

Effectiveness of Human Resources Information System in the Tanzanian Local Government Authorities: Do Technological, User and Organisational Attributes matter?

¹*Hadija Matimbwa**, ²*Venance Shillingi* & ³*Orest Sebastian Masue*

¹Department of Management Science and Procurement, Faculty of Business and Management Science, Ruaha Catholic University, Iringa, Tanzania

² & ³ Department of Public Service and Human Resource Management, School of Public Administration and Management, Mzumbe University, Morogoro, Tanzania.

*Corresponding author: hadija.matimbwa@gmail.com

Ikisiri

Tanzania iliamua kuanzisha mfumo wa taarifa za rasilimali watu katika wizara zake, idara zake, na mawakala wake ikidhamiria kuondoa utunzaji wa kumbukumbu wa kizamani wa kurekodi taarifa kwa mkono kwa kuwa mfumo huo (wa zamani) ulikuwa na changamoto za taarifa kutokamilika, kukosekana kwa usahihi wa taarifa na hata kukosekana kwa taarifa zilizohuishwa za wafanyakazi. Licha ya kutekelezwa kwa mfumo huu wa taarifa za rasilimali watu, bado changamoto hizo zinaendelea kujitokeza. Usuli huu ndio uliotoa msukumo wa kufanyika kwa utafiti huu huku lengo likiwa kuchunguza mchango na nafasi ya mtumiaji wa mfumo, teknolojia, na taasisi katika utendaji kazi mzuri wa mfumo wa taarifa za rasilimali watu. Eneo la utafiti lilikusishwa mikoa sita ya Tanzania Bara: Mwanza, Arusha, Dodoma, Morogoro, Iringa, na Kagera. Data za utafiti huu zilikusanywa kwa njia ya hojaji na usaili. Data za kitakwimu zilichanganuliwa kwa kutumia modeli ya kuhusianisha vigeu “regression model” wakati uchanganuzi maudhui “content analysis” ulitumika kwa upande wa data za kitaamuli. Matokeo ya utafiti yalibaini kwamba ujuzi wa mfumo wa masuala ya TEHAMA wa mtumiaji wa mfumo na kujituma kwa wafanyakazi ina nafasi katika utendaji kazi mzuri wa mfumo ya taarifa za rasilimali watu; hii ilijidhihirisha katika matumizi mazuri ya muda, kukamilika vizuri kwa kazi na utendaji kazi bora. Pia, suala la teknolojia lilionekana kuwa na mchango katika utendaji kazi mzuri wa mfumo ya taarifa za rasilimali watu katika misingi ya mfumo hiyo kutumika kiusahihi, hali ya mfumo hiyo kushabihiana vyema na mfumo mingine inayotegemeana au kuingiliana nayo, hali ya kumudu na kudhibiti suala ugumu wa kifundi wa mfumo, na hali ya mfumo huo kuwa na ubora unaotakiwa. Aidha, mchango wa taasisi nao ulidhihirika kuwepo katika kuchangia utendaji kazi mzuri wa mfumo ya taarifa za rasilimali watu hususani suala la taasisi kuwa na miundombinu mizuri ya masuala ya

TEHAMA na suala la ushirikiano mzuri wa mwajiri kwa wafanyakazi (waajiririwa). Utafiti huu unatoa mapendekezo kadhaa ili kuimarisha utendaji kazi mzuri wa mifumo ya taarifa za rasilimali watu: kuwepo kwa mafunzo ya mara kwa mara kuhusu mifumo ya taarifa za rasilimali watu, kuwajengea wafanyakazi ari na hali ya kujituma, kuhamasisha suala la watu kushirikishana uzoefu mbalimbali, uboreshaji wa masuala ya TEHAMA, kushirikiana vizuri na wafanyakazi/waajiririwa, kuajiri wataalamu wa masuala ya TEHAMA kwa sababau wao ndiyo nguzo ya mifumo ya taarifa za rasilimali watu.

