

THE INFLUENCE OF ORGANIZATIONAL FACTORS ON HUMAN RESOURCE INFORMATION SYSTEM EFFECTIVENESS IN THE TANZANIAN LOCAL GOVERNMENT AUTHORITIES

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Abstract

Advancement in information and communication technology has greatly changed the way human resources departments function. The introduction of human resources information system has improved the quality of information to the extent that information has become more complete, accuracy and up-to-date. Organization factors, specifically establishment of information technology infrastructure and employing IT experts highly impact the effectiveness of human resources information system. The study examined the influence of organization factors on the effectiveness of human resources in Tanzania Local Government Authorities (LGAs). The study covered 37 LGAs in six regions; Mwanza, Arusha, Dodoma, Morogoro, Iringa, and Kagera. Primary data were collected through administration of 201 questionnaires to Human Resource Officers (HROs) and interviews with 8 key informants. Secondary data were mainly collected through documentary review. Data were analysed using both descriptive and inferential statistics. The study employed the ordered logistic regression model to assess the influence of organizational factors on the effectiveness of HRIS in LGAs in terms of information timeliness, completeness, and accuracy. Based on the results, it was found that organizational factors have significant influence on HRIS effectiveness in terms of timeliness, completeness, and accuracy of information. These organisational factors include but not limited to IT infrastructures, rate of support to HR in terms of training, and maintenance of the system. The implication of the study is that when top management supports HR departments, it augments the effectiveness of HRIS in LGAs. Hence, LGAs should provide financial and psychological resources needed to produce reliable information for informed decision-making.

Keywords:

Human Resources, Information System, Effectiveness, Local Government Authorities

1. INTRODUCTION

In the current trend of high enrolment of civil-servants and expansions in the public sector in Tanzania, demand to take a new route in the administration and management of the Public Service is impelling. The pressure to transform from a centrally controlled bureaucracy to a more decentralized, flexible and initiative-led institution was no longer inevitable in 2000s. A number of reasons behind this move were outlined such as to introduce new policies, principles and practices that ensured public servants became motivated, conducted themselves to the highest ethical standards, and that they put their skills and talents to productive use. As the strategies to attain such goals, different initiatives were developed and implemented [14].

One of the initiatives is the Tanzania's Public Service Reform Programme (PRSP) which aimed to streamline government, reduce employment numbers, introduce wage bill control, and improve public service incentives, accountability, skills, and service delivery, improve employees' information and management systems. The goal was to achieve a smaller, affordable, well-compensated public service with the emphasis on results and outcomes. Streamlining the government and introducing wage bill control alongside with PSRP was the introduction of Human Resources Information Systems (HRIS) to its Ministries, Department and Agencies (MDAs) and the Local Government Authorities (LGAs).

Contrary to the reality on the ground, the application of HRIS in Tanzanian's LGAs has resulted into incomplete, inaccurate and outdated civil servants' information. This is particularly demonstrated by the high number of ghost workers, inefficient recruitment, and payroll fraud [20] [25] detected in LGAs in comparison to the central government (CG) and public institutions. For instance, as of 1st March, 2016, out of the total of 10,295 ghost workers identified in the country, 81.35% (8,373) were in the LGAs while 18.65% (1,922) were in both CG and public institutions [1] [8] [26] [17]. Critical questions to be answered with regards to higher number of ghost workers and employees with counterfeit certificates in the LGAs are: besides application of HRIS in the LGAs for more than nine (9) years now; what determines its effectiveness in terms of completeness, accuracy and up to-date employee information?

Previous studies have such as [13] and [24] and [29], HRIS effectiveness in LGAs can be explained by various factors which determine the effectiveness of HRIS. These can be broadly categorized into three broad categories: user characteristics, technological characteristics, and organisation characteristics [7] [2] [5]. Unfortunately, no any study has attempted to assess influence of neither of user characteristics, technological characteristics, nor organisation characteristics on the effectiveness of HRIS in the LGAs in Tanzania. However, the current paper focused on the influence organization factors on HRIS effectiveness by focusing on IT infrastructures, management support, the number of Information and Communication Technology (ICT) specialists and the number of human resource specialists available.

2. THEORETICAL BACKGROUND OF THE STUDY

There is no consensus on the meaning of HRIS. However, all definitions describe HRIS as a software or online solution for data

entry, data tracking, and information needs of the human resources, management, and accounting functions within an organization [19]. The benefits of the system cannot be overstated. It has been argued that the system helps in controlling employees, increasing employees' knowledge base, establishing a basis for promotion, and promoting equality in work places [10]. Through the system, HR managers can access the information they need to legally, ethically, and effectively support the success of reporting employees [23] [34].

As described earlier, HRIS has two main components: 1) Human Resource Management (HRM), particularly its basic HR roles and processes, and 2) ICT use [19]. This study focuses on the second component, which is ICT use. This is due to the fact ICT is grounded in technology. It is argued by several scholars that for the system to operate optimally, it requires installation of relevant hardware (e.g. desktop PCs for accessing and input information locally, Uninterruptible Power Supply (UPS) and 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) [21]. In addition, the system requires reliable internet to easily send and receive information between departments, almost all LGAs are connected with National Information Technology Backbone (NICTBB) Optic Fiber Cable [36].

To discuss the influence organization factors has on HRIS effectiveness, this study employs the Unified Theory of Acceptance and Use of Technology (UTAUT) [16]. The theory has been used in various studies to investigate users' technology acceptance [15] [33] [34]. Many studies have shown that technology acceptance depend on whether the technology is user-friendly and whether it is of any benefit to the user. In simple terms, users normally prefer technologies that are not complicated to use [19]. The UTAUT integrates the proper process of adopting and implementing HRIS in LGAs for improved output that is complete, accurate, and up-to-date. It is also used in this study to develop variables for measuring the influence of organization factors (Reliable IT infrastructure, Rate of support of top management, Number of IT experts and Number of Human Resources Officers) on HRIS effectiveness (completeness, timeliness and accuracy) in LGAs in Tanzania.

