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Employee Adoption and Use of Human Resource Information Systems (HRIS) : Evidence from Ugandan Local Government Perspective

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ABSTRACT

Globally, the importance of human resource technologies such as the Human Resources Information Systems (HRIS) has been recognised in streamlining the organisations operations and human resource management in order to provide better services. The aim of this research was to ascertain the determinants of employee adoption and use of HRIS in the Ugandan local governments' services. By adopting the Technology-Organization-Environment (TOE) framework, we categorised the possible adoption factors. We adopted a quantitative approach, a descriptive and cross-sectional research design and analyzed data using Partial Least Squares Structured Equation Modeling (PLS-SEM) to evaluate the strength of the hypothesized relationships among the constructs from the TOE factors and HRIS adoption. In our results, relative advantage; IT infrastructure; organisational compatibility; top management support and IT knowledge were found to have a significant positive relationship in the adoption and usage of HRIS. However, as hypothesized, complexity as an environmental context factor within the TOE framework was not supported as having a significant negative relationship and predictor of HRIS adoption and usage. Subsequently, the central governments in developing countries should earnestly consider the technological and organisational factors in the adoption of HRIS in the context of local governments based on the R-squared value of 87.9%. While the regulatory agencies concentrate on developing legal frameworks that would foster competition in the adoption and usage of HR technological innovations. Lastly, study implications of the findings are discussed alongside some direction for future research.

Keywords : HRIS Adoption and Usage, Local Governments, TOE Factors and PLS-SEM.

I. INTRODUCTION

In recent times, many countries have developed interest in the use of technological advancements to promote effectiveness and efficiency in facilitating service delivery achievement in respect to human resource management (HRM). Dessler (2005) define Human Resource Management (HRM) as a process of acquiring, training, appraising and compensating employees, and attending to their labour relations, health and safety and fairness concerns. Whereas French and Bell (1994) defines HRM as a managerial philosophy, policies, procedures, and practices related to the effective management of people for purposes of facilitating the achievement of results in the work organisation. Today, HRM is robustly becoming dependent on Human resources Information System (HRIS) (Lippert and Swiercz, 2005; Troshani, et al., 2011). As a result, the HRM area has had unprecedented technological advancement in technology (Ngai et al., 2008) that also gave rise to implementation of the HRIS in order to support HRM processes.

HRIS is defined as a system which is used to acquire, store, manipulate, retrieve and distribute pertinent information about an organisation's human resources (Kavanagh, Thite, & Johnson, 2012) supported by the Internet. On the other hand, Ruel et al. (2011) defines HRIS as an IT-based information system and applications for the purpose of HRM in facilitating HR practices, processes and strategies. Consequently, and

boosted by the ubiquitous and pervasive nature of the Internet, the HRIS has emerged as a significant interdisciplinary instrument to realise governments human resource (HR) objectives. To successfully achieve the HRM function, governments have capitalised on the rollout of HRIS to perform the human resource function. Kavanagh et al., (2012) and Anthony et al., (2002) allude to the fact that the special function of HRIS is to gather, collect, and help analyse the data necessary for the human resource department to do its job properly. Accordingly, the HRIS can be viewed as comprising all kinds of information system application like the enterprise resource planning (ERP) that support the HRM processes and policies that include recruitment, training, compensation, human resource planning and performance appraisal facilitated by networked resources and applications. Consequently, many organisations have invested heavily in the development and acquisition of the HRIS in order to gain from its benefits.

Whereas, organisations have spent massive financial and human resources on implementing various information systems, usage among end users remains low particularly in third world countries as manifested in e-government, e-learning and e-HRM (Schaupp et al., 2010; Lean et al., 2009; Yusoff et al., 2011). Furthermore, although the HRIS importance has been notable for organisations, its adoption has remained limited (Blount and Castleman, 2009) especially in developing countries. Moreover, few organisations are progressing further than utilising the HRIS to automate their existing HR practices thereby affecting the achievement of organisational strategic objectives aligned to HR. Many researchers also believe that public institutions delay in adopting HRIS than private sector (Troshani et al., 2011; Kamal, 2006; Themistocleous et al., 2004 and Caudle et al., 1991). Teo et al., 2001 notes that, there has also been some evidence to suggest that HR has been a laggard in adopting IT without any reasons.