Abstract

Tanzania introduced Human Resources Information System (HRIS) in her Ministries, Departments and Agencies (MDAs) in an intentional move to replace the manual record system due to challenges of incomplete, inaccurate and out dated employees' information, despite the implementation of HRIS same challenges still prevail. It is with this understanding; the current study examined the influence of user, technological and organisational characteristics on HRIS effectiveness in six regions of Tanzania Mainland namely; Mwanza, Arusha, Dodoma, Morogoro, Iringa, and Kagera. Data were collected through questionnaire and interview methods. The ordered regression model was used to analyse quantitative data whereas content analysis was used to analyse qualitative data. Information and Technology (IT) skills and employee commitment were revealed as user characteristics with statistically significant influence on HRIS effectiveness (in terms of timeliness, completeness and accuracy). Furthermore, technological characteristics that had significant influence on HRIS effectiveness were usefulness, compatibility, complexity and reliability. Organisational characteristics with significant influence on HRIS effectiveness were IT infrastructure and the support that employers rendered to their employees. Study findings imply, frequent training on HRIS use, nurturing staff commitment; encouraging experience-sharing, improvement of technological features, provision of sufficient support to employees, and recruiting sufficient and qualified ICT personnel are central to the effectiveness of HRIS.

Keywords: *User Characteristics, Organisation Characteristics, Technological Characteristics, Human Resources Information System and Effectiveness*

1. INTRODUCTION

The rapid revolution in information and communication technology has changed the face of the contemporary workplace organisations strive to launch more effective systems. Majority of organisations currently acknowledge the important role of information storage and retrieval. Human resources professionals now have greater capacity not only to accrue information, but also to store and retrieve it in a timely and effective manner using the Human Resources Information System (HRIS), resulting to improved organisational efficiency and effective managerial functions (Hien *et al.*, 2014).

The HRIS is computerized software database that allows for entry, storage and manipulation of employee data. The system also allows for global visualisation and access of important employees' information (Daniel, 2015). This system is basically used to acquire, store, analyse, retrieve and disseminate employees' information in an organisation. It facilitates data entry, tracking and management of all human resource operations in an organisation (Akoyo and Muathe, 2017).

HRIS was first launched in developed countries in the 1950s to 1960s; the system's usage would later spread all over the world, including developing countries through various technological transfer strategies. Tanzania like many other countries adopted the HRIS and the system was implemented in Local Government Authorities (LGAs) and public institutions in 2011. The major target was to diminish the manual or traditional workload of administrative activities and to enable the maintenance of employees' information using application software (Daniel, 2015). Five years following the launch of HRIS however, a 2016 government report revealed that the country's public sector harboured a total of 19,700 ghost workers, while 9,932 civil servants had presented forged certificates. Further revelations were that 1,500 academic credentials were used by multiple employees while 11,500 civil servants had incomplete records (Akwei, 2017; Iaccino, 2017). The revelation was no doubt shocking and raised a critical question as to what determines the effectiveness of the human resources information system?

Such a critical question emanates from the fact that the effective operation of HRIS (i.e. to produce complete, accurate and timely outputs), greatly relies on three HRIS determinants. The first one is user characteristics; which entail user skills, knowledge, and experience as indicators (Aziz *et al.*, 2012; Akoyo and Muathe, 2017). The second is organisational characteristics with number of staff with IT skills and knowledge, top management support,

and IT infrastructures as indicators (Al-Mobaideen *et al.*, 2013). The third is technological characteristics with system compatibility, complexity, reliability, and usefulness as indicators (Ahmer, 2013; Hien *et al.*, 2014). The influence of these determinants on HRIS effectiveness in Tanzanian LGAs however remains unknown; a research gap that the current study attempts to address.

2. THEORETICAL FRAMEWORK

The Unified Theory of Acceptance and Use of Technology (UTAUT) and the Integrated Management Competence Models (IMCM) were used to explain the effectiveness of HRIS in LGAs. The relevance of UTAUT theory to the study is based on the fact that it enshrines the proper process of adopting and implementing technology – the HRIS in LGAs for completeness, accuracy and updated HR information. UTAUT provided a firm basis for singling out variables for measuring the influence of organisational characteristics and technological characteristics on HRIS effectiveness in Tanzania's LGAs. In the current study, performance expectancy indicators included; usefulness, and outcome expectation, while ease of use/complexity was the indicator for effort expectancy. Furthermore, facilitating conditions included IT infrastructure, management support, compatibility and reliability of information technology. However, a major weakness in UTAUT is that the model does not provide user characteristics variables which influence HRIS effectiveness in LGAs thus, it was necessary to adopt the Integrated Management Competence Model (IMCM).