3. METHODOLOGY

The study was conducted in six regions in Tanzania Mainland namely, Mwanza, Arusha, Dodoma, Morogoro, Iringa, and Kagera. Sampled regions represent high levels of ghost workers as reported in the Civil Servants' Auditing Report of 2016. The selection of regions was proceeded by stratification of regions based on the number of ghost workers reported. Three strata were created; high (>150 ghost workers), moderate (<150 but >50 ghost workers), and low (<50 ghost workers). Regions in each stratum were first assigned a unique identification number and, in each stratum, two regions were randomly selected for further assessment of influence of organization factors on HRIS effectiveness. In each stratum, the random between functions in MS excel was used to pick two regions randomly. According to the Civil Servants' Auditing Report, Mwanza and Arusha had 334 and 270 ghost workers respectively.

Fieldwork was conducted in two sequential distinct phases of quantitative and qualitative data collection. The first phase commenced with quantitative data collection and analysis of the numerical data relevant to the research questions. The second phase was then conducted mainly for collection of qualitative data. Quantitative data were collected through a structured questionnaire administered to Human Resources Officers (HROs). HROs were chosen because they are well informed and possess valuable knowledge on the application and effectiveness of the HRIS in LGAs as they consistently use the system. The sampling frame for the study comprised all HROs in the selected regions totalling to 249 HROs. The sample size was 213 HROs, the researcher managed to get 201 respondents, which was a sufficient sample size as suggested by [6] [3].

Qualitative data were collected through in-depth interviews with key informants selected based on their HRIS knowledge. These 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 perusing and analysing various relevant documents such as ICT policies, HRIS reports on diverse issues accessed from government authorities' reports on recruitment and promotion procedures, ghost workers, and counterfeit certificate reports.

Data collected through structured questionnaires were summarized, coded, and entered into the IBM Statistical Package for Social Sciences (SPSS) computer programme version 21.0 for analysis. Respondents' preliminary information was analysed using descriptive statistics; frequency and cross tabulation in particular. To examine the influence of organization factors on HRIS effectiveness, the study employed the ordered logistic regression model. Organizational factors comprise IT infrastructures, rate of support of top management, number of IT specialists, and number of HR specialists. In building the model, organizational factors were treated as variables predictor where by effectiveness in terms of timeliness, completeness, and accuracy were dependent variables.

Qualitative data were subjected to content analysis. Content analysis helps to reduce the volume of recorded information or communication to a set of categories that represent some factors of the research. Content analysis was conducted to produce information that could explain HRIS effectiveness in improving employees' information in the selected LGAs.

4. RESULTS

4.1 ORGANIZATIONAL FACTORS

Organization factors include 1) reliable information technology infrastructures, 2) rate of support from top management towards human resource information systems, 3) the number of information and communication technology (ICT) specialists, and the number of human resource specialists available in the districts under study.

The Table.1 and Table.2 present a general distribution of organization factors and the results show that the majority of HROs interviewed (43.8%) denied that their districts have reliable information technology infrastructures. It was further revealed

that 43.8% of the respondents stated that the rate of support from top management towards human resource information systems was neither high nor low (Table.1). The study further calculated the average number of ICT and HR specialists in LGAs and the results indicated 2.69 and 5.94 respectively (Table.2).

Table.1. Distribution of organization factors

| Organization Factors | Response | n (%) |
|---|----------------------------|-----------|
| The district has reliable information technology infrastructures | Disagree | 88 (43.8) |
| | Neither agree nor disagree | 51 (25.4) |
| | Agree | 62 (30.8) |
| Rate of support of top management towards human resource information system | High Support | 62 (30.8) |
| | Neither high nor low | 88 (43.8) |
| | Low support | 51 (25.4) |

Source: Field Data (2019)

4.2 DISTRIBUTION OF ORGANIZATIONAL FACTORS ACROSS REGIONS WITH HIGH, MEDIUM AND LOW LEVELS OF HRIS CHALLENGES

The Table.3 and Table.4 present the distribution of organization factors across regions with high, medium, and low levels of HRIS challenges. As shown in Table.3, the majority of HROs who agreed that their districts have reliable information technology infrastructures were from regions with low levels of HRIS challenges (i.e. in low category) as reported by 65.5% of the respondents. The responses across high, medium, and low were statistically significant with $\chi^2=52.895$ at $p\leq 0.001$. Similarly, results show that the majority of HROs who agreed that there was a high rate of support from top management towards human resource information systems were from regions with low HRIS challenges (i.e. in low category).

Table.3. IT Infrastructure and Top Management Support across Regions with High, Medium and Low Levels of HRIS Challenges

| Statements and responses | | Level of HRIS challenges across Regions | | | Total n (%) | Chi-square | p-value |
|---|----------------------------|---|--------------|-----------|-------------|------------|---------|
| | | High n (%) | Medium n (%) | Low n (%) | | | |
| The district has reliable information technology infrastructure | Disagree | 34 (45.9) | 43 (62.3) | 11 (19.0) | 88 (43.8) | 52.895 | <.001 |
| | Neither agree nor disagree | 28 (37.8) | 14 (20.3) | 9 (15.5) | 51 (25.4) | | |
| | Agree | 12 (16.2) | 12 (17.4) | 38 (65.5) | 62 (30.8) | | |
| Rate of support from top management towards human resource information system | High Support | 13 (17.6) | 14 (20.3) | 35 (60.3) | 62 (30.8) | 36.347 | <.001 |
| | Neither high nor low | 43 (58.1) | 31 (44.9) | 14 (24.1) | 88 (43.8) | | |
| | Low support | 18 (24.3) | 24 (34.8) | 9 (15.5) | 51 (25.4) | | |
| Total | | 74 | 69 | 58 | 201 | | |

