

Internal Structure of the Organization as a Determinant of Adoption of HRIS in the Operations of Teachers Service Commission (TSC) in Kenya

Catherine Warui

Prof. Elegwa Mukulu

Dr. Kabare Karanja

School of Human Resource Development

Jomo Kenyatta University of Agriculture and Technology

P.O Box 62000-00200, Nairobi, Kenya

Email: waruikay@gmail.com

DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v5-i2/1463>

Published Date: 06 February 2015

Abstract

Human Resources (HR) and information technology are the two elements that many firms are learning to use as strategic weapons to compete. The vision 2030 economic reform progress initiated by the government of Kenya is aimed at turning Kenya into a middle level income country. It incorporates ICT as a social economic force under the economic pillar for driving development among other sectors. The government's key objective is to turn Kenya into a global ICT hub and a premier location for business process outsourcing (BPO). To capitalize on the synergy between these two assets, human resource information systems (HRIS) is an emerging area that may lead human resource management into a new era. Technological developments and particularly those based on advancing IT, are essential for organizational effectiveness and are powerful drivers of organizational change. The TSC has grown tremendously since its creation through an act of parliament cap 212 in 1967 in terms of the teacher population it serves, as well as its secretariat staff. Recently it was made a constitutional office through an act of parliament 237(1) of 2012. It is therefore expected to improve service delivery to its customers. Being the biggest employer in eastern and central Africa means it manages a massive payroll. The HR issues it has to manage lead to a lot of correspondences in a day. The introduction of HRIS in the organization can improve efficiency and in consequence reduce the amount of correspondences and clients visiting the commission at any given time. The study therefore sought to investigate whether internal structure of an organization has effect on adoption of HRIS in its operations. The independent variable was internal structure of the organization with a moderating variable; effect of external environment. The study investigated how each variable influences the level of

adoption of Human Resource Information Systems at the TSC in Kenya. The study employed descriptive research design and the study population was the staff of the TSC in Kenya. Purposive stratified sampling was used to select the sample for the study. Data was collected using a self administered questionnaire. It was analyzed using multiple regression and analysis of variance (ANOVA) to come up with some useful conclusions and recommendations. From the analysis above it was concluded that the null hypothesis be rejected and the alternative be accepted; there is a significant relationship between internal structure of the organization and adoption of HRIS. According to (Ivancevich et al 2006), an organization's structure is considered to be the "anatomy of the organization, providing a foundation within which the organization functions. This underscores the importance of internal structure of an organization in adoption of new technology and for this case HRIS.

1.0 Introduction

Internal organizational structure is the particular manner in which an organization is arranged in order to achieve its goals (Ivancevich et al 2006).

As organizations grow it becomes increasingly difficult and inefficient to rely on manual systems. This has called for change from the traditional manual management systems to computerized systems. Many firms and TSC for that matter have begun computerizing individual tasks a system commonly referred to as use of information systems. A case in point is the customer relations management system (CRM) introduced in 2012. However there is need to fully integrate organization-wide network of HR- related data, information, services, databases, tools and transactions. However the impact of information systems in solving HR issues is yet to be felt since most of it is still at transactional level.

A report on enhancing professionalization of human resource management in the public service in Africa observes that Human Resource Information system (HRIS) has been quite widespread in the developed world since the 1980's. Before the 1960s, computer systems had a very limited purpose in human resource management and were used only to monitor employee records and payroll activities. The same report adds that the use of a wide range of ICT technologies and social media technologies has now been used to rationalize or even transform HR. It has been used to transform internal operations in order to lead to the virtualization and or leaning of HR while simultaneously improving quality of services by transforming the traditional paper and pencil, labor intensive tasks into efficient fast response activities that enable organizations to anticipate and profit from change to create competitive advantage.