The IMCM is an explanatory tool that identifies the knowledge, skills, abilities, traits, and behaviour required for the effective performance of tasks embedded in a particular job (Lucia and Lepsinger, 1999). The IMCM is relevant to the current study as it allows researchers to formulate user' characteristics variables (skills, knowledge, experience, commitment and education, qualification) which influence the adoption and proper implementation of HRIS in LGAs. The objective of HRIS was to improve the maintenance of employees' information for decision-making purposes although this is yet to be attained. Accordingly, IMCM applies to the current study as the model can be employed in identifying the influence of user' characteristics on HRIS effectiveness in the provision of complete, accurate and up-to-date employee.

3. METHODOLOGY

The current study was conducted in six regions of Tanzania Mainland namely; Mwanza, Arusha, Dodoma, Morogoro, Iringa, and Kagera. Sampled regions represent the prevalence of ghost workers in varying degrees as reported in Civil Report of 2016 Servants' Auditing (URT, 2016). Fieldwork for this study was conducted in two sequential distinct phases involving quantitative and qualitative data collection, analysis and interpretation. The first phase commenced with quantitative data collection and analysis followed by a qualitative data collection and analysis phase. Quantitative data were collected from HRIS users located in LGAs. Quantitative data were collected through a structured questionnaire supplied to and filled by Human Resources Officers (HROs). HROs are well informed and possess valuable knowledge on the application and effectiveness of the HRIS in LGAs as they use HRIS on a daily basis. Thus, justifying their participation and as such, the sampling frame for the study comprised of all HROs in selected regions amounting to 249 HROs. The suitable sample size was 213 HROs and was computed as per Robert and Morgan's (1970) recommended formula. The second phase of data collection was done to Director of Human Capital Division and Human Resources Officers located in the Ministry. The reason behind the second phase is to clarify emerging issues raised by HRIS users in the LGAs. Each phase of data collection took at least three months.

All district councils i.e. Local Government Authorities (LGAs) in selected regions participated in the study. The proportional sampling technique was used to obtain the adequate number of HROs per district council who participated in the questionnaire survey. Responses to questions posed to respondents were recorded against specific questions on the questionnaires. The researcher employed two research assistants to facilitate the data collection process, and the recruitment criteria was based on their familiarity with ICT and HR practices. This was intended to not only simplify the training process but also to ensure accurate data collection. The training centred on HR practices, enumerators' roles, questionnaire administration, data recording, data collection methods, and adherence to research codes of conduct and ethics.

Qualitative data were collected through in-depth interviews with key informants that were selected on the basis of their HRIS knowledge and included HROs (approvers) and Directors of Human Capital Division. A total of six (6) HROs "approvers" and two (2) Directors of

Human Capital Division were approached and interviewed. To supplement primary data, secondary data were collected by reviewing and analysing relevant documents such as ICT policies, HRIS reports accessed from government authorities on; recruitment and promotion procedures, ghost workers, and counterfeit certificate reports.

The Ordinal Logistic Regression Model was used to analyse quantitative data. The modelling procedure included checking the multicollinearity of user, organisational and technological characteristics. Multicollinearity exists whenever an independent variable is highly correlated with one or more independent variables; in this case the cut point was $r = 0.9$ and above as recommended by Pallant, (2005). Qualitative data were subjected to content analysis, a process which helps to reduce the volume of recorded information or communication to a set of categories that represent some characteristics of a study. Content analysis was done to establish links in information and to explain the situation in the field regarding HRIS effectiveness in improving employees' information in selected LGAs.

4. RESULTS

Findings on the influence of user characteristics on HRIS Effectiveness show that, IT skills ($\beta = 0.452$, $p = 0.002$) and employee commitment ($\beta = 0.889$, $p < 0.001$) had a statistically significant influence on HRIS effectiveness in terms of information timeliness. In reference to completeness, only employee commitment ($\beta = 0.464$, $p = 0.031$) and experience ($\beta = 0.46$, $p = 0.006$) were statistically significant. For accuracy, only one user characteristics: IT skills ($\beta = .329$, $p = 0.023$) was statistically significant as depicted on Figure 1.

These findings suggest that, ICT skills play a crucial role in the HRIS usage, thus HROs with ICT skills are more competent in using the system than their unskilled counterparts. The observation is consistent with several scholars who studied HRIS. For instance, Kassam (2013) recommended that the Tanzania government, Presidents Office Public Service Management (POPSM) and the Management of Shinyanga Municipal Council should encourage the spread of ICT and increase its availability, accessibility and use in performing HR functions. Elsewhere, it was revealed that work experience increases the effectiveness of HRIS use, as those with sufficient experience may perform better than their inexperienced counterparts. Brennan *et al.* (2002) similarly found that work experience has a positive effect on employment outcomes for graduates in the UK.