Source: Field Data (2019)

Table.4. HR and ICT Specialists across Regions with High, Medium and Low Level of HRIS Challenges

| Level of HRIS Challenges | Organization Factors | N | Min | Max | Sum | Mean | Std. Deviation |
|--------------------------|---------------------------|----|-----|-----|-----|------|----------------|
| High | Number of ICT specialists | 74 | 1 | 5 | 217 | 2.93 | 1.077 |
| | Number of HROs | 74 | 4 | 12 | 471 | 6.36 | 2.551 |
| Medium | Number of ICT specialists | 69 | 1 | 6 | 182 | 2.64 | 1.599 |

Again, responses across three categories were statistically significant with $\chi^2 = 36.347$ at $p\leq 0.001$. Regarding the number of ICT specialists, regions facing greater challenges (i.e. in high category) had 2.93 specialists compared to 2.64 for medium and 2.43 for low categories. On the other hand, the average number of HR specialists was 6.36 in regions with high levels of HRIS challenges (i.e. in high category) compared to 6 for medium and 5.33 for low categories (Table.2).

Table.2. Distribution of ICT and HR Specialists

| Organization Factors | N | Min | Max | Sum | Mean | Std. Deviation |
|--|-----|-----|-----|------|------|----------------|
| The number of information and communication technology specialists | 201 | 1 | 6 | 540 | 2.69 | 1.306 |
| The number of human resource specialists available in the district | 201 | 1 | 12 | 1194 | 5.94 | 2.445 |

Source: Field Data (2019)

4.3 RELATIONSHIP BETWEEN EFFECTIVENESS OF HRIS AND ORGANIZATIONAL FACTORS

The researcher asked Human Resource Officers (HROs) about their extent of agreement or disagreement with statements related to their satisfaction with HRIS in LGAs. They were asked questions on their level of satisfaction with organizational factors. These included: 1) support employees receive from employers on HRIS, 2) availability of reliable IT infrastructure, 3) the number of IT specialists available in the LGA, and 4) the number of HR specialists available in the LGA.

| | | | | | | | |
|-----|---------------------------|----|---|----|-----|------|-------|
| | Number of HROs | 69 | 2 | 11 | 414 | 6 | 2.651 |
| Low | Number of ICT specialists | 58 | 1 | 4 | 141 | 2.43 | 1.141 |
| | Number of HROs | 58 | 1 | 9 | 309 | 5.33 | 1.905 |

Source: Field Data (2019)

Table.5. Relationship between Organizational Factors and Information Timeliness

| Organizational Factors | Current/up-to-date information | | Information Captured Time | | Time saving | |
|--|--------------------------------|-----------------|---------------------------|-----------------|---------------------|-----------------|
| | n% | (χ^2, p) | n% | (χ^2, p) | n% | (χ^2, p) |
| Reliable IT infrastructure 0. Disagree 1. Agree | 62 (31) 139 (69) | 10.516, 0.001 | 62 (31) 139 (69) | 12.519, < 0.001 | 62 (31) 139 (69) | 8.844, 0.002 |
| Management organizes training on HRIS 0. Disagree 1. Agree | 51 (25) 150 (75) | 2.236, 0.0091 | 51 (25) 150 (75) | 0.001, 0.557 | 150 (75) 51 (25) | 0.019, 0.518 |
| Level of top management support 0. Highest 1. Lowest | 46 (23) 155 (77) | 5.025, 0.0019 | 46 (23) 155 (77) | 0.356, 0.336 | 90 (45) 111 (55) | 0.353, 0.328 |
| Conducting prompt maintenance 0. Disagree 1. Agree | 90 (45) 111 (55) | 18.715, <0.001 | 90 (45) 111 (55) | 19.114, <0.001 | 46 (23) 155 (77) | 4.412, 0.0025 |
| Emphasis on accurate data entry 0. Disagree 1. Agree | 157 (78) 44 (22) | 4.956, 0.019 | 157 (78) 44 (22) | 0.180, 0.406 | 157 (78) 44 (22) | 6.709, 0.008 |

Source: Field Data (2019)

4.3.1 Relationship between Organizational Factors and Information Timeliness:

Current/up-to-date Information: Organization factors considered in this study include reliable IT infrastructure, the support of top management towards HRIS, management organizing training on HRIS use, management promptly providing maintenance services in case system errors occur, and management emphasizing accurate data entry. The Table.5 presents all organization factors, namely that LGAs have reliable IT infrastructure ($\chi^2(df)=10.576, p=0.001$), the support of top management towards HRIS ($\chi^2(df)=2.236, p=0.0091$), management organizing trainings on HRIS use ($\chi^2(df)=5.025, p=0.0019$), management promptly providing maintenance services in case system errors occur ($\chi^2(df)=18.715, p\leq 0.001$), and management emphasizing accurate data entry ($\chi^2(df)=4.956, p=0.019$) had a statistically significant association with current/up-to-date information status. The p -values of all organization factors are below our significance threshold of $P<0.05$.

Information Captured Time: The Table.5 indicates two organization factors namely LGA with reliable IT infrastructure ($\chi^2(df)=12.519, p\leq 0.001$), and management promptly providing maintenance services in case system errors occur ($\chi^2(df)=19.114, p\leq 0.001$) had a statistically significant association with information captured time since their P -values are below our significance threshold of $P<0.05$. The remaining organization factors such as the support of top management towards HRIS ($\chi^2(df)=0.356, p=0.336$), management organizing trainings on HRIS use ($\chi^2(df)=0.001, p=0.557$) and management emphasizing accurate data entry ($\chi^2(df)=0.180, p=0.406$) were found to be unimportant in associating with the information captured time.