The term e-HRM was first used in the late 1990's when e-commerce was sweeping the business world. e-HRM is internal application of e-business techniques to add value to the management through more effective and efficient information flow and is a way of doing HRM. It is application of technology enabling managers and employees to have direct access to HR and other workplace services for communication, performance, reporting, team management, knowledge management and learning as well as administration applications. e-HRM consists of HR functional application, extranet applications, intranet, wireless and mobile HR applications. Current literature distinguishes three types of e-HRM: operational; relational; transformational e-HRM.

1.1 General objective of the study

The purpose of this study was to find out the determinants of adoption of human resource information systems in Teachers Service Commission operations in Kenya.

1.2 Specific objectives of the study

1. To analyze the effects of internal structure of an organization on the adoption of human resource information systems in TSC operations in Kenya.

2.0 Literature Review

Internal organizational structure is the particular manner in which an organization is arranged in order to achieve its goals. Managers achieve coordinated effort through the design of a structure of tasks and authority relationships. Structure refers to relatively stable relationships and processes of the organization. Organization structure is considered to be the “anatomy of the organization, providing a foundation within which the organization functions (Ivancevich et al 2006).

Internal characteristics of organizational structure include observations according to Rogers (1995) whereby: “centralization is the degree to which power and control in a system are concentrated in the hands of a relatively few individuals”; “complexity is the degree to which an organization’s members possess a relatively high level of knowledge and expertise”; “formalization is the degree to which an organization emphasizes its members’ following rules and procedures”; “interconnectedness is the degree to which the units in a social system are linked by interpersonal networks”; “organizational slack is the degree to which uncommitted resources are available to an organization”. Organizational structure may also include the assignment of tasks, supervision structure, hierarchy and other concerns affecting the way an organization is run. It may be based on the nature of goals of the organization and may also differ based on the preferences and ideas of those in charge. An organizations structure system can be based on strict hierarchical control structure while another may involve less supervision. The goal of the first would be stability and efficiency while the second likely places emphasis on creativity and flexibility.

The internal organization structure of most organizations is based primarily in arrangement and grouping of personnel to accomplish tasks. A strongly hierarchical structure is characterized by ranks in which superiors direct actions of their subordinates toward the goals of the company.

Individuals of higher ranks supervise and assign tasks to their subordinates. This structure supports the primary manner in which tasks that ultimately contribute to the goals of the organization are accomplished (Wise Geek, 2013).

According to the institutional theory, organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutions are transported by cultures, structures, and routines and operate at multiple levels. The theory claims that firms become more similar due to isomorphic pressures and pressures for legitimacy (Olivera and Fraga 2011). This means that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. For example, rather than making a purely internally driven decision to adopt e-commerce, firms are likely to be induced to adopt and use e-commerce by external isomorphic pressures from competitors, trading partners, customers, and government.

Miles and Snow (2003) observed that in most successful organizations, management consciously develops and articulates an internal organizational image just as it does a product-market image. It tries to demonstrate how and why the organization’s structure and processes reflect previous decisions about the market and, further how these pave the way for future organizational development. They argued that since organizations enact their own environments, it is theoretically possible that no two organizational strategies will be the

same. They came up with four organization types: the defenders, prospectors, analyzers and reactors.

The defenders are organizations which have narrow product-market domains. Top managers in this type of organization are highly expert in their organizations limited area of operation but do not tend to search outside their domains for new opportunities. As a result of this narrow focus they seldom need to make major adjustments in their technology, structure, or methods of operation. Instead they devote primary attention to improving the efficiency of their existing operations. The main problem of such organizations is how to produce and distribute goods and services as efficiently as possible. Technology efficiency is central to organizational performance, but heavy investment in this area requires technological problems to remain familiar and predictable for lengthy periods of time.

The prospectors are organizations which almost continually search for market opportunities, and they regularly experiment with potential responses to emerging environmental trends. Thus these organizations are often the creators of change and uncertainty to which their competitors must respond. However, because of their strong concern for product and market innovation, these organizations are usually not completely efficient. The main problem is how to avoid long term commitments to a single technological process. Technological flexibility permits a rapid response to a changing domain but the organization cannot develop maximum efficiency in its production and distribution system because of multiple technologies.

