Inadequacy

in the number of HROs with sufficient computer skills was reported in almost all MDAs. This problem was noted when those with expertise were not in office for activities such as meetings [9]. In order to get out of the hurdle of expertise inadequacy, training and development on information systems should be given adequate impetus [26].

The second group of personnel is ICT experts responsible for maintaining, evaluating and enhancing the databasesto avoid information leaks or losses. According to the HRIS Payroll Software, the system requires maintenance as follows: (1) monthly maintenance is done to fix bugs in coding, configurationand upgrading the system; (2) quarterly maintenance for reviewing and fine-tuning the system's security access; (3) biannual maintenance aims at removing all obsolete reports, functions, and features from the system and organizing well the information and dashboards; and (4) annual maintenance for reviewing the system to make sure that all relevant compliance needs are being taken care of, and also removing terminated employees' records [29]. It is recommended that system maintenance be done by in-house experts to reduce costs on maintenance [12]. However, the major challenge faced is lack of sufficient number of ICT specialists in MDAs who can maintain the HRIS [16]. This challenge contributes to high maintenance costs and delays.

3.3. Government Structures for Handling of Personnel Data

In Tanzanian, the HRIS and payroll process involves multiple actors. These include Public Service Department (PSD) for personnel policy formulation and implementation, Ministry of Finance (for financial policy formulation, budgeting, treasury functions, accounting and pension administration); employing ministries, departments and agencies (MDAs; parent ministries for common cadres such as the Administration Cadre and the Accounting Cadre; and service commissions such as those for teachers, police and the judiciary (for recruitment and the approval of promotions). Others include the Office of the Controller and Auditor General (for auditing the Government accounts), Workers Councils representing employees at all levels within MDAs; and the Public Social Security Fund.

The whole process of handling employees' data starts from recruitment and selection which is a shared responsibility among different organs. It is initiated by the Director of Administration and Personnel (DAP) in the employing ministry to request approval to appoint from the Permanent Secretary of the (PSD). The PSD checks to ensure whether the available budget can accommodate the appointment; if so, it authorizes the appointment. A request is then sent to the appropriate service commission to initiate the selection process and once completed; the name(s) of the successful candidate(s) are forwarded to the MDA to proceed with appointment. The candidate then is added to the payroll, the DAP prepares a letter of appointment and forwards it to the Chief Accountant, who completes a data entry form for submission to the PSD for approval. Once appointment is approved, the form is forwarded to the Budget Commissioner to verify that funds are available to make the appointment. Once the three relevant authorities (the DAP, the head of the Establishment Division and the Budget Commissioner) have signed the data entry form, the forms are batched and data entry is carried out in either the Treasury or the PSD [40].

The presence of multiple actors sometimes poses a challenge on usage of HRIS. There are several cases where some actors have failed to implement their responsibilities on time causing delay in the decision making process. This indicates that there is poor cooperation between departments in sharing information, example a delay in removing employees from the payroll because heads of department had delayed to pass on information on deaths of employees to the system users soon after the deaths [25]. In another case, it is reported that secondary education department failed to inform system users on resignation of employees in the department on time [24]. It was reported that the system requires information on transferred employees, employees to be promoted, employees to be removed from the payroll, employees for data cleaning, and employees to be subjected to disciplinary actions. All this information must be received by system users from other departments so that such information is timely fed into the system. It is argued that to facilitate information flow that is used by system users in updating information in the system, there must be close cooperation between HR departments especially HRIS offices and other departments.

3.4. Unreliable Internet Connectivity

For HRIS to function effectively there must be reliableinternetto easily send and receive information between departments. It has been reported that there is a direct relationship between use of HRIS and network stability. Network is the engine of HRIS in the sense that availability and stability of network will facilitate effective use of the system and minimize time taken to serve customers. In Tanzania, since 2011, the government opted to use reliable and inter-operable ICT infrastructure achieved through deployment of the National ICT Broadband Backbone (NICTBB) and landing of two submarine cables in Dar es Salaam, namely Eastern Africa Submarine cable System (EASSy) and Southern and Eastern Africa Communication Network (SEACOM) [37]. EASSy has a capacity of 4.72Tbps, SEACOM has a capacity of 1.28 Tbps, and coverage of 7,560 Km long and NICTBB Optic Fibre Cable has a capacity of 4.8Tbps [37].

The Government of Tanzania (GoT) has networked almost all regional headquarters and all LGAs with NICTBB (National Information Technology Backborne) Optic Fibre Cable to replace low capacity and expensive satellite bandwidth for local and international communication (URT, 2016). NICTBB Optic Fibre Cable network is operated by Tanzania Telecommunication Company Limited (TTCL) [9, 37]. However, despite all these efforts, reliable network has remained a challenge that affects HRIS application in some MDAs. This is due to the fact that there are some MDAs which have no reliable internet connections for official use. These MDAs instead rely on employees' personal internet modems to get online and update HR information. Modem use

slows down system usage since users have to spend a lot of time waiting for network response or spend a lot of money to recharge the modem [21, 9].

3.5. Inadequate Top Management Support

Support from the organization's top managementis an important tenet for ensuring effective HRIS performance. Top management support may be ensured through provision of financial and psychological resources needed to produce reliable information for sound decision-making. Research evidence proves that top management commitment is an indispensable component in HRIS implementation and effectiveness [32, 33, 4, 6]. Top management support influences HRIS adoption pace in many organizations [2]. Similarly, inadequate top management commitment found to be one among the major barriers to successful HRIS use [13]. Underscoring the role of top management support for effective HRIS implementation, [39] emphasizes on the need for top management of organizations to provide adequate top management support to employee training programmesto eliminate skill gaps.