Time Saving: The Table.5 indicates that three organization factors namely LGA with reliable IT infrastructure ($\chi^2(df)=8.844, p=0.002$), HRIS management emphasizing accurate data entry ($\chi^2(df)=6.709, p=0.008$), and management promptly providing maintenance services in case system errors occur had a statistically significant association with time saving. Their p -values are below our significance threshold of $P<0.05$. However, the remaining organization factors including management organizing trainings on HRIS use ($\chi^2(df)=0.019, p=0.518$) and the support of top management ($\chi^2(df)=0.353, p=0.328$) were found to be unimportant in associating with timeliness i.e. time saving.

4.3.2 Relationship between Organizational Factors and Information Completeness

Sufficiency of Information: The Table.6 indicates that three organization factors namely LGAs with reliable IT infrastructure ($\chi^2(df)=19.525, p\leq 0.001$), the support of top management towards HRIS ($\chi^2(df)=14.698, p\leq 0.001$) and management conducting prompt maintenance in case system errors occur ($\chi^2(df)=19.291, p\leq 0.001$) had a statistically significant association with sufficiency of information status since their p -values are below our significance threshold of $P<0.05$. The remaining organization factors such as management emphasizing accurate data entry ($\chi^2(df)=0.013, p=0.523$) and management organizing trainings on HRIS use ($\chi^2(df)=1.907, p=0.117$) were not statistically associated with completeness i.e. sufficiency of information.

Complete Datasets: The Table.6 indicates four organization factors, namely LGAs with reliable IT infrastructure ($\chi^2(df)=11.131, p=0.001$), the support of top management towards HRIS ($\chi^2(df)=8.886, p=0.002$), and prompt maintenance services

provided by management incase system errors occur ($\chi^2(df)=10.067, p=0.001$) had a statistically significant association with complete data sets since their P -values are below our significance threshold of $P<0.05$. On the other hand, management organizing trainings on HRIS use ($\chi^2(df)=0.000, p=0.571$) and management emphasizing accurate data entry ($\chi^2(df)=0.360, p=0.334$) were found to be unimportant.

4.3.3 Relationship between Organizational Factors and Information Accuracy

Error-Free Information: The Table.7 indicates that LGAs with reliable IT infrastructure ($\chi^2(df)=5.759, p=0.016$) had a statistically significant association with error-free information with p -value below our significance threshold of $P<0.05$ and management promptly providing maintenance services in case system errors occur ($\chi^2(df)=18.715, p\leq 0.001$). The rest, namely the support of top management towards HRIS ($\chi^2(df)=1.321, p=0.175$), management organizing trainings on HRIS use ($\chi^2(df)=0.41, p=0.498$), and management emphasizing accurate data entry ($\chi^2(df)=0.128, p=0.438$) were found to be unimportant in influencing error-free information.

Reliable Information: The Table.7 indicates that three organization factors, namely LGAs with reliable IT infrastructure ($\chi^2(df)=18.150, p\leq 0.001$), management prompt provision of maintenance services in case system errors occur ($\chi^2(df)=39.685, p\leq 0.001$), and management emphasizing accurate data entry ($\chi^2(df)=6.899, p=0.006$) had a statistically significant association with reliable information. The remaining factors such as the support of top management towards HRIS ($\chi^2(df)=1.269, p=0.168$) and management organizing trainings on HRIS use ($\chi^2(df)=1.453, p=0.438$) were found to be unimportant in influencing error-free information.

Reality of Information: The Table.7 indicates three organization factors, namely LGAs with reliable IT infrastructure ($\chi^2(df)=6.452, p=0.003$), management prompt provision of maintenance services in case system errors occur ($\chi^2(df)=18.715, p\leq 0.001$), and management emphasizing accurate data entry ($\chi^2(df)=12.076, p\leq 0.001$) had a statistically significant association with reality of information since their p -values are below our significance threshold of $P<0.05$.

Table.6. Relationship between Organizational Factors and Information Completeness

| Organizational factors | Sufficiency of Information | | Complete Datasets | |
|--|----------------------------|-----------------|---------------------|-----------------|
| | n% | (χ^2, p) | n% | (χ^2, p) |
| Reliable IT infrastructure 0. Disagree 1. Agree | 62 (31) 139 (69) | 19.525, <0.001 | 62 (31) 139 (69) | 11.131, 0.002 |
| Management organizes training on HRIS 0. Disagree 1. Agree | 150 (75) 51 (25) | 1.907, 0.117 | 51 (25) 150 (75) | 8.886, 0.002 |
| Level of top management support 0. High 1. Low | 155 (77) 46 (23) | 14.698, < 0.001 | 155 (77) 46 (23) | 0.000, 0.571 |
| Conducting prompt maintenance 0. Disagree 1. Agree | 90 (45) 111 (55) | 19.291, < 0.001 | 90 (23) 111 (77) | 10.067, 0.001 |
| Emphasis on accurate data entry 0. Disagree 1. Agree | 157 (78) 44 (22) | 0.013, 0.523 | 157 (78) 44 (22) | 0.360, 0.334 |

Source: Field Data (2019)

Table.7. Relationship between Organizational Factors and Information Accuracy

| | Error-Free Information | | Reliable | | Reality | |
|--|------------------------|-----------------|---------------------|-----------------|---------------------|-----------------|
| | n% | (χ^2, p) | n% | (χ^2, p) | n% | (χ^2, p) |
| Reliable IT infrastructure 0. Disagree 1. Agree | 62 (31) 139 (69) | 5.759, 0.016 | 62 (31) 139 (69) | 18.150, < 0.001 | 62 (31) 139 (69) | 6.452, 0.003 |
| Management organizes training on HRIS 0. Disagree 1. Agree | 51 (25) 150 (75) | 1.321, 0.175 | 51 (25) 150 (75) | 1.269, 0.168 | 51 (25) 150 (75) | 1.016, 0.199 |
| Level of top management support 0. Disagree 1. Agree | 46 (23) 155 (77) | 0.41, 0.498 | 46 (23) 155 (77) | 1.453, 0.150 | 46 (23) 155 (77) | 0.062, 0.468 |
| Conducting prompt maintenance | | | | | | 18.715, < 0.001 |

| | Error-Free Information | | Reliable | | Reality | |
|---------------------------------|------------------------|-----------------|----------|-----------------|----------|-----------------|
| | n% | (χ^2, p) | n% | (χ^2, p) | n% | (χ^2, p) |
| 0. Strongly disagree | 90 (45) | 18.715, <0.001 | 90 (45) | 39.685, <0.001 | 90 (45) | |
| 1. Strongly agree | 111 (55) | | 111 (55) | | 111 (55) | |
| Emphasis on accurate data entry | | | | | | |
| 0. Disagree | 157 (78) | 0.128, 0.438 | 157 (78) | 6.899, 0.006 | 157 (78) | 22.076, <0.001 |
| 1. Agree | 44 (22) | | 44 (22) | | 44 (22) | |

