



# East African Journal of Information Technology

[eajit.eanso.org](http://eajit.eanso.org)

Volume 6, Issue 1, 2023

Print ISSN: 2707-5346 | Online ISSN: 2707-5354

Title DOI: <https://doi.org/10.37284/2707-5354>

**EANSO**

EAST AFRICAN  
NATURE &  
SCIENCE  
ORGANIZATION

Original Article

## Adoption of Human Resource Information Systems on Public Sectors in Tanzania

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Article DOI: <https://doi.org/10.37284/eajit.6.1.1191>

Date Published: **ABSTRACT**

28 April 2023

**Keywords:**

*Human Resources (HR),  
Information System (IS),  
Human Resource  
Information System (HRIS),  
Human Resource  
Management (HRM)*

Tanzania's public sectors have begun to use Information Systems (IS) in various HR functions over the last fifteen years due to the increased use of Information and Communication Technology (ICT). Organisations are increasingly implementing Human Resource Information Systems (HRIS) to ensure that their human resources are used efficiently (HR). The purpose of this study is to investigate the functions and practices of the adoption of human resource information systems in Tanzania's public sectors. The study areas were drawn from eight districts in the Mwanza region with the case study design accompanied by a mixed method technique. The population were 75 employees who were drawn from eight districts, yielding a sample size of 63 respondents. A non-probability sampling technique, known as purposive was employed to get relevant information from Human Resource Offices, ICT Officers, and Head of Departments from a sample size. The study employed survey questionnaires and interviews as methods for primary data collection and the self-administered questionnaires with closed-ended, 5-level Likert scale and semi-structured interview questions formats were used as tools for primary data collection. The study employed Statistics Package for Social Science (SPSS) to analyse descriptive and inferential Quantitative data and Atlas.ti to analyse the Qualitative data. The results of the study findings revealed that HRIS has been useful in eight districts in the Mwanza region in the management of human resources functions and practices and the study recommended that all public sectors in Tanzania should adopt HRIS to reduce the cost of HR operations.

### APA CITATION

Mathew, M. N., Rwela, E. G. & Mkwizu, N. Y. (2023). Adoption of Human Resource Information Systems on Public Sectors in Tanzania. *East African Journal of Information Technology*, 6(1), 66-76. <https://doi.org/10.37284/eajit.6.1.1191>

#### CHICAGO CITATION

Mathew, Mwendu Ngulugulu, Evelyne George Rwela & Noel Yoeza Mkwizu. 2023. "Adoption of Human Resource Information Systems on Public Sectors in Tanzania". *East African Journal of Information Technology* 6 (1), 66-76. <https://doi.org/10.37284/eajit.6.1.1191>.

#### HARVARD CITATION

Mathew, M. N., Rwela, E. G. & Mkwizu, N. Y. (2023) "Adoption of Human Resource Information Systems on Public Sectors in Tanzania", *East African Journal of Information Technology*, 6(1), pp. 66-76. doi: 10.37284/eajit.6.1.1191.

#### IEEE CITATION

M. N. Mathew, E. G. Rwela, & N. Y. Mkwizu, "Adoption of Human Resource Information Systems on Public Sectors in Tanzania", *EAJIT*, vol. 6, no. 1, pp. 66-76, Apr. 2023.

#### MLA CITATION

Mathew, Mwendu Ngulugulu, Evelyne George Rwela & Noel Yoeza Mkwizu. "Adoption of Human Resource Information Systems on Public Sectors in Tanzania". *East African Journal of Education Studies*, Vol. 6, no. 1, Apr. 2023, pp. 66-76, doi:10.37284/eajit.6.1.1191.

## INTRODUCTION

The Internet of Things (IoT) has ushered in a digital era for human resource management (HRM). This phenomenon motivates researchers and practitioners to focus on e-HRM, or the integration of IT and HRM systems (Myllymäki, 2023). e-HRM is a term that refers to any combination of human resource management and technology (Thite, 2020). The Human Resource Information System (HRIS) contributes to the modernisation and development of the HR function by utilising the most advanced technological equipment and systems (Alwis *et al.*, 2022). This is because the system's information reduces uncertainty, bridges the gap between forecasting and reality, and generates data that can be used to make decisions. Although some researchers expressed confidence in the adoption of e-HRM (Johnson *et al.*, 2022; Myllymäki, 2023; Ullah *et al.*, 2021), the empirical evidence suggests that the use of ICT in HRM does not always result in better services. However, for the efficient management of human resource functions, HRIS provides quick, effective, and professional handling of resources and information because it manages day-to-day HR processes, reduces paperwork, and keeps employee data up to date, allowing management to focus on more productive functions (Kapoor, 2022).