The objective of this study was to examine the determinants of HRIS adoption in the context of Ugandan local governments. The research was guided by the Tornatzky and Fleischer (1990) Technology-Organization-Environmental (TOE) factors. In congruent with Tornatzky and Fleischer (1990), Indrit et al., (2011) contend that the adoption of HRIS in the public sector depends on environmental, organizational, and technology context factors. An understanding of the determinants that foster the adoption and usage of HRIS services from the employees' perspective is essential to promote rapid reception of these services. This study suggests that another study be conducted in the adoption and usage of the HRIS in the health sector environment in Uganda with a focus on public hospitals.

The rest of this paper is organised as follows: - first with the review of literature to develop research model and hypotheses which is followed by the research methodology and data analysis; then results and discussion and the final section provide a conclusion, study limitations and future research.

II. METHODS AND MATERIAL

1. Literature Review on Human Resource Information System (HRIS) and its Benefits

The developments in information technology (IT) have established latest organisational dimensions and are playing a significant role in changing the face of the human resource development. Consequently, Ostermann et al., (2009) assert that during the 1990s, along with the adoption of further comprehensive human resource (HR) practices focused on an organisation's general performance goal, HRIS equally evolved into extra sophisticated information expert system scoring exploratory tools to support decision-making in managing human capital. According to Panayotopoulou et al., (2007) there are several effects of technology on six key HR processes, namely:- HR planning; acquiring HR (recruitment and selection); HR evaluation (performance appraisal); communication; rewarding HR (performance appraisal, compensation and benefits); and developing HR (training and development, career management). In the past, organizations exploited technology to administer and control HRM internal processes; however, the use of IT to perform the human resource function has become popular in modern times. As a result, Troshani et al., (2011) reveal that lately, HRM is becoming strongly dependent on the human resource information systems (HRIS). Extant research has examined the adoption of HRIS in public sector in Australia (Troshani, Jerram and Gerrard, 2010), benefits

and barriers to HRIS implementation in Hong Kong (Ngai and Wat, 2006), adoption and diffusion of HRIS in Singapore (Thompson, Lim and Fedric, 2007), and usage of HRIS usage in Malaysia (Normalini et al., 2012) among others.

The rationale of any HRIS is to provide its users with information. Most HR processes can be done by using HRIS on a daily basis which can benefit the organisation in several ways (Ruel et al., 2004). Organisations are relying more on HRIS to improve the effectiveness of the human resource function in their various departments (Troshani et al., 2011) to track the existing employee data which traditionally included personal histories, skills, capabilities and other accomplishments among others. HRIS tools are used to help in making a decision in HR functions (Farndale, Scullion and Sparrow, 2010). Moreover, most benefits derived from the usage of HRIS are both administrative and strategic in nature (Kovach et al., 2002). Pablos et al., (2006) assert that at strategic level, HRIS is recorded to achieve performance positively and improve the tracking and control of human resource actions (Lengnick-Hall and Moritz, 2003). Furthermore, the HRIS provides diverse information to the management of the organization, which makes quality strategic decisions related to human capital possible (Aggarwal and Kapoor, 2012). Moreover Dery et al., (2009), Wyatt (2009), Hendrickson (2003) and Wiblen et al., (2010) assert that the HRIS at an administrative level can improve administrative efficiency through faster information processing, improved employee communications, greater information accuracy, lower HR costs and overall HR productivity improvements. Similarly, Singh et al., (2011) contend that HRIS is applied in personnel administration, salary administration, leave/absence recording, skill inventory, medical history, performance appraisal, training and development, HR planning, recruitment, career planning and negotiations among others. Cox and Blake (1991) argue that proper implementation of HRIS can create a competitive advantage for the organization, resulting in lower turnover, increased job satisfaction, high motivation and less internal conflict. Furthermore, more sophisticated HRIS have recently been developed to discover and manage talents now used in critical talent management (Harris et al., 2011). However, in its implementation, the HRIS also has major challenges that include:- organisational attention, dealing with the complexities associated with people administration, and managing user approval of the change associated with the system (Dery et al., 2009), though not a subject in this study.

2. Research Model and Hypotheses

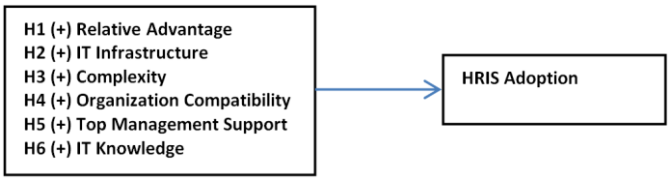

Figure 1: Research model adopted and modified from Tornatzky and Fleischer (1990) and Low et al., (2011).