Analyzers are organizations which operate in two types of product- market domains, one relatively stable, the other changing. In their stable areas, these organizations operate routinely and efficiently through use of formalized structures and processes. In their more turbulent areas, top managers watch their competitors closely for new ideas, and then they rapidly adopt those which appear to be most promising. Its main problem is how to be efficient in stable portions of the domain and flexible in changing portions. Another is how to differentiate organizations structure and processes to accommodate both stable and dynamic areas of operation. A dual technological core is able to serve a hybrid stable- changing domain, but the technology can never be completely effective or efficient.

Reactors are organizations in which top managers frequently perceive change and uncertainty occurring in their organizational environments but are unable to respond effectively. Because this type of organization lacks a consistent strategy- structure relationship, it seldom makes adjustment of any sort until forced to do so by environmental pressures. This inconsistency may stem from at least three sources. Management failure to articulate a viable organizational strategy, a strategy is articulated but technology, structure and processes are not linked to it in an appropriate manner or lastly management adheres to a particular strategy – structure relationship even though it is no longer relevant to environmental conditions.

It has been recently observed that government is keen on implementation of information systems in its service delivery to the public. The focus is transiting to less paper work and hence the ICT policies in most public organizations including the TSC policy of 2003. However an understanding of the characteristics of an organization such as the TSC is important in aligning the structure with HRIS adoption strategy.

2.1 Theoretical Framework

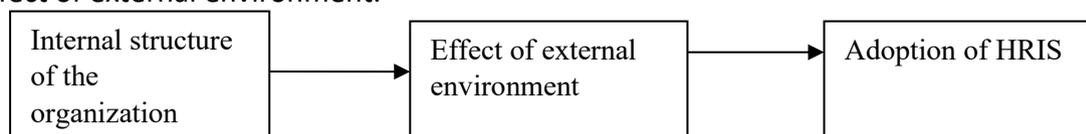
The study was built around the institutional theory. Olivera and Fraga (2011) explain that institutional theory emphasizes that institutional environments are important in shaping

organizational structure and actions. According to the institutional theory, organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutions are transported by cultures, structures, and routines and operate at multiple levels. The theory claims that firms become more similar due to isomorphic pressures and pressures for legitimacy (Olivera and Fraga 2011). This means that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. For example, rather than making a purely internally driven decision to adopt e-commerce, firms are likely to be induced to adopt and use e-commerce by external isomorphic pressures from competitors, trading partners, customers, and government.

They go on to add that mimetic, coercive, and normative institutional pressures existing in an institutionalized environment may influence organizations' predisposition toward an IT-based inter organizational system. Mimetic pressures are observed when firms adopt a practice or innovation imitating competitors (Soares-Aguiar and Palma-Dos-Reis 2008). Coercive pressures are a set of formal or informal forces exerted on organizations by other organizations upon which the former organizations depend. Normative pressures come from dyadic relationships where companies share some information, rules, and norms. Sharing these norms through relational channels amongst members of a network facilitates consensus, which, in turn, increases the strength of these norms and their potential influence on organizational behavior. The institutional theory adds to the environmental context of the TOE framework external pressures, which include pressure from competitors and pressure exerted by trading partners.

2.2 Conceptual Framework

Internal structure of the organization was conceptualized through creativity and innovativeness, decision making and interdepartmental networks. The moderating factor is effect of external environment.



Independent variable

moderating variable

Dependent variable

Figure 1 Conceptual framework

3.0 Research Methodology

The study adopted an exploratory research design. This choice was informed by the fact that research on HRIS in the context of Africa and Kenyan public sector is very marginal. The exploratory research design is a methodological approach that is primarily concerned with discovery and generating or building a theory. Kothari (2007) explains that exploratory studies aim at formulating a problem for more precise investigation of developing the working hypothesis from operational point of view. He further adds a research design appropriate for such studies must be flexible enough to provide opportunity for considering different aspects of a problem under study.