## Background and Research Problem

The earliest form of managing human resource information began in the prehistoric era as personnel management, in which tribal members were assigned to specific jobs, and by the early twentieth century, personnel functions primarily involved record-keeping information such as names, addresses, and employment history. However, because computer technology did not exist at the time to store this data, a paper record had to be used (Faruk, 2019). In today's world, there are more businesses and workers who have access to ICT facilities than those who do not, which can be explained by the various actions taken by different governments around the world. There are also several technical associations and working groups that have emphasised the need for support in their organisations for several decades, so organisations in today's world must carry out their administrative and commercial tasks using Information Technology (IT) systems (Kapoor, 2022)

In Tanzania, over the past decade, the government has been trying to change technologically by introducing IT as a key base functioning operator in many organisations. HRIS has been used in Tanzania since 2011 when the government of Tanzania implemented it in its ministries, departments, and agencies (MDAs) as well as local government authorities (LGAs) (Chinyuka, 2018). Regarding the usage of HRIS in Tanzanian public sectors, 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, training, and development.

Despite the relevance and promising contributions of HRIS to effective HRM and organisational performance in public sectors, several challenges associated with the usage of HRIS were identified to be the unsteady financial capacity to acquire, update and maintain the HRIS; inadequate ICT and HRIS expertise among the HRM workforce; inadequate coordination of government machinery in the performance of their statutory responsibilities; instability of internet connectivity and inadequate top management support (Matimbwa & Masue, 2019). The nationwide audits of public servant reports issued by the Minister of State in the President's Office responsible for Public Service Management and Good Governance in 2016 revealed several flaws. The persistence of difficulties raises concerns about the application of Human Resource Information Systems in Tanzania's public sector, which is why the study intends to investigate the functions and practices of the adoption of human resource information systems in Tanzania's public sector.

## **METHODOLOGY**

### **Research Design**

The study used a case study design because it is effective in terms of saving time while also studying an aspect thoroughly and accurately with minimal resources (Wario & Khalfan, 2015). The study also involved the use of a mixed method technique whereby Quantitative (QUAN) and Qualitative (QUAL) techniques were used. This design allows the researcher to confirm the study findings of one stage by another so that enhancing the validity as well as reliability of the study findings. Also, this design allows the study to be benefitted from the strengths of both QUAN and QUAL during data collection, processing and analysis; the weakness of

one approach will be offset by the strengths of the other approach (Creswell & Plano-Clark, 2011)

### **The Study Area**

The study was carried out in eight districts of the Mwanza region, including Ilemela, Nyamagana, Misungwi, Kwimba, Magu, Ukerewe, Sengerema, and Buchosa. The districts were chosen purposively because they were among the first in Tanzania to implement HRIS to manage daily human resource operations.

### **Population and Sample and Sampling Techniques**

The target population of the study involved 75 employees from eight districts in the Mwanza region. From this target population, the study used a total number of 63 respondents who were determined using Yamane (1967) sample size formula for determining sample size. A non-probability sampling technique, known as purposive was employed to get relevant information from 41 Human Resource Offices (HROs), 14 ICT Officers (ICTOs) and 8 Head of Departments (HoDs) due to their knowledge and skills related to HR-systems, as well as their involvement in HR-system utilisation

### **Data Collection Methods and Tools**

The study employed survey questionnaires and interviews as methods for primary data collection. The self-administered questionnaires which were designed based closed-ended and 5-level Likert scale formats were used as tools for primary data collection and were given to (41) HROs and fourteen (14) ICTOs to collect QUAN data. On the other hand, the semi-structured interview questions were also designed to collect primary data from the key informant HoDs. The HoDs were chosen as the interviewee because of their roles as custodians of HR-Systems establishment as well as facilitators of HR-Systems training. They also played an important role in directing HROs and ICTOs to

utilise the HR-Systems were used to collect QUAL data.