This study used the TOE conceptual framework. Understandably, the Tornatzky and Fleischer (1990) TOE conceptual framework has also been used by other researchers to analyse the adoption of a variety of information systems (IS) and technical innovations, including e-commerce, e-learning, online retailing, e-business, and ERP (Chong et al., 2009; Lin and Lin, 2008; Oliveira and Martins, 2010; Zhu et al., 2006; Shin-Yuan et al., 2009). The TOE framework's technology context refers to internal and external technologies which are relevant for the firm. Frequently used constructs therein are relative advantage, complexity, and IT infrastructure (Ramdani et al., 2009), (Thong, 1999), (Grover, 1993) which have also been applied in this study. Whereas, the TOE framework's organizational context comprises "... the characteristics and resources of a firm including linking structures between employees, intra-firm communication processes, and the amount of slack resources" (Baker, 2012). Factors employed in the study include: organization compatibility, IT/IS knowledge and top management support. Lastly, the TOE framework's environmental context relates to the area "in which a firm conducts its business - its industry, competitors, access to resources supplied by others, and dealing with the government" (Tornatzky and Fleischer, 1990). Competition pressure or intensity and regulatory environment / policy have not been proposed in the study due to the nature of the local governments partly funded by the central government and are yet to experience some form of competition among them. Besides, the regulatory frameworks are still being developed.

2.1 Relative Advantage of HRIS

In a technological context, Low and Chen (2011) define relative advantage as a degree to which a technological factor is perceived as providing great benefit to an organization and that the adopted technology must assist the organizations to accomplish its goals. Relative advantage of the technology has been consistently identified as one of the most critical adoption factors (Iacovou et al., 1995; Kuan and Chow, 2000). It's considered to be similar to what the Technology Acceptance Model (TAM) calls perceived usefulness. Comline (2008) refers to perceived usefulness as the benefits or the efficiencies that will be enabled through the use of the system. Relative advantage was found as significant influencing adoption factors of HRIS in Australian public sector organization (Troshani et al., 2011). Agarwal and Prasad (1998) demonstrate that the advantage an innovation has relative to another method is positively related to its rate of adoption. It is therefore possible to suggest that the advantages that HRIS offers would influence its rate of adoption. Therefore, the following hypothesis (H) was formulated on this basis:

- **H1:** There is a significant positive relationship between relative advantage of technology and the adoption of HRIS.

2.2 Information Technology (IT) Infrastructure

Studies by Lin and Wang (2012) and Mitsweni and Biermann (2008) have revealed that organisations that have advanced IT infrastructure will have more chance in implementation success. The IT infrastructure encompasses all the IT technologies like fast Internet connection, sufficient and up to-date computers (Tagoe, 2012) with good computer networks. Oliveira and Martins (2010) contend that IT infrastructure and technical skills are factors that allow the technological capacity of an organisation to adopt HRIS. Conversely, since organizations with superior technology readiness are in a better position to adopt HRIS, companies that do not have strong technology infrastructure and wide IT expertise may not take the risk of adopting HRIS (Oliveira & Martins, 2010). However, HRIS can become an integral part only if the organisation has infrastructures and technical skills. Therefore, this study also adopts the IT infrastructure as a construct for the measure of HRIS adoption. Thus, the study sought to verify:

- **H2:** There is a significant positive relationship between IT infrastructure and the adoption of HRIS.

2.3 Complexity

Rogers (2003) defines complexity as the degree to which innovation is perceived as relatively difficult to understand and use. The more difficult an innovation and technology is to understand and to use, the more slowly it is likely to be adopted. In the technology acceptance model (TAM) model, the complexity attribute is referred to as perceived ease of use (PEOU). High complexity of innovation is assumed to restrict the organisations from integration of innovation with organisational activities, which ultimately increases the uncertainty upon its implementation, thus hindering the adoption process. Similarly, greater complexity implies boosting the degree of difficulty in understanding the use of a given innovation. Therefore complexity is assumed to be negatively associated with the intention to understand and use an innovation. For instance, studies on online portals use (Shih, 2008) and automatic cash payment system (Yan et al., 2006) found complexity had a significant negative impact on use intentions. The complexity of ICT can be considered a key factor affecting HRIS adoption. Generally, it could be thought that non-technical professionals face difficulty in understanding and using HRIS.

- **H3:** There is a perceived significant negative relationship between complexity and the adoption of HRIS.