3.1 Population

According to Mugenda & Mugenda(2003) population is complete set of individuals, cases or objects with some common observable characteristics, all items or people under consideration in any field of inquiry, Orodho (2004). It is that portion which is accessible and most representative of the target population (Mugenda & Mugenda, 2003).

The population of the study comprised the secretariat staff of the TSC which according to datum obtained from human resourced department-2014 was 3000. The unit of observation for the study was all top level and middle level management staff in TSC offices spread across Kenya. The top management (job groups Q and above) comprised of directors heading the seven directorates namely: teacher management, human resource management, finance, audit, accounts, administration and ICT, TSC county directors and, and senior deputy directors in charge of divisions. The middle level management included all deputy directors, assistant deputy directors and senior officers in the field offices (job groups L-P). This target population was also most likely to be well informed about human resource information systems.

3.2 Determination of Sample Size

Gall et al (1999) reckon that researchers attempt to discover something about large group of individuals by studying a smaller group. The larger group that they wish to learn about is called a population while the smaller group is the sample. Wisker (2001) defines a sample as a selected and chosen group upon which you carry out your research. A sample is a subset of the population. It comprises of some members selected from it. By studying the sample, the researcher should be able to draw conclusions that would be generalized to the population of interest (Sekaran 2003). He further explains that sampling is the process of selecting a sufficient number of elements from the population, so that a study of the sample and an understanding of its properties or characteristics would make it possible for us to generalize such properties or characteristics to the population elements.

A sample size 203 respondents was used in the study. Out of these, 41 were drawn from top management and 162 from middle level management. All made the population of study since they comprised the group that is faced with decision making at the commission.

This was arrived at by using the formula below as espoused by Mugenda & Mugenda (2003).
 $n = z^2 pq / d^2 = (1.96)^2 (0.5) (0.5) / (0.01)^2 = 384.$

However this is only applicable when the population size is at least 10,000. When the population is less than 10,000 as was the case with this study, then the sample size was subjected to the formula: $nf = n / 1 + (n-1) / N$

$$= 384 / 1 + 383 / 417 = 384 / 1.91846$$

$$= 200$$

Which $200 / 203 \times 100 = 99$

Therefore the sample for top management was $99\% \times 40 = 3$.

Middle management was $100\% \times 160 = 158$

Where: n= the desired sample size

z=the standard normal deviate at the required confidence level

p=the proportion in the target population estimated to have characteristics of adoption being measured assumed to be 50% = 0.5

q=1-p =0.5

d=the level of statistical significance set. (0.05).

The number of staff and sample size for each stratum is shown in the table below

Table 1 Sample Size

	Top mgt	Middle mgt	Sample Total
Teacher mgt	6	52	58
HR mgt	6	31	37
Administration	12	30	42
ICT	2	10	22
Accounts	3	10	13
Audit	2	10	12
Finance	3	5	8
Former Provincial	7	14	21
Total	41	180	203

3.3 Data Collection

The study used both primary and secondary data. Since different data collection methods have different strengths and weaknesses complimentary tools and methods were used. The selection of the tools and methods was guided by the research method, nature of data to be collected, and the research objectives. The research instruments included a questionnaire and documents review.

Questionnaire has been defined as a document that asks the same questions of all individuals in the same sample. The researcher chose the questionnaire because it is relatively economical, easier and quicker to administer than interviews or focus group discussions for a large group of respondents. (Kathuri 1993), (Orodho 2004) and (Mugenda & Mugenda, 2003). The questionnaire employed both structured and unstructured questions and was self-administered. It also adopted open ended and close ended questions. Likert Scale of (1-5) will be used. Saunders et al (2007) observe that personal contact with the respondents raises response rate by 19% and anonymity by 20%.

4.0 Summary, Conclusions And Recommendations

4.1 Background of the Respondents

The characteristics of the respondents are summarized in terms of gender and age.

4.1.1 Response by gender

Out of the 140 respondents, 137 responded positively while three did not indicate their gender. 42.3% (58) were male while 57.7% (79) were female from the sampled TSC offices countrywide as provided in figure below.