**Data Processing and Analysis**

The study employed a mixed method technique therefore, the QAUN data gathered through the self-administered questionnaires were analysed using inferential and descriptive analysis techniques via Statistical Products for Service Solutions (SPSS) and the QAUL data which were gathered through semi-structured interview questions were subjected to thematic analysis and the computer program which was employed during data analysis was Atlas.ti

**Response Rate**

Out of the 55 questionnaires distributed, 47 were collected, yielding an 85.5% response rate. Additionally, the researcher and his assistants collected the completed instruments from the respondents, they double-checked to ensure that all items in the returned questionnaire were answered and the omissions were identified; the concerned respondent was asked to fill in the gaps. However, 8(14.5%) of the questionnaires were either not

returned or had errors that prevented them from being analysed. Therefore, the researcher met the minimum requirement of a response rate of more than 60%, as suggested by Fincham (2008), and this response rate assists researchers in avoiding non-response bias in generalising research findings.

**RESEARCH FINDINGS**

**Quantitative Results and Discussion**

*Inferential Results and Discussion*

Regarding inferential statistics, the study employed Binary Logistic Regression (BLR) to examine the functions and practices of the adoption of HRIS in the selected eight districts in the Mwanza region with respect to Predictors variables (Independent Variables (IVs)) employed to predict the outcomes (Dependent Variable (DV)). The study employed the Hosmer and Lemeshow test to determine the Goodness of Fit of the Model. *Table 1* shows that the Significance Value (Sig.) is (0.117), which is greater than P-Value (0.05). Therefore, there is *NO difference between the Observed and Predicted models*. Thus, *the model fits the data well*.

**Table 1: Hosmer and Lemeshow Test**

Step	Chi-Square	df	Sig.
1	11.537	7	0.117

Furthermore, the study employed the Hosmer and Lemeshow Contingency to determine the model’s Goodness of Fit. The results showed that there is *NO difference between the Observed and Expected models* as seen in the following columns; HRIS

Adopted Observed, NOT adopted HRIS Expected and Adopted HRIS Expected in *Table 2* below. As a result, ALL values are Approximately Equal. Therefore, *the model fits the data well*.

**Table 2: Contingency Table for Hosmer and Lemeshow Test**

		HRIS Adopted	NOT Adopted HRIS	HRIS Adopted	Adopted HRIS	Total
		Observed	Expected	Observed	Expected	
Step 1	1	3	3.750	2	1.250	5
	2	3	3.086	2	1.914	5
	3	4	2.421	1	2.579	5
	4	3	2.399	3	3.601	6
	5	0	1.240	5	3.760	5
	6	0	.695	5	4.305	5
	7	0	.241	5	4.759	5
	8	1	.131	4	4.869	5
	9	0	.038	6	5.962	5

In addition, the study employed Nagelkerke’s R<sup>2</sup>, which covers the entire range from 0 to 1 value. The result in *Table 3* of the model summary shows that Nagelkerke’s R<sup>2</sup> is 0.432 which is in the range from

0 to 1 and is within the required range. As a result, the Predictor Variables (IVs) in the model can account for 43.2% of the change Criteria Variable.

**Table 3: Mode Summary**

Step	-2 Log Likelihood	Cox and Snell R <sup>2</sup>	Nagelkerke’s R <sup>2</sup>
1	40.213 <sup>a</sup>	0.304	0.432

*Estimation termination at iteration number 6 because parameter estimates changed by less than 0.001*

Furthermore, regarding the classification table in *Table 4* below, the overall Percentage Accuracy Rate (PAR) was very good, that is 76.6%. As a result, the model exhibits have Good Sensitivity, as

87.9% of respondents who chose “Adopted HRIS” over 50.0% of respondents who chose “NOT Adopted HRIS” were *correctly Predicted to choose Adopted HRIS* based on the model.