2.4 Top Management Support

Top management support refers to the level of support extended by the higher management to adopting the technological innovations for use (Grover, 1993). Jeyaraj et al., (2006) suggests, top management support as one of the three best predictors for IT innovation adoption at the organizational level and can contribute to the adoption of innovations by creating a fertile environment and by providing resources [(Ramdani et al., 2009), (Grover, 1993), (Premkumar & Roberts, 1991)]. Moreover, it reduces barriers and resistance to

change (Teo et al., 2006). Previous studies on IT innovation adoption based on TOE framework have also suggested that top management support has a positive relationship to the organizational decision to adopt an innovation (Chong et al., 2009; Grover, 1993; Lee et al., 2009; Ramdani et al., 2009; Teo et al., (2006). Top management support lessens organisational disagreement on adopting an IT innovation as top management can provide long-term vision, proposals, support, and the obligation to generate an affirmative environment for the IT innovation (Quinn, 1985; Palacios-Marqués, et al., 2013). This in turn leads to message acceptance across the organization (Wang, Wang & Yang, 2010). According to Teo et al. (2007) beside top management support to adopt a system in the organizations, employee engagement is also needed which is also greatly influenced by the management commitment. Most studies showed that management commitment has a positive influence on HRIS or IT adoption (Teo et al., 2007; Troshani et al., 2011; Yang et al., 2007). Therefore, based on the previous theoretical arguments, the following hypothesis was formulated:

- **H4:** There is a significant positive relationship between top management support and the adoption of HRIS.

2.5 Organisational Compatibility

Rogers (1995) defines compatibility as the degree to which innovation is consistent with the adopter's current culture, lifestyle, values, needs, processes and technological requirements. Previous research most frequently singles out compatibility's influence on the adoption of innovative technology; it correlates positively with the diffusion of innovations (Tornatzky & Klein, 1982). Prior studies such as Teo et al., (2007) and Tan et al., (2009) provide evidence suggesting organisations are more likely to adopt and use technology that is compatible with the organizations existing technology infrastructure, business processes and value systems. The lack of compatibility had led many organizations to doubt the potential of the innovation in relation to their current environment (Jianyuan & Zhaofang, 2009). Organizations are more likely to adopt a technology when it is compatible with their existing practices and values (Rogers, 2003). The greater the compatibility between the applications of HRIS with the practical applications of the local government that had adopted it in terms of beliefs, values and past experiences, needs, priorities and policies, the better the influence on the success of the implementation of HRIS. Duan et al., (2010) have suggested that only perceived compatibility has significant positive influence on the likelihood of innovation uptake. Therefore the study is intended to verify that:

- **H5:** There is a significant positive relationship between organisation compatibility and the adoption of HRIS.

2.6 IT/IS Knowledge

Information technology (IT) knowledge / Information systems (IS) knowledge also referred to as technological readiness and the IT/IS human resources and infrastructures of a particular firm. IS Knowledge enables organisations to manage effectively the risks associated with investing in an innovation (Teo et al., 2007). A number of researches have recognized technological readiness as a significant factor that influences IT adoption (Kwon & Zmud, 1987; Oliveira & Martins, 2010; Lee et al., 2004; Lertwongsatien & Wongpinunwatana, 2003; Grover, 1993; Chau & Jim, 2002; Fichman, 1992; Zhu et al., 2002). Dholakia & Kshetri (2002) suggest that the experience of already available technologies in the organization will influence the adoption of similar technology in the future. Moreover, Kuan & Chou (2001) also found that prior IS experience influences the adoption of new technologies. Those organisations that do not have much IT/IS expertise and experience may not be aware of new technologies and may not desire to take a risk of adoption (Ramdani et al., 2009). Considering that increasingly non-IT employees - or at least their management are involved in strategic IT decisions, their perception and understanding of the targeted technologies is important. Van Grembergen and De Haes (2008) also state that IT knowledge within business divisions contributes to a creative and innovative environment. There are also some empirical evidence that shows the positive relationship between employees' IS knowledge and the decision to adopt IS (Thong, 1999). Technical competence and enhanced skills can be acquired through training. Troshani et al.,

(2011) study indicated that training is needed for all user levels such as operational and strategic levels to increase their knowledge and skills in using an IT system more effectively. Organisations could delay adoption of innovation until the staff acquired sufficient IT technical skills and knowledge of operating HRIS. Research suggested that organisations with IT competency were more likely to adopt innovations (Kwon & Zmud, 1987). If the staff lacked HRIS knowledge and skills, the rate of application of IT to HR departments could be slow. Therefore, the following hypothesis can be formulated on this basis on IT knowledge of the non-IT human resources:

- **H6:** There is a significant positive relationship between IT knowledge and the adoption of HRIS.