Regarding commitment, findings suggest that committed employees are more effective in comparison to uncommitted ones as supported by Iskandar (2015) and Matimbwa *et al.* (2021) who writes that Management commitment and user competence affects the quality of accounting information system. The quality of accounting information systems can be improved through management commitment and user competence.

Regarding technological characteristics, the most influential variables in descending order for every element of effectiveness are as follows: for usefulness -completeness ($\beta = 1.158$, <0.001), and compatibility ($\beta = 0.458$, $p = 0.009$); for timeliness - complexity ($\beta = 0.791$, <0.001), compatibility ($\beta = 0.571$, $p = 0.002$), and reliability ($\beta = 0.451$, $p = 0.017$); and for accuracy - complexity ($\beta = 0.6$, $p = 0.007$), reliability ($\beta = 0.523$, $p = 0.008$), and usefulness ($\beta = 0.803$, $p = 0.001$). Findings therefore depict that technological characteristics have the strongest influence on HRIS effectiveness, as similarly revealed by several other scholars (e.g. (Ahmer, 2013; Hien *et al.*, 2014; Qteishat, 2014; and Al-Mobaideen *et al.*, 2013).

Regarding technological characteristics, one district HRO from Arumeru shared that:

“Some templates are yet to be activated for use by the department, important background employee information like place of domicile cannot be added to the system to datethe system is also occasionally malfunctioned and might not respond or reveal whether data entered is accepted (saved) or rejected, technical errors are however inevitable. This is an obstacle to the efficient utilisation of the system” (Arumeru interview, June, 2019).

Another HRO from Chemba shared that:

“The inappropriate use of the system can be detrimental, considering that HROs are the user departments of the system and have full access to employment information within the council, if HROs are not well vetted and committed to work, they can simply misuse their power and cause significant damage to employees” (Chemba interview, July, 2019).