Source: Field data (2019)

However, factors such as support of top management towards HRIS ($\chi^2(df)=1.016, p=0.199$), and management organizing trainings on HRIS use ($\chi^2(df)=0.062, p=0.468$) had a statistically significant association with reality of information since their P-values are above our significance threshold of $P<0.05$.

4.4 INFLUENCE OF ORGANIZATIONAL FACTORS ON HRIS EFFECTIVENESS

Organizational factors such as independent variables were regressed against dependent variables, namely effectiveness in terms of timeliness, completeness, and accuracy by using ordered logistic regression model. Four independent variables that were included in the model were: 1) support that employees receive from employers on HRIS usage, 2) availability of reliable IT infrastructure, 3) the number of IT specialists available in the LGAs, and 4) the number of HR specialists available in the LGAs in Tanzania.

The Table.8 presents SPSS output for parameter estimates. The Table.8 gives variables in the equation, their direction, and magnitude of the influence on dependent variables. It gives the coefficients (β), their standard errors, the Wald test and associated p-values (Sig.), and the 95% confidence interval of the coefficients. Results show that for all three models, the Wald statistics were non-zero, which implies that there was interaction between the dependent and independent variables. The results imply that organizational factors influence HRIS effectiveness (i.e. timeliness, completeness, and accuracy). Therefore; the study rejects the null hypothesis in favour of the alternative hypothesis.

The Table.8 further indicates the relationship between the explanatory variables and the outcome. In this table, the focus is on the second part dealing with location coefficients. The results show that the regression coefficients (β values) are either positive or negative. The positive sign associated with a β coefficient shows that the particular variable increases the logit of the dependent variable and vice versa. Out of all independent variables (organizational factors), four had negative β -values implying that they negatively influenced the effectiveness of HRIS in LGAs. These include support to HR and the number of IT specialists (in timeliness), and IT infrastructure and support to HR (in completeness). Furthermore, Table.8 presents the extent of influence of each independent variable and the establishment of whether such influence is statistically significant. Out of 12 independent variables for all three models (four independent variables for each dependent variable), only three; one for each statistically significantly association influenced HRIS effectiveness in LGAs. These include IT infrastructure (in timeliness and accuracy), and support that employees receives from employers on HRIS usage - support to HR (completeness).

4.5 DISCUSSION

4.5.1 Distribution of Organizational Factors:

The results in Table.1 to Table.4 indicate that districts in regions with low levels of HRIS challenges (i.e. in low category) have reliable information technology infrastructures compared to other regions. By reliable information here we mean information that can be trusted. Reliable information technology infrastructure includes 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 and Relational database/Information processing software for records, payroll). It was revealed during the survey that some districts have limited technology infrastructures. For instance, Mwanza region was found to have few computers compared to the number of HROs. The same observation was made by [28] who reported that Mwanza Municipality had a deficit of five (5) computers connected to HRIS and therefore, system users had to share the few available computers.

In addition, the findings indicated that HROs in regions with low HRIS challenges (i.e. in low category) are highly supported by top management to use human resource information systems. The listed support provided includes good interaction between junior and senior HROs and provision of working gears such as computers. To demonstrate the importance of top management support, [2] [4] argue that top management commitment is an indispensable component in HRIS implementation and effectiveness. Furthermore, the findings indicate that the number of ICT and HR specialists were relatively higher in regions with higher rates of HRIS challenges (i.e. in high category) compared to medium and low categories. However, regardless of a large number of ICT and HR specialists, it was reported that many irregularities in employees' data record keeping still persist. This implies that effectiveness of HRIS not only depends on the presence of large numbers of ICT and HR specialists but also depends on the commitment of HROs and support from top management to HROs on use of HRIS.

4.5.2 Relationship between Effectiveness of HRIS and Organizational Factors

The results in Table.5 indicate that two organizational factors are strongly associated with timeliness. These include LGAs with reliable IT infrastructure and management promptly providing maintenance services in case system errors occur. Each of the two has different implications. For instance, reliable IT infrastructure includes 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 and payroll) [44]. The findings imply that the LGAs with all relevant hardware and software are highly positioned to accomplish their duties and responsibilities on time. However, existing literature shows that the Government has not invested sufficient funds to procure the required quantity of hardware and software for maximum utilization of HRIS [27] [28].

Regarding management's prompt provision of maintenance services in case system errors occur, it must be noted that it is important to both update and service the system as per maintenance schedule. The HRIS Payroll Software identified four maintenance schedules as follows: (1) monthly maintenance to fix bugs in coding, configuration, and upgrading the system; (2) quarterly maintenance to review and fine-tuning the system's security access; (3) biannual maintenance to remove all obsolete reports, functions, and features from the system and organizing information and dashboards; and (4) annual maintenance to review the system to make sure that all relevant compliance needs are being taken care of, and also remove terminated employees' records [32].

In the same coinage, an interview with HRO from UTUMISHI revealed the importance of data cleaning. He said: "We expect to start using a more modernized way of information storage by next year. Given the fact that we need accurate information, each officer is required to fill in all the necessary information including but not limited to postal addresses, email accounts, mobile phone numbers, file numbers, etc."