III. RESEARCH METHODOLOGY

Research Design, Sampling and Research Instrument

Using quantitative, descriptive and cross-sectional research designs, the study examined the determinants of employee adoption and use of human resource information systems (HRIS) in Ugandan local government services with constructs derived from the TOE framework. The study population comprised all the 24 local governments drawn from the central region in Uganda obtained from the Uganda Bureau of Statistics Report (2016). The choice of the central region was due to improved infrastructure such as Internet connectivity that avoided systems failures and accessibility. Data was collected from 4 employees who are actual users of the HRIS in each of the 24 local governments in the central region. The unit of analysis was the local government whereas the unit of inquire was the employees in the human resource offices. Simple random sampling was used to select respondents who are frequent users of the HR system and are believed to be very knowledgeable about the area under study.

The questionnaire was self-administered to all the 96 possible target respondents fairly across all the 24 district local governments. 92 questionnaires were returned with 91 usable registering 94.8% of response rate. The impressive response rate was due to the fact a network of friends and alumni now employees in both the district local governments and other nongovernmental organisations (NGOs) were actively engaged. Moreover, a period of three months was considered adequate was dedicated to data collection.

The instrument for this survey comprised of items that provided indicators as a yardstick for HRIS adoption. The instrument was anchored on a multi-item five-point Likert scale with statements to which respondents gave the degree to which they were in agreement/disagreement with five options offered as:- Strongly Agree “5”, Generally Agree “4”, Neutral “3”, Generally Disagree “2”or Strongly Disagree “1”. The questionnaire was pre-tested through solicited views from human resource practitioners and management IT experts to ensure validity and clarity of the items within the instrument.

The instrument consisted of two parts A and B obtained in the Appendix. Part A contains questions relating to the respondent’s social demographic characteristics that sought to know the respondent’s job title, gender, education background and professional qualifications. Whereas part B comprised of questions related to the Technological-Organisation-Environmental context factors in the adoption of HRIS.

The survey measured 8 constructs that included;- relative advantage; information technology infrastructure; complexity; organization size; top management support; organisation compatibility; information technology knowledge; regulatory environment and legal requirements and finally adoption of HRIS. Below is the summary of the sources of measure of all variables.

(a) Relative Advantage (RA) – measured of 5 items derived from (Ali & Green, 2007; De Haes & Van Grembergen, 2008; Lee et al., 2008; Nfuka & Rusu, 2010; Nfuka & Rusu, 2011; Wang et al., 2010; Yen et al., 2013; Alshamaila et al. 2012; Low et al., 2011; Jang, 2010; and Dublin, 2004).

(b) Information Technology Infrastructure (ITI) – measured by 5 items from (Lin and Wang, 2012; Ansong et al., 2016; Mitsweni and Biermann, 2008; Namisiko et al., 2014; and Eze et al., 2013).

(c) Complexity (CX) – measured by 4 items from (Matopoulos et al., (2009; Ahmad and Agrawal, 2012; and Furneaux and Wade, 2011).

(d) Top Management Support (TMS) – measured by 4 items derived from (Ali & Green, 2007; De Haes & Van Grembergen, 2008; Lee et al., 2008; Nfuka & Rusu, 2010; Nfuka & Rusu, 2011; Wang et al., 2010; Yen et al., 2013; Alshamaila et al., 2012; Low et al., 2011; and Jang, 2010).

(e) Organisation Compatibility (OC) – measured by 3 items derived from (Matopoulos et al., 2009; Ahmad and Agrawal, 2012; and Furneaux and Wade, 2011).

(f) Information Technology Knowledge (ITK) – measured by 3 items derived from (Van Huy et al., 2012; Rahayu & Day 2013; and Wang, Vogel & Ran 2011); and finally,

(g) HRIS Adoption (HRISA) – measured by 4 items derived from (Agarwal et al., 2004; Basheer and Ibrahim, 2011; Liu and Wang, 2009; Borstorff and Lowe, 2007; and Kartha, 2006).

3. Data Analysis

The structural equation modeling (SEM) based on partial least squares (PLS) approach was used to test the research hypotheses. PLS is a second generation multivariate technique (Fornell and Cha, 1994) which can simultaneously evaluate the measurement model (the relationships between constructs and their corresponding indicators), and the structural model with the aim of minimising the error variance (Gil-Garcia, 2008). We chose PLS because it estimates path models with small samples (Reinartz et al., 2009) and the sample for this study was 91 employees to determine the significance levels for loadings, weights, and path coefficients.