**Table 4: Classification Table**

	Observed	Predicted		Percentage Correct	
		HRIS Adoption			
		NOT Adopted HRIS	Adopted HRIS		
Step 1	HRIS Adoption	NOT Adopted HRIS	7	7	50.0
		Adopted HRIS	4	29	87.9
Overall Percentage				76.6	

*The cut value is 0.500*

Finally, Variables in the Equation (VE) show the relationship between Predictors-IVs and the Outcome-DV. That is to say, for the probability of an event occurring, the *Odds Ratio should be greater than one* (Odds Ratio: > 1) that means the Probability of falling into the Target Group (*Adopted HRIS*) is Greater than the probability of

falling into the Non-Target Group (*NOT Adopted HRIS*). The results in VE in *Table 5* below revealed that Odds Ratio: > 1 for respondents who Adopted HRIS as the result of “*System efficiency in terms of cost reduction*” is 6.473 times higher than those who did not adopt HRIS with a 95% CI range from 0.83 to 46.923. Another were 3.554 for *Technical*

Assistance for HRIS with a 95% CI range from 0.393 to 32.149; 2.005 was for Computer skills given to HRIS users with a 95% CI range from 0.451 to 8.914; 1.964 was for HR-operations performance improvement following HRIS implementation with a 95% CI range from 0.263 to 14.657; 1.294 was for HRIS few time spent on report generation with a 95% CI range from 0.221 to 7.580 and 1.018 was for HR-Operations benefits following HRIS adoption with a 95% CI range from 0.562 to 1.843.

**Table 5: Variables in the Equation**

	B	S.E	Wald	df.	Sig.	Exp(B)	95% CI for Exp(B)	
							Lower	Upper
Computer skills given to HRIS users	.696	.761	.836	1	.361	2.005	.451	8.914
HR-Operations benefits following HRIS adoption	.018	.303	.003	1	.954	1.018	.562	1.843
Methods used by HRO to access HRIS	-.653	.486	1.807	1	.179	.521	.201	1.348
HRIS times spent on report generation	.258	.902	.082	1	.775	1.294	.221	7.580
HR-operations performance improvement following HRIS implementation	.675	1.025	.433	1	.510	1.964	.263	14.657
System efficiency in terms of cost reduction	1.868	1.011	3.415	1	.065	6.473	.893	46.923
Technical Assistance for HRIS	1.268	1.124	1.274	1	.259	3.554	.393	32.149
Time spent on HRIS implementation	-.495	.933	.282	1	.595	.609	.098	3.791
Constant	-2.948	3.050	.934	1	.334	.052		

The adoption of HRIS in public sectors in Tanzania in the surveyed eight districts in the the Mwanza region, the study findings indicated that the efficiency of an implemented system in terms of cost reduction was the first reason determined by respondents. Other reasons were; technical assistance provided by LGAs on implemented HRIS, Computer Knowledge/skills given to users of HRIS to districts of Mwanza region, HR-operations performance improvement of HRIS, few time spent

on the generation of reports concerning HR and HR-Operations benefits following the adoption of HRIS

**Descriptive Results and Discussion**

On the other hand, the study employed a five-point Likert scale ranging from 1.00 to 5.00 to assess the adoption of HRIS on the functions and practices of eight districts in the Mwanza region by using the following mean score interpretation as depicted in Table 6 below:

**Table 6: Mean Score Interpretation**

S/N	Description	Likert Scale	Mean Range	Interpretation
1.	Strongly Disagree	1	1.00-1.89	Very Low
2.	Disagree	2	1.90-2.69	Low
3.	Neutral	3	2.70-3.49	Moderate
4.	Agree	4	3.50-4.29	High
5.	Strongly Agree	5	4.30-5.00	Very High

The study used a 5-Point Likert scale with Mean Range and Interpretation as indicated in *Table 6* above.

Moreover, the descriptive measures of central dispersion (mean and standard deviation) were used for ease of interpretation and generalisation of findings.