In Tanzania, top management support is one of the major challenges facing HRIS implementation. For example, there is inadequate interaction between people and technology because middle and senior managers use the systems differently. While the middle managers often use the system to monitor their supervisees' work, analyse, and create information; senior managers rarely use the systems. This is so because they rely heavily on their junior colleagues to supply them with paper based abstracts or summaries [14].

In addition, the insufficient number of computers and use of a single room to accommodate all system users was observed in some MDAs partly constitutes evidence on inadequate top management support purchasing adequate number of computers [25]. The inadequate top management support has often been reported to be one of the major causes of delays in decision making in the MDAs. For example some of them had many pending actionsin the system simply because some of top management members (approvers) failed to act timely [20, 25].

4. Concluding Thoughts and Policy Implications

The study has documented usage and challenges of HRIS implementation in Tanzania. The results indicate that HRIS is used in MDA, LGAs, and non-government entities such as privately owned companies for keeping personnel records such as updating and maintaining employee data, recruitment and selection, employee reports, deductions, direct deposit distributions, career planning, training and development. However, HRIS is not fully utilized and therefore, neither government nor non-government organization has ever achieved optimum outputs. Underutilization of the system is linked to failure of the top management to address challenges such as fraud, technical knowhow, and bureaucracy. Consequently, the existing system is either lacking or users are not able to use important modules like training and development, performance and industrial relations, ability of employees to access information from remote places when needed at short notice, and limited space in the system whereby employees can discuss about collective bargaining issues (negotiations between employers and group of employees aimed at reaching agreements that regulate working conditions) in the system. Therefore, the study suggests the need for a fundamental investment in HRIS in terms of manpower, facilities and trainings to HRIS users and IT specialists. It is also recommended that immediate measures are needed to address the challenge of bureaucracy by improving coordination between departments in order to speed up the flow of information to system users to avoid production of incomplete and inaccurate output and therefore minimize ghost workers and promote timely update of employees' data.

The use ofHRIS is guided by theHuman Capital Management Information System (HCMIS) user manual developed by the Presidents Office – Public Service Management(PO – PSM). The first version of the manual was developed in 2011 and the second version was developed in 2016. In addition to theguidelines, there are laws, policies, administrative circulars, and decrees. Such laws and policies include the Records and Archives Management Act (No. 3) of 2002, the Public Service Act (No. 8) of 2002, the Employment and Labour Relations Act (No.6) of 2004, the Labour Institutions Act (No.7) of 2004, the e-Government Act (No.10) of 2019, the National Information and Communications Technology Policy of 2016, Education and Training Policy of 2014, Vocational Education Policy of 1996, and Higher Education Policy of 1999. Limited usage of HRIS and associated challenges are somehow rooted in laws, policies, administrative circularsand decrees. Ironically, it may be argued that existing challenges facing usage of HRIS require institutional reform for the challenges to be phased out.

The existing top management support in HRIS together with limited financial resources and complex government structures in handling personnel records makes it very difficult to achieve HRIS effectiveness. This hampers the information quality in terms of complete, accurate and up to-date employees' information and data. Based on the findings presented in this paper, implementation of the HRIS in Tanzania may continue producing ghost workers, inefficient recruitment, and payroll fraud if serious measures are not taken [34, 19].

The inadequate budget allocations to the MDAs and LGAs either intendedly or unintendedly seems to weaken the institutions' ability to further HRM transformation though HRIS. Adequate and steady budget allocations will enhance the capacity of MDAs and LGAs to purchase HRIS facilities and upgrades, support training of system users, servicing and upgrading the system. The HR departments often rely on ICT specialists who also deal with other ICT challenges and have limited access to the system. It is high time now to think of employing HRIS specialists in every MDAs and LGAs.

In-house HRIS specialists will be responsible for servicing and upgrading the system [29]. This can be affected by first reviewing employment and information security policies and instituting policy, principles and requirements formanaging electronic records ingovernmental bodiesto avoid information leakage [28].

Limited ICT and HRIS can be addressed through review of the teaching curriculum in universities and colleges that run degree, diploma, and certificate programmes in HR and HRIS. The review of the curriculum should focus on introduction of a special courses related to management of HRIS to help students become aware ofsystem installations and functions. Regarding complex government structures in handling personnel records, it is the responsibility of the public service department in the President's Office, Public Service Management (PO – PSM) and treasury to resolve all issues related to the use of the system by MDAs and LGAs. This can be done by devising a consistent policy for handling and storing data entry forms to ensure that system users feed the required information into the system.

5. Contribution of the Paper to the HRIS Sub-field

The use of HRIS in the emerging economies is a relatively new development in HRM. In Tanzania, HRIS in the public sector has been in place for just less than a decade now. For that reason, there is not much research evidence that shows the progress made and challenges encountered in the modernization of HRM in the public sector through adoption of computerized and web based HRIS. This paper contributes insights on the practice, challenges and way forward to the advancement of HRIS use in the public sector organizations. Besides, the paper is an attempt to stimulate interest in conducting field research on HRIS as its empirical evidence is limited to the data obtained through desk review.

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