Table 1 below represents the social demographic characteristics of respondents about their gender, age, education level and duration of usage of the HRIS. The social demographic characteristics indicate that most of the respondents in the survey were male 64.8% and with 35.2% as female. In addition, most respondents are in the age bracket of 26-30 years 34.1%, 31-40 years 50.5% and above 41 years constituted 15.4% an indicator of an average workforce in age. Furthermore, educational level indicate that the highest percentage of respondents are graduates with 19.8% possessing Diplomas, followed by 32.2% with Bachelor degrees, 32.2% hold Postgraduate Diplomas/Masters and 9.9% possessing Ph.D holder participated in the survey. Moreover, the duration at workplace show that 14.3% worked for at least one year; 76.9% served for 2-3 years; 6.6% worked for 4-6 years and only 2.2% worked for 7 years and beyond. This is an indicator the HRIS is still at its infancy stage in local governments.

Table 1: Social Demographic Characteristics

		Frequency	Percentage
Gender	Male	59	64.8
	Female	32	35.2
	Total	**91**	**100**
Age	20 – 30 years	31	34.1
	31 – 40 years	46	50.5
	41 years and above	14	15.4
	Total	**91**	**100**
Education Level	Diploma	18	19.8
	Bachelors	32	35.2
	Postgraduate/Masters	32	35.2
	PhD	9	9.9
	Total	**91**	**100**
Duration of Service	0 - 1 year	13	14.3
	2 - 3 years	70	76.9
	4 - 6 years	06	6.6
	7 years and beyond	02	2.2
	Total	**91**	**100**

A two-phase approach, assessment of the measurement and testing the structural relationships among latent constructs, suggested by Andersonand Gerbing (1988) was used to assess the reliability and validity of the measures before using them in the research model. The test of the measurement model involves the estimation of internal consistency reliability as well as the convergent and discriminate validity of the research instruments, which indicates the strength measures used to test the proposed model (Fornell, 1982; Nunally, 1978 and Fornell, C., and Wernerfelt, 1987). The criterion for measuring the internal consistency reliability was by considering the Cronbach's Alpha (CA) and composite reliability (CR). A CA must be greater than 0.7 and not less than 0.6 while a CR must not be lower than 0.6. As shown in Table 2 below, all reliability measures were well above the recommended threshold value of 0.70 as an indicator for adequate internal consistency (Hair et al., 2014; Nunnally, 1994). This therefore implies that the constructs in the model were adequately measured hence making the model measurements reliable.

Table 2 : Loadings, Construct Reliability and Validity

Construct	Items	Loadings	Cronbach Alpha	Composite Reliability	AVE
Relative Advantage	RA1	0.803	0.846	0.890	0.619
	RA2	0.825			
	RA3	0.818			
	RA4	0.752			
	RA5	0.732			
IT Infrastructure	ITI1	0.752	0.803	0.864	0.565
	ITI2	0.875			
	ITI3	0.844			
	ITI4	0.649			
	ITI5	0.601			
Complexity	CX1	0.824	0.858	0.899	0.690
	CX2	0.853			
	CX3	0.865			
	CX4	0.779			
Top Management Support	TMS1	0.894	0.872	0.914	0.730
	TMS2	0.915			
	TMS3	0.910			
	TMS4	0.677			
Organisation Compatibility	OC1	0.859	0.826	0.893	0.736
	OC2	0.853			
	OC3	0.862			
IT Knowledge	ITK1	0.887	0.864	0.917	0.786
	ITK2	0.874			
	ITK3	0.898			
HRIS Adoption	HRISA1	0.906	0.736	0.839	0.580
	HRISA2	0.912			
	HRISA3	0.669			
	HRISA4	0.672			

Hair et al., (2014) recommended the use of factor loadings, composite reliability and average variance extracted (AVE) to assess convergence validity. Composite reliability values in Table 2, that depict the degree to which the construct indicators indicate the latent construct ranged from 0.839 to 0.917 exceeded the recommended value of 0.7 (Hair et al., 2014). In addition, the average variance extracted (AVE) that reflects the overall amount of variance in the indicators accounted for by the latent construct all exceeded the recommended value of 0.5 (Hair et al., 2014; Fornell and Larcker, 1981). Therefore the outcome shows a convergent validity of the model. Moreover, the factor loadings, also in Table 2 above, that measure the strength of the relationship between the indicators and the constructs (latent variables) of the model, was calculated using the PLS Algorithm. The result shows that the loadings are high since they are all above factor loading threshold of 0.6. Hence the model fit based on the factor loadings is very desirable.

Furthermore, as required, we tested for the discriminant validity. The criterion for measuring discriminant validity is the Fornell-Larcker criterion. Fornell & Larcker (1991) suggest that the discriminant validity can be observed by comparing the squared correlations between constructs and variance extracted for a construct. Table 3: below shows a matrix of calculated latent variable construct correlations together with the AVE values and the square root of the AVE value for each construct in the leading diagonal. As demonstrated,

since the square root of the AVE in each instance is higher than the value of the latent variable correlations below it in Table 3, all constructs therein in the model were distinct as required for construct and discriminant validity. In entirety, the measurement model showed a suitable convergent validity and discriminant validity for further analysis.