**Table 7: Adoption of HRIS on HR-Departments in Mwanza region's Districts**

Statements on HRIS's Adoption	N	Mean	STD	Interpretation
HRIS assists in providing information about employment and retention strategies.	55	3.81	1.096	HIGH
HR personnel are at ease with new HRIS roles.	55	3.66	1.273	HIGH
HRIS assists in the effective and efficient use of HR functions, which improves the district's financial and operational performance.	55	3.60	1.116	HIGH
HRIS aids in strategic decision-making and the day-to-day operations of HR functions.	55	3.60	0.970	HIGH
HRIS reduces administrative workload by reducing boring, repetitive, and routine tasks.	55	3.49	1.349	HIGH
HRIS aids in the creation of more detailed HRM reports.	55	3.49	1.140	HIGH
The presence of a formal HR-Department result increases the likelihood of HRIS adoption in the districts.	55	3.47	0.997	HIGH
HR expertise is critical in the district's adoption of HRIS.	55	3.38	1.012	MODERATE
The district's digital HR roles are the result of HRIS adoption.	55	3.36	1.258	MODERATE

Regarding the Adoption of HRIS on the functions and practices on HR-departments in Mwanza region's districts, almost all eight districts in Mwanza region had already implemented and used the HRIS in their HR-department offices. To demonstrate this, the mean score from *Table 7* indicated that, the respondents rated HIGH the statements "*HRIS assists in providing information about employment and retention strategies*" with Mean of 3.81 and Standard Deviation of 1.096. Based on the study findings, the respondents AGREED that, when districts employees are aware of their employment information and retention strategies, the district's performance improves, which is made possible by the use of HRIS. This findings correspondingly to that of Jayabalan *et al.* (2020) who indicated that HRIS is a powerful and effective technology tool for assisting HR professionals in performing complex HR tasks in the most intelligent and efficient manner while also achieving Strategic Human Resources Management (SHRM).

Furthermore, respondents rated HIGH the statement "*HR personnel are at ease with new HRIS roles*" with mean score of 3.66 and standard deviation of 1.273. Based on the study findings, the respondents AGREED that staffs are comfortable with the new roles they have been assigned following the implementation of HRIS in districts. This findings correspond with Hosain *et al.* (2020) who argued that in HRIS, it is the users or managers who decide which information is important and whether to use such information efficiently or not, and this has a significant impact on the organisations' operational efficiency.

Additionally, respondents rated HIGH the statement "*HRIS assists in the effective and efficient use of HR functions, which improves the district's financial and operational performance*" and "*HRIS aids in strategic decision-making and the day-to-day operations of HR functions*" with respectively Standard Deviation of 1.116 and 0.970. Respondents they AGREED that, in order for

distinct to perform well in HR activities, strategic decision-making operations, program and policy assessment or daily operational matters should be a priority on HRIS. The findings resembles with Savalam (2018) who explained that the implementation of HRIS resulted in faster data retrieval and processing, as well as the availability of accurate and timely human resource data for strategic decision-making in day-to-day operations and Verma (2021) who observed that the more rapid decision-making is achieved in development, planning and management of HR because HRIS makes much easier storing, updating, classifying and analysing of data

Moreover, respondents rated HIGH the statement regarding “*HRIS reduces administrative workload by reducing boring, repetitive and routine tasks*” with the overall mean score of 3.49 and standard deviation of 1.349. This finding AGREED that the use of HRIS in the surveyed districts in the Mwanza region reduced administrative workload, which resulted in better day-to-day operation performance. By the same token with Schiemann and Seibert (2017) who stated that:

*“Organisations that view performance management as an interactive process with outcomes such as promotion, new opportunities for learning and development, and other forms of recognition recognise the importance of integrating performance and HRIS to measure total compensation and rewards”.*

Furthermore, respondents rated HIGH the statement regarding “*HRIS aids in the creation of more detailed HRM reports*” with the overall mean score of 3.49 and standard deviation of 1.140. Respondents they AGREED that HRIS assists HRs in producing comprehensive management reports, ensuring high organisational performance. Similarly, the findings are consistent with Hosain *et al.* (2020), who argued that HRIS generates comprehensive reports containing information about HRM from all angles.