Furthermore, he pointed out why the government has resolved to adopt a new system of data storage. He stated that: "The new system was purchased and customized but there are some elements that do not suit government needs. We, therefore, need a system that is user-friendly and is ideal for us".

Results in Table.6 show that, completeness is strongly associated with LGAs having reliable IT infrastructure, the support of top management towards HRIS and management prompt provision of maintenance services in case system errors occur. The results on having reliable IT infrastructure imply that connecting LGAs in NICTBB (National Information Technology Backbone) to Optic Fibre Cables has helped to accomplish various activities on time.

Table.8. Parameter Estimates for Organizational Factors

| | | | Estimate | Std. Error | Wald | df | Sig. | 95% Confidence Interval | |
|--------------|-----------|-----------------------|----------|------------|--------|----|-------|-------------------------|-------------|
| | | | | | | | | Lower Bound | Upper Bound |
| Timeliness | Threshold | [Timeliness=1.00] | -4.988 | 1.328 | 14.116 | 1 | 0 | -7.591 | -2.386 |
| | | [Timeliness=2.00] | -1.644 | 0.896 | 3.371 | 1 | 0.066 | -3.399 | 0.111 |
| | | [Timeliness=3.00] | 0.701 | 0.884 | 0.627 | 1 | 0.428 | -1.033 | 2.434 |
| | | [Timeliness=4.00] | 3.008 | 0.919 | 10.722 | 1 | 0.001 | 1.208 | 4.809 |
| | Location | IT infrastructure | 0.317 | 0.156 | 4.143 | 1 | 0.042 | 0.012 | 0.623 |
| | | Support to HR | -0.273 | 0.172 | 2.513 | 1 | 0.113 | -0.61 | 0.065 |
| | | No. of IT specialists | -0.073 | 0.171 | 0.185 | 1 | 0.668 | -0.408 | 0.261 |
| | | No. of HR specialists | 0.09 | 0.091 | 0.982 | 1 | 0.322 | -0.088 | 0.267 |
| Completeness | Threshold | [Completeness=1.00] | -5.254 | 0.976 | 28.982 | 1 | 0.000 | -7.167 | -3.341 |
| | | [Completeness=2.00] | -2.268 | 0.877 | 6.68 | 1 | 0.010 | -3.988 | -0.548 |
| | | [Completeness=3.00] | -1.106 | 0.866 | 1.63 | 1 | 0.202 | -2.803 | 0.592 |
| | | [Completeness=4.00] | 0.906 | 0.883 | 1.053 | 1 | 0.305 | -0.824 | 2.636 |
| | Location | IT infrastructure | -0.051 | 0.151 | 0.114 | 1 | 0.735 | -0.347 | 0.245 |
| | | Support to HR | 0.751 | 0.176 | 18.194 | 1 | 0.000 | -1.096 | -0.406 |
| | | No. of IT specialists | 0.109 | 0.167 | 0.424 | 1 | 0.515 | -0.218 | 0.435 |
| | | No. of HR specialists | 0.069 | 0.088 | 0.608 | 1 | 0.435 | -0.104 | 0.242 |
| Accuracy | Threshold | [Accuracy=1.00] | -3.107 | 1.331 | 5.449 | 1 | 0.020 | -5.717 | -0.498 |
| | | [Accuracy=2.00] | 0.958 | 0.908 | 1.113 | 1 | 0.291 | -0.822 | 2.738 |
| | | [Accuracy=3.00] | 3.607 | 0.948 | 14.492 | 1 | 0.000 | 1.75 | 5.465 |
| | | [Accuracy=4.00] | 6.284 | 1.076 | 34.085 | 1 | 0.000 | 4.175 | 8.394 |
| | Location | IT infrastructure | 0.363 | 0.162 | 5.03 | 1 | 0.025 | 0.046 | 0.679 |
| | | Support to HR | 0.144 | 0.176 | 0.665 | 1 | 0.415 | -0.202 | 0.489 |
| | | No. of IT specialists | 0.024 | 0.176 | 0.019 | 1 | 0.891 | -0.321 | 0.369 |
| | | No. of HR specialists | 0.129 | 0.094 | 1.888 | 1 | 0.169 | -0.055 | 0.313 |

Source: Field Data (2019)

Previously, such activities were constrained by weak internet connections, which mostly relied on employees' personal internet modems [11]. The study [15] argue similarly that reliable IT infrastructure is necessary for the effectiveness of HRIS as the system is built on computer network availability and accessibility in many organizations. Regarding the support of top management towards HRIS, the findings of this study coincide with current efforts of the government to connect all LGAs in NICTBB. However, more support is needed from top management in terms of supplying computers, recruiting more IT specialists, and encouraging employee commitment. In [31], the author argues that progress in technology is substantially connected with an organization's financial support to boost the development of HRIS and manpower.

The Table.7 shows that generally, accuracy in terms of error-free information, reliable information, and reality of information is strongly associated with LGAs with reliable IT infrastructure. The findings imply that for the system to produce accurate information, reliable IT infrastructure is a pre-requisite. As stated earlier, the IT infrastructure comprises both hardware and software. Other scholars also confirm the importance of reliable IT infrastructure. For instance, in [18], the author report that the availability of hardware and software for application programs is a prerequisite for maximizing HRIS usage. In [27], the author also observe that reliable IT infrastructure positively influences the adoption of HRIS in parastatal organizations in Dar es Salaam. In [12], the author argued similarly that, availability of IT infrastructure is needed for the successful adoption of HRIS.

4.5.3 *The Influence of Organizational Factors on HRIS Effectiveness:*

Results in Table.8 show that all three ordered logistic regression models are statistically significant (p -values less than 0.05). The descriptive measures of goodness-of-fit also indicate that all three models fit the data well. The findings imply that organization factors influence the effectiveness of HRIS usage in terms of timeliness, completeness and accuracy, which are statistically significant. The findings are consistent with [27] who used the linear regression model to assess the influence of organizational factors on the adoption of the Human Resource Information System.