Table 3 : Discriminant Validity (Fornell-Larcker Criterion)

Variables/Model Constructs	**(HRISA)**	**(CX)**	**(ITI)**	**(ITK)**	**(OC)**	**(RA)**	**(TMS)**
HRIS Adoption (HRISA)	**0.762**						
Complexity (CX)	-0.147	**0.831**					
IT Infrastructure (ITI)	0.515	-0.105	**0.752**				
IT Knowledge (ITK)	0.467	-0.178	0.495	**0.886**			
Organisational Compatibility (OC)	0.341	-0.087	0.701	0.261	**0.858**		
Relative Advantage (RA)	0.522	-0.192	0.749	0.920	0.365	**0.787**	
Top Management Support (TMS)	0.965	-0.175	0.356	0.447	0.285	0.446	**0.855**

As shown in Table 4 below, the R-squared values for the dependent variable produced from the PLS algorithm calculation and path coefficients after bootstrapping to test the research hypotheses were considered. This was done in order to assess the determinants of the employee HRIS adoption model. Sang et al., (2010) contend that the structural model indicates the causal relationships among constructs in the model that includes the estimates of the path coefficients, and the R square value, which determine the prediction power of the model. Together they indicate how well the data support the hypothesized model (Sang et al., 2010). The R-squared value for HRIS adoption is 0.879. This indicates that 87.9% of the variation of HRIS adoption in the model is mainly explained by the exogenous latent variables used in the model.

Table 4 : Path Coefficient

	Original Sample	**Sample Mean**	**T-Statistics**	**P Values**	**R-Squared**
Complexity → HRISA	0.008	0.006	0.463	0.644	0.879
IT Infrastructure → HRISA	0.615	0.615	4.513	0.000	
IT Knowledge → HRISA	0.359	0.362	2.648	0.008	
Organisational Compatibility → HRISA	-0.227	-0.225	3.957	0.000	
Relative Advantage → HRISA	-0.592	-0.598	3.358	0.001	
Top Management Support → HRISA	0.916	0.910	20.121	0.000	

IV. RESULTS AND DISCUSSION

The hypotheses derived from literature were used to test the research model involving both the exogenous variables and HRIS adoption variables. The exogenous variables in this study are complexity, IT infrastructure, IT knowledge, organizational compatibility, relative advantage and top management support with HRIS adoption as an endogenous variable.

Hypothesis H1: Relative Advantage was found to have significant positive influence ($t = 3.358$, p-value <0.01) on the employees' intention to adoption and usage of HRIS in the local governments in Uganda as shown in Table 4 above. Relative advantage was explained as perceived benefits in Troshani et al, (2011) and previous researches (Lean et al., 2009; Schaupp et al., 2010; Van Slyke, Lou, Belanger & Sridhar, 2010) have indicated that perceived usefulness/relative advantage is positively related to system usage. Just like in those previous researches, the results here also reveal that HRIS

adoption and usage increases user satisfaction, improves organisational performance, efficiency and effectiveness. Moreover, it also offers convenience in service provision and the provision of new opportunities.

Hypothesis H2: IT Infrastructure was found to have significant positive impact (t = 4.513, p-value <0.01) on the employees' adoption and usage of HRIS in Ugandan local government. Congruent with extant research, we also confirm that availability of good Internet connectivity and adequate computers for the application of the HRIS, coupled with existence of proper software and hardware to support the infrastructure, the more employees tend to use the system.

Hypothesis H3: Complexity was found to have an insignificant positive impact (t = 0.463, p-value >0.01) on the employees' adoption and usage of HRIS in Ugandan local governments thus the hypothesis was not supported. The result was not consistent with several past studies by (Ansong et al., 2016; Wang et al., 2010; Alghamdi et al., 2012; Ayyagari et al., 2012; Sohail, 2012; Swilley et al., 2012; Nasseef, 2013; Ahmed et al.,2014) which found a negative significant influence of complexity on the adoption and usage of HRIS. Past research has indicated that innovation with substantial complexity requires more technical skills and needs greater implementation and operational effort to increase its chances of adoption (Cooper and Zmud, 1990). The results indicate that the skills needed to use HRIS are not complex and the integration of HRIS to the existing local government practices is not a challenge. Furthermore, it reveals that it's easy to use the HRIS. This inconsistent result is attributed to the fact that most employees were found to be University graduates and have used the HRIS for at least 3 years to the extent that usage of other systems is no longer a challenge.