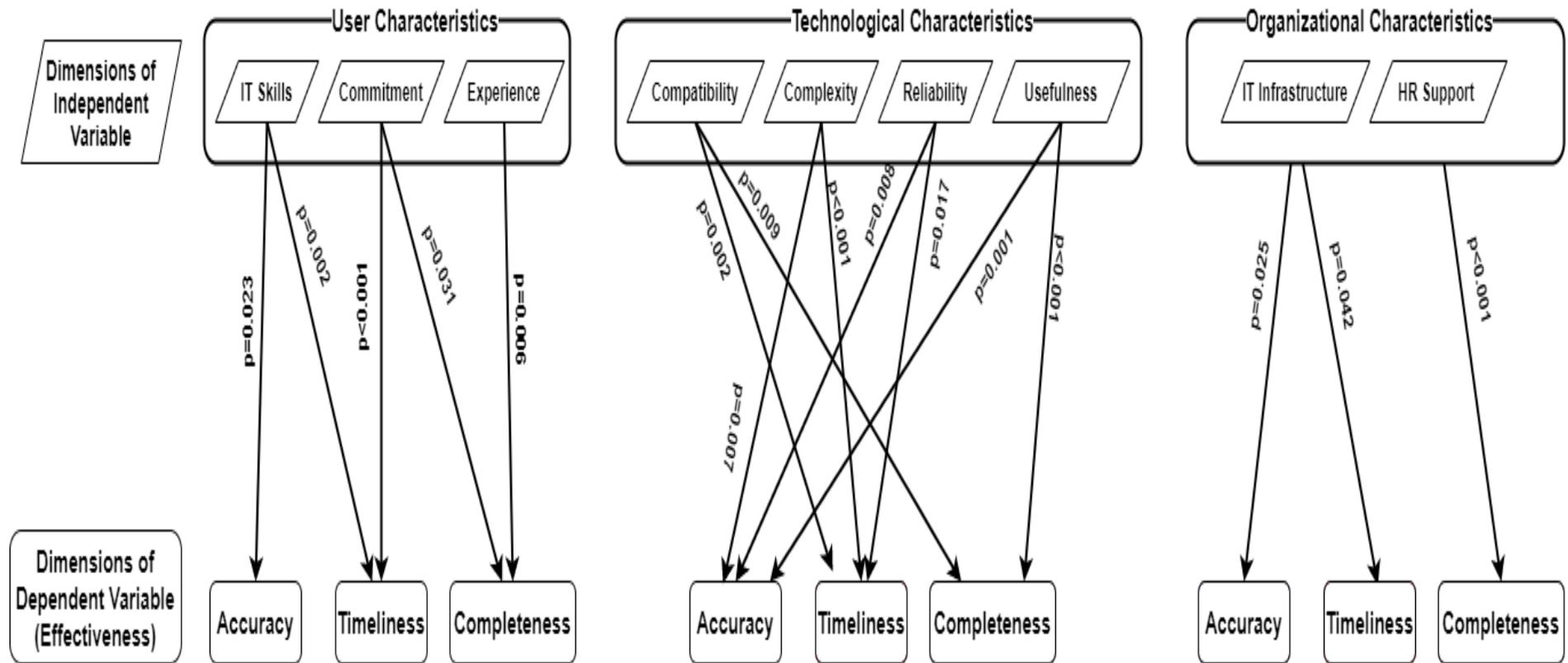


Figure 1: Influence of user, technology and organisation characteristics on HRIS Effectiveness

Recognising the influence of technological characteristics, the Director of Human Capital division said that the government plans to purchase a new system that meets current needs and as quoted:

“We expect to adopt a new system next year and the reason is twofold firstly, we purchased a system that was not suitable for us so the government through its system specialists is devising means of implementing a system that best suits us. Since we adopted a new system that captured a lot of unnecessary information, this time we are well prepared to store relevant information on especially employees whose information is insufficient compared to new employees who found the system in place.... secondly, the current system is outdated since it lacks modern modules. The new system will certainly meet government requirements.” (Utumishi interview, September, 2019).

Lastly on organisational characteristics, the study found out of the 12 independent variables for all three models (four independent variables for each dependent variable), only three had statistically significant influence on HRIS effectiveness in LGAs. These include IT infrastructure (in timeliness and accuracy), managerial support rendered to employees for HRIS usage and to HR (completeness). The findings imply that organisational characteristics influence the effectiveness of HRIS usage in terms of timeliness, completeness and accuracy, which are statistically significant.

One interviewee provided justification for the government’s intention to adopt a new data storage system and as quoted: “The new system was purchased and customized although some elements did not meet government needs. We, therefore, need a system that is ideal and user-friendly.”

The above findings are supported by Fung and Visscher (2001) who emphasized that successful computer operation requires Stable Power Supply (UPS) and other equipment to shield the computer hardware from electricity related damages. Reddic (2009) also recommends the use of an electricity grid as power supply and also suggests other energy sources. Although still fairly new in Tanzania, many vendors and users have installed solar systems to run their facilities.

One HRO interviewee in Ngorongoro shared that:

“Unstable power supply is a major detriment..... poor internet connectivity is another challenge because the capacity of the internet bundle we use is much smaller than

required.... the first and last HRIS training was in 2012 and yet new functions are frequently introduced to the system. Had it not been for the personal efforts we have made to learn from neighbouring councils, we would have been unable to effectively operate the system. All this is attributed to the limited support rendered by top management.” (Ngorongoro interview, June, 2019).

Similarly, in an earlier study, Matimbwa, *et al.* (2020) found that effective HRIS operation does not only require capable personnel who are skilled, committed, and motivated enough to effectively manage employees’ records but also adequate IT infrastructures.

1. CONCLUSION AND IMPLICATIONS

Based on the evidence from the findings; technological, user and organisational characteristics have influence on HRIS effectiveness. However, on ranking, technological characteristics come first in terms of strength in influencing HRIS effectiveness followed by user characteristics and finally organisational factors. Of importance to note in this study is that organisational factors particularly adequacy of managerial support, staff training for skill proficiency, recruitment of adequate and qualified human resources officers and IT experts to shoulder the responsibility of handling the HRIS matters were identified as one of the major challenges facing HRIS effectiveness in the LGAs.

These findings essentially imply the following: First, and more generally; it is important that organisations in the public sector particularly the LGAs pay attention to the three sets of factors (technological, user and organisational) for effectiveness of HRIS. Spending resources on the strengthening of any of these factors needs to be considered as an investment rather than a cost. Second, which is more specific, HRIS effectiveness is dependent upon the workforce quality in terms of technical capacity, competencies, commitment and ethical conduct. Therefore, paying adequate attention to the HRIS workforce to enhance the desired attributes for HRIS effectiveness should be a permanent concern of the top management.