The results in Table.8 present parameter estimates, which give the level and direction of influence of each independent variable and whether such influence is statistically significant. Direction can be either positive or negative and is indicated by (-) sign one none in β coefficient in column labeled estimates. A positive sign associated with a β coefficient shows that the particular organizational factors increase the effectiveness of HRIS. As shown in Table.8, three and nine coefficients had negative and positive influences respectively. Out of 9 independent variables with positive signs, only support to HR with $\beta=0.751$ and $p=0$ is statistically significant in influencing HRIS effectiveness (i.e. completeness). The results suggest that to achieve the best outcomes, the organization should appropriately support HROs with working gears, skills, and knowledge.

HROs have been given access to HRIS to maintain their employees' information and make all necessary changes. Therefore, to be effective in HRIS usage; they should be knowledgeable on more than one functional area, particularly, ICT and HR functions. The previous studies on implementation

have shown that HROs face several challenges that constrain the effective implementation of their duties and responsibilities.

These include lack of sufficient computers, unreliable internet service, and insufficient knowledge on system use. In [27], the author reports that some HROs are ignorant about some system applications. Similarly in [9], the author report that some HROs in the Ministries, Departments, and Authorities are ignorant about HRIS and lack computer skills. Furthermore, supporting HR is important because skilled human resource with well-equipped and advanced systems is needed to solve human resource problems.

5. CONCLUSION

This study concludes that completeness is strongly associated with LGAs having reliable IT infrastructure and the support of top management towards HRIS and management promptly providing maintenance services in case system errors occur. This relates to what was argued earlier that top management support is the cornerstone for effective implementation of HRIS. It is the responsibility of top management to provide financial and psychological resources needed to produce reliable information for sound decision-making. The study, therefore, concludes that top management support is an important tenet for ensuring effective HRIS performance. Through top management support, other variables such as IT infrastructure as well as individual and technological characteristics will automatically be improved.

5.1 IMPLICATIONS

On the basis of the findings and the conclusions drawn, the following are the implications: first, there is a need for management to provide support to HR LGAs to ensure continuous training of HRIS staff on IT and HR skills for the purpose of enhancing their competencies. The second implication is that LGAs should provide financial and psychological resources needed to produce reliable information for informed decision-making.

5.2 LIMITATION OF THIS ARTICLE

HRIS in Tanzania is used by Local Government Authorities and Ministries, Department and Agencies. This study focused on LGAs only, future study can be done on Ministries, Department and Agencies. Moreover, handling employees' records involves multiple actors such as employees' and their supervisors, PDS (for personnel policy formulation, Ministry of Finance and MDA. This study is limited to employees and their supervisors, hence future studies can be done by considering other factors.

5.3 CONTRIBUTION TO KNOWLEDGE

The use of Human Resources Information System in the emerging economies is a relatively new development in Human Resources Management. In Tanzania, HRIS in the public sector has been in place for just less than a decade now. For that reason, there is little research evidence that shows the influence of Organization factors (IT infrastructures, Management support, the number of information and communication technology (ICT) specialists and the number of human resource specialists available) on HRIS effectiveness. This paper contributes the

insights on the influence of the above mentioned factors on HRIS effectiveness in terms of completeness accuracy and timeliness of information.