Hypothesis H4: Top management support by senior administrators was found have the most significant positive influence (t = 20.1, p-value <0.01) on the employees' adoption and usage of HRIS in Ugandan local governments thus the hypothesis also was supported. Most studies showed that top management support has a positive influence on HRIS or IT adoption (Teo et al., 2007; Troshani et al., 2011; Yang et al., 2007). This finding is also not odd since top managers have encouraged employees to use the HRIS and also taking risk by investing the necessary resources for improving the HRIS usage.

Hypothesis H5: Organisational compatibility was found to have significant positive influence (t = 3.957, p-value <0.01) on the employees' adoption and usage of HRIS in Ugandan local government. Previous empirical studies found positive relationship between compatibility and intention to use (Ojha, Sahu & Gupta, 2009; Van Slyke et al., 2010). The findings in this study augment that HRIS services are compatible with the goals, objectives and existing culture and values of local governments. Further, it indicates the usage of HRIS technologies is compatible with all aspects of the local governments' operation.

Hypothesis H6: IT knowledge was found to have a significant positive impact (t = 2.648, p-value <0.01) on the employees' adoption and usage of HRIS in Ugandan local governments which also did support the hypothesis. This is consistent with previous study of (Kwon & Zmud, 1987; Oliveira & Martins, 2010; Lee et al., 2004). In this study, we state that possessing an extensive HRIS knowledge, familiarity with the HRIS technology and having prior IT skills to use the HRIS services positively influences the adoption and usage of the system.

Table 5 : Summarised Hypothesis Results

Hypothesis	Descriptions	Results
H1	There is a significant positive relationship between relative advantage of technology and the adoption of HRIS.	Supported.
H2	There is a significant positive relationship between IT infrastructure and the adoption of HRIS.	Supported.
H3	There is a perceived significant negative relationship between complexity and the adoption of HRIS.	Not Supported.
H4	There is a significant positive relationship between top management support and the adoption of	Supported.

	HRIS.	
H5	There is a significant positive relationship between organisation compatibility and the adoption of HRIS.	Supported.
H6	There is a significant positive relationship between IT knowledge and the adoption of HRIS.	Supported.

V. CONCLUSION, IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH AREAS

The aim of this research was to ascertain the determinants of employee adoption and use of human resource information systems (HRIS) in Ugandan local government services using the TOE framework. As indicated in Table 5 below; relative advantage, IT infrastructure, organizational compatibility, top management support and IT knowledge were found to have a significant positive relationship in the adoption and usage of HRIS. However, complexity was not supported as having a significant negative relationship and predictor of HRIS adoption and usage. This is an indicator that the HR managers were knowledgeable about the use of HRIS. In fact is complemented with the fact that only employees who had prior knowledge of the HRIS usage were given the survey instrument. In the context of HRIS, the study provides evidence on the appropriateness of using the Tornatzky and Fleischer (1990) TOE conceptual framework also applied by other researchers to analyse the adoption of a variety of information systems (IS (Chong et al., 2009; Lin and Lin, 2008; Oliveira and Martins, 2010; Zhu et al., 2006; Shin-Yuan et al., 2009). However, the environmental context factors were not examined since we considered that they are fully applicable to organisations that have consistently used and embraced information systems for years.

Consequently, the central government should consider intensely the technological and organizational factors in the adoption of HRIS in the context of local governments as demonstrated by the R-squared value of 87.9% while regulatory agencies concentrate on developing legal frameworks that promote the adoption and usage of HR technological innovations.

The study will contribute to the gaps in technological human resource applications literature. Moreover, organisations that recognise the value of using HRIS functionalities across the organisation platform will benefit from improved efficiency and effectiveness in their operations. HRIS adoption will also expose other stakeholders within government to formulate policies and strategies that could reassure its adoption due to its prospect. The study would also permit researchers and practitioners alike to discover the challenges and opportunities in the use of employee information systems with the view to improve on its implementation elsewhere. Organisations that will have fully adopted and implemented the HRIS usage would expect a less stressed and motivated workforce resulting into effectiveness, efficiency and improved productivity. This will also positively influence policy on new ideas on employee retention and training. However, focusing only on the HR department was one of the limitations in the study since it limits the generalisation of our findings to other departments. Moreover, the Ugandan context of the study may also impede the generalisation of the findings. Further studies could be done in the area of organisational culture and the adoption of the HRIS as an enabling technology.

VI. REFERENCES

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