REFERENCES

- Ahmer, Z. (2013). Adoption of Human Resource Information Systems Innovation in Pakistani organisations. *Journal of Quality and Technology Management*, Volume IX, Issue II, Pp 25–50
- Akoyo, S.I. and Muathe S.M.A. (2017). Towards a Theoretical Model for Human Resource Management Information Systems, Government Policy and Organizational Performance:

- A Research Agenda. *IOSR Journal of Business and Management (IOSR-JBM)*. Volume 19, Issue 1. pp 43-53
- Akwei, I. (2017). Thousands of Tanzanian Civil Servants Sacked Over Fake Certificates. Africanews, April 28th, 2017. Retrieved on May 11th 2017 from <http://www.africanews.com>
- Al-Mobaideen, H., Allahawiah, S. and Basio, E. (2013). Factors Influencing the Successful Adoption of Human Resource Information System: The Content of Aqaba Special Economic Zone Authority. *Intelligent Information Management*, Volume 5, pp 1-9.
- Aziz N.M, Salleh H, and Mustafa N.K. (2012), People Critical Success Factors (CSFs) in Information Technology/Information System (IT/IS) Implementation. *Journal of Design and Built*, 5(1), 1-17
- Daniel J.P. (2015). *The Influence of Human Resource Information System on Decision Making in LGAs: The Case of Lawson Version 9 in Kiteto District, Tanzania*. A Dissertation Submitted in Partial/Fulfilment of the Requirements for Award of the Degree of Master of Science in Human Resource Management (MSc HRM) of Mzumbe University
- Fung, A. C., and Visscher, A. J., (2001). Imperatives for successful implementation of school information systems. In Visscher, A. J., Wild, P., and Fung, A. C. (Eds.), *Information Technology in Educational Management: Synthesis of Experience, Research and Future Perspectives on Computer-Assisted School Information Systems*. Dordrecht: Kluwer
- Hien, L.T., Nguyen, T.L. and Cuong, P.H. (2014). Key Determinants of Information System Effectiveness – An Empirical Case in Lac Hong University. *International Journal of Information Technology and Business Management*, Vol.32 No.1
- Iaccino, L. (2017). Tanzania Fires 10 000 Civil Servants Over Fake Qualifications. Newsweek, April 28th, 2017. Retrieved on May 11th 2017 from <http://www.newsweek.com>
- Iskandar, D (2015). Analysis of Factors Affecting the Success of The Application of Accounting Information System, *International Journal of Scientific & Technology Research* Volume 4, Issue 02, 155-162
- Kassam, A. (2013). Challenges of human capital management information system (Lawson Version, 9) in Local Government Authorities: The case of Shinyanga Municipal Council. A Dissertation for Award of MSc Degree at Mzumbe University, Morogoro, Tanzania. 100pp.
- Matimbwa, H. and Masue O.S.(2020). The Influence of Organisation Factors on Human Resource Information System Effectiveness in the Tanzanian Local Government

Authorities. *ICTACT Journal on Management Studies August 2020, Volume 06 issue 03*

Matimbwa H, Masue O and Shillingi (2021). User Characteristics and Effectiveness of Human Resources Information System (HRIS) in the Tanzanian Local Government Authorities. *Journal of Cooperative and Business Studies Vol 6 issue 1*

Matimbwa, H, Masue, O.S., and Shillingi, V (2020). Technological Features and Effectiveness of Human Resources Information System in Tanzania Local Government Authorities. *American Journal of Operations Management and Information Systems, Vol 5, No. 3, pp 29-40*

Pallant, J. (2005). *SPSS Survival Manual: A step by step guide to data analysis using SPSS for Windows (Version 12)*. Crow's Nest, NSW: Allen & Unwin.

Qteishat, M.K. (2014). The Impact of Information System Success Factors, Human Resource Staff Satisfaction, and E-Human Resource Use on Organizational Benefit. *International Journal of Computer Applications, Volume 105 – No. 2*.

Reddic C.G. (2009). *Human Resources Information Systems in Texas City Governments: Scope and Perception of its effectiveness*. *Public Personnel Management* .38(4), 19-34. Full-text(online). Academic Search Premier, EBSCO host [Accessed on 1st February 2020)