REFERENCES

- [1] I. Akwei, "Thousands of Tanzanian Civil Servants Sacked over Fake Certificates", Available at: <http://www.africanews.com>, Accessed at 2017.
- [2] H. Al-Mobaideen, S. Allahawiah and E. Basio, "Factors Influencing the Successful Adoption of Human Resource Information System: The Content of Aqaba Special Economic Zone Authority", *Intelligent Information Management*, Vol. 5, No. 2, pp. 1-9, 2013.
- [3] S. Basbas, V. Tetou and I. Politis, "Ordinal and Binary Logistics Models for Examination of Behavioral, Infrastructure and Perception Factors Influencing Biking", *WIT Transactions on the Build Environment*, Vol. 130, No. 2, pp. 573-584, 2013.
- [4] M.B.U. Bhuiyan and R. Rahman, "Application of Human Resource Information System in the Firms of Bangladesh and its Strategic Importance", *World Wide Research*, Vol. 4, No. 3, pp. 1-12, 2014.
- [5] F. Calisier and F. Calisier, "The Relation of Interface Usability Characteristics, Perceived Usefulness, and Perceived Ease of Use to End-User Satisfaction with Enterprise Resource Planning (ERP) Systems", *Computers in Human Behaviour*, Vol. 20, No. 4, pp. 505-515, 2004.
- [6] E. Elamir and H. Sadeq, "Ordinal Regression to Analyze Employees Attitude Towards the Application of Total Quality Management", *Journal of Applied Quantitative Methods*, Vol 5, No. 4, pp. 1-13, 2010.
- [7] M. Gelderman, "The Relation between User Satisfaction, Usage of Information Systems, and Performance", *Information and Management*, Vol. 34, No. 1, pp. 11-18, 1998.
- [8] L. Iaccino, "Tanzania Fires 10 000 Civil Servants Over Fake Qualifications. Newsweek", Available at: <http://www.newsweek.com>, Accessed at 2017.
- [9] H. Ishijima, M. Mapunda, M. Mndeme, S. Sukums and V.S. Mlay, "Challenges and Opportunities for Effective Adoption of HRH Information Systems in Developing Countries: National rollout of HRHIS and THIS in Tanzania", *Human Resources Health*, Vol. 13, pp. 48-59, 2015.
- [10] S. Jahan, "Human Resources Information System (HRIS): A Theoretical Perspective", *Journal of Human Resource and Sustainability Studies*, Vol. 2, No. 2, pp. 33-39, 2014.
- [11] D.P. Jorojick, "The Influence of Human Resource Information System on Decision Making in LGAs: The Case of Lawson Version 9 in Kiteto District, Tanzania", Master Thesis, Department of Human Resource Management, Mzumbe University, pp. 1-78, 2015.
- [12] G. Kalikawe, "Assessment on the Effectiveness of HRIS in Parastatal Organizations", Master Thesis, Department of Human Resource Management, Mzumbe University, pp. 1-89, 2010.
- [13] A.F. Karikari, P.A. Boetang and E.O.N.D. Ocansey, "Role of Human Resources Information System in the Process of Manpower Activities", *America Journal of Industrial and Business Management*, Vol. 5, No. 2, pp. 1-13, 2015.
- [14] A. Kassam, "Challenges of Human Capital Management Information System (Lawson Version, 9) in Local Government Authorities: The case of Shinyanga Municipal Council", Master Thesis, Department of Human Resource Management, Mzumbe University, pp. 1-100, 2013.
- [15] N. Kassim, T. Ramayah and S. Kurnia, "Antecedents and Outcomes of Human Resource Information System (HRIS) Use", *International Journal of Productivity and Performance Management*, Vol. 61, No. 6, pp. 603-623, 2012.
- [16] Y. Venkatesh, M.G. Morris, G.B. Davis and F.D. Davis, "User Acceptance of Information Technology: Toward A Unified View", *MIS Quarterly*, Vol. 27, No. 3, pp. 425-448, 2003.
- [17] L. Kolumbia, "Tanzania: 7.5 Billion TZS paid to Ghost Workers in Three Months", Available at: <https://allafrica.com/stories/20160406091.html>, Accessed at 2017.
- [18] K.A. Kovach and C.E. Cathcart, "Human Resource Information Systems (HRIS): Providing Business with Rapid Data Access, Information Exchange and Strategic Advantage", *Public Personnel Management*, Vol. 28, No. 1, pp. 275-282, 1999.
- [19] D.M. Kroenke, "MIS Essentials", 4th Edition, Pearson, 2014.
- [20] W.U. Lameck, "Explaining the Performance of Decentralized Recruitment in Tanzania Local Government Authorities on Institutional Context Perspective", *International Journal of Academic Research in Business and Social Sciences*, Vol. 5, No. 12, pp. 1-15, 2015.
- [21] World Bank, "Evidence-Based Governance in the Electronic Age", Available at: http://www.irmt.org/documents/research_reports/case_studies/IRMT_Case_Studies_Summaries.pdf, Accessed at: 2003.
- [22] M.A. Mahmood and D.L. Swanberg, "Factors Affecting Information Technology Usage: A Meta-Analysis of Empirical Literature", *Journal of Organizational Computing and Electronic Commerce*, Vol. 11, No. 2, pp. 107-130, 2001.
- [23] H. Matimbwa and O.S. Masue, "Usage and Challenges of Human Resources Information System in Tanzanian Public Organizations", *Journal of Human Resource Management*, Vol. 7, No. 4, pp. 131-137, 2019.
- [24] J. Midiwo, "Influence of Human Resource Information Systems on the Performance of in Kenyan Public Universities", PhD Dissertation, Department of Human Resource Management, Jomo Kenyatta University of Agriculture and Technology, pp. 1-89, 2015.
- [25] S. Muchemwa, "Tanzania's Public Ghost Workers Increase", Available at: <http://www.herald.co.zw>, Accessed at 2017.
- [26] F. Ngwanakilala, "Tanzania Says Over 10000 ghost Workers Purged from Government Payroll", Available at: <https://www.reuters.com/article/us-tanzania-corruption/tanzania-says-over-10000-ghost-workers-purged-from-government-payroll-idUSKCN0Y70RW?il=0>, Accessed at 2016.
- [27] N.F. Njau, "Factors Influencing Adoption of Human Resource Information System in Parastatal Organizations; Case of Dares Salaam", Master Thesis, Department of

- Human Resource Management, Dodoma University, pp. 1-99, 2018.
- [28] S. Njau, "Challenges in the Use of Human Capital Management Information System (HCMIS) in Local Government Authorities", Master Thesis, Department of Human Resource Management, Mzumbe University, pp. 1-94, 2017.
- [29] S.B. Ponduri, "Quality of Human Resources Information Systems at Commercial Bank of Ethiopia. A Case Study of Dessie District at Dessie Ethiopia", *International Journal of Research*, Vol. 4, No. 4, pp. 1-16, 2016.
- [30] M.K. Qteishat, "The Impact of Information System Success Factors, Human Resource Staff Satisfaction, and E-Human Resource Use on Organizational Benefit", *International Journal of Computer Applications*, Vol. 105, No. 2, pp. 1-12, 2014.
- [31] C.G. Reddic, "Human Resources Information Systems in Texas City Governments: Scope and Perception of its Effectiveness", *Public Personnel Management*, Vol. 38, No. 4, pp. 19-34, 2009.
- [32] D. Rietsema, "How to Properly Maintain Your HRIS: HRIS Payroll Software", Available at: <https://www.hrisspayrollsoftware.com/maintaining-your-hris/>, Accessed at 2019.
- [33] M. Tagoe, "Students Perception on Incorporating E-Learning into Teaching and Learning at University of Ghana", *International Journal of Education and Development using Information and Communication Technology*, Vol. 8, No. 1, pp. 91-103, 2012.
- [34] T.S.H. Teo, G.S. Lim and S.A. Fedric, "The Adoption and Diffusion of Human Resources Information Systems in Singapore", *Asia Pacific Journal of Human Resources*, Vol. 45, No. 1, pp. 44-62, 2007.
- [35] I. Troshani, C. Jerram and S.R. Hill, "Exploring the Public Sector Adoption of HRIS", *Industrial Management and Data Systems*, Vol. 111, No. 3, pp. 470-488, 2011.