In another case, respondents in this study rated HIGH the statement concerning “*the presence of a formal HR-Department result increases the likelihood of HRIS adoption in the districts*” with the overall mean score of 3.47 and standard deviation of 0.997 They AGREED that the HR department is critical in providing the IT department with the HR information required for HRIS adoption. This implies that the HR-Department is a critical component of HRIS adoption because it provides HR information that is critical in HRIS adoption. In the same way, Niisha and Mona (2012) conducted a study and concluded that the presence of a formal HR-Department appears to increase the likelihood of a firm adopting HRIS because they act as internal promoters.

Apart from this, respondents in table 7 above they rated MODERATE the statement about “*HR expertise is critical in the districts innovation and adoption of HRIS*” with the overall mean score of 3.38 and standard deviation of 1.012. They AGREED that the expertise is a critical factor in the innovation and adoption of HRIS because HRIS provide HR information concerning personnel skills that are required for adoption of HRIS and day-to-day work within the districts. Similarly, the findings is consistent with Esen and Erdoğmuş (2014) who contended that user training could provide HR expertise, and that training increased competency, which could affect the speed and breadth of system adoption.

Finally, the statement regarding “*the district’s digital HR-roles as result of HRIS adoption*” the respondents rated it as MODERATE with overall mean score of 3.36 and standard deviation of 1.258. They AGREED that there is a strong relationship between HR-roles and HRIS adoption since all HR-roles can be conducted electronically. Correspondingly, the findings concur with Murat and Nihat (2014) who contended that HR’s recognition as a change agent and strategic partner is likely to influence HRIS adoption and implementation on applications and practices.



## Qualitative Results and Discussion

### *Adoption of Human Resource Information Systems on Public Sectors in Tanzania*

In this section, the interview was conducted to HoD in order to provide views on adoption of Human Resource Information Systems on human resource functions eight districts in Mwanza region. Their viewpoint is summarised below;

The first interviewee responded to the above question by saying:

*“The transition of manual HR operations into digital format is facilitated by HRIS, and my work-related information is safely stored in the system, as opposed to previously where files were misplaced or completely lost, and the system made it simple to obtain and update my information as needed” (RP<sub>1</sub>).*

The findings is resemble with that of Özdemir et al. (2018) who discovered that one of the major benefits offered by HRIS is its contribution in information creation, update, storage, sharing and decision-marking to organisation.

Another interviewee responded that:

*“The implementation of HRIS in the public sector, particularly in districts, aids in the resolution of numerous inexpensive errors such as information loss and unnecessary delays in some expected planned activities. This is an indication that HRIS motivates employees to work harder and thus become more productive” (RP<sub>2</sub>).*

Correspondingly, the findings concur with Jayabalan et al. (2020) who indicated that HRIS is a powerful and effective technology tool for assisting HR professionals in performing complex HR tasks in the most intelligent and efficient manner while also achieving Strategic Human Resources Management (SHRM).

The last interviewee responded that:

*I am the Head of Department (HoD) in Nyamagana District; HRIS in my department has been a great help, especially in our day-to-day operations; it allows us to provide timely feedback on all human resource (HR) issues that our employees require.*

This finding agrees with Sergio *et al.* (2010) who argued that HRIS assisted in making more rapid, accurate, and effective feedbacks and decisions, which in turn helped to improve organisational performance.

## CONCLUSION

Public sector in Tanzania should consider the HRIS as a tool used in HR-operations for enhancing productivity such as improving data accuracy, supporting high processing speed, having accuracy information generation, supporting easier storage, updating, and analysis of data and ultimately saving the costs of the organisations, but organisation should not consider it as an expense and should take it as the amount spent was invested since The cost of installing infrastructure for HRIS implementation was also significant in monetary terms. It concluded that the assistance of HRIS in providing information about employment and retention strategies, easy of HR personnel with new HRIS roles, assistance of HRIS in the effective and efficient use of HR functions, which improves the district’s financial and operational performance and finally the system efficiency in terms of cost reduction were positively related to adoption of HRIS.

## Recommendations

It is recommended that Tanzanian public sectors should adopt a new HRIS, which will help to reduce the cost of HR operations in the department as well as improve the efficiency of the human resources section. It is strongly advised that the public sectors refrain from implementing HRIS. They must implement the most recent systems after gaining HRIS expertise. The study’s findings support the usefulness of HRIS. It will assist other public

sectors in comprehending the benefits of putting such systems in place.

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