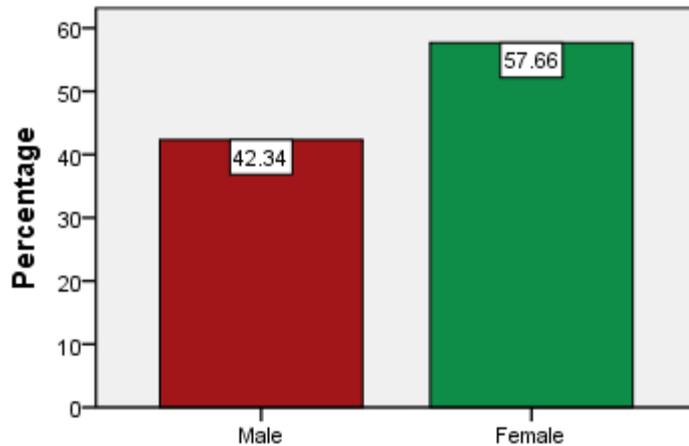


Figure 2 Response by gender

4.1.2 Response by age

The responses indicate that most of the employees who were drawn from middle and top management level are in the age bracket of 40- 50 years at 59.3% and 25.7% for the age bracket 30- 40 years. These age brackets mainly comprise the operation managers and implementers of policies at the TSC. The organizational structure narrows towards the top comprising of employees in job group 'Q' and above. The least were in the age bracket of 30 years and below at 5.0%.who are yet to rise to management level, followed by above 50 years at only 7.1%. (See figure 4.2).

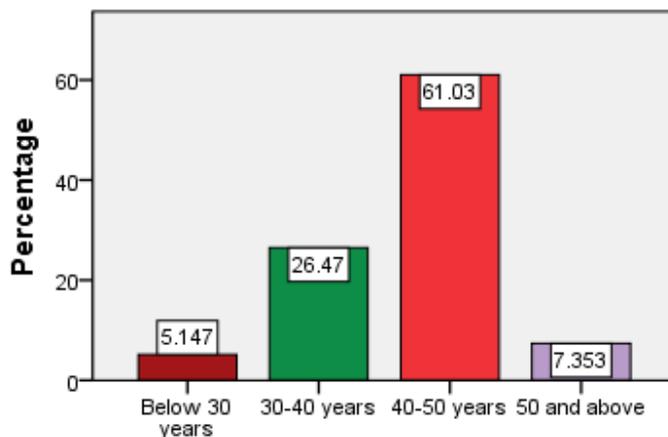


Figure 3 Age of respondents

4.2 Descriptive Analysis

The analysis sought to test the hypothesis that internal structure of the organization has significance on adoption of HRIS in the operations of TSC in Kenya

4.2.1 Internal structure of the organization

A significant number of respondents, (63.3%) disagreed with the statement that creativity was encouraged at TSC which is understandable while an equally significant number (64.7) was of the opinion that TSC was more committed to improving existing operations than exploring new ideas. Most respondents indicated that directors hold regular meetings (71.7%). However 61.8% indicated that TSC as an organization does not respond well to changes in its environment. This therefore makes the TSC fall in to the category of reactors. These are organizations in which top managers frequently perceive change and uncertainty occurring in their organizational environments but are unable to respond effectively. Because this type of organization lacks a consistent strategy- structure relationship, it seldom makes adjustment of any sort until forced to do so by environmental pressures. This inconsistency may stem from at least three sources. Management failure to articulate a viable organizational strategy, a strategy is articulated but technology, structure and processes are not linked to it in an appropriate manner or lastly management adheres to a particular strategy – structure relationship even though it is no longer relevant to environmental conditions A majority 87.1% agreed that there was a functional welfare and they also chose their own leaders. The results are displayed in the table 2.

Table 2:
Internal structure of the organization

Statements	SD	D	N	A	S
Creativity is emphasized and encouraged at TSC	30.9%	32.4%	12.2%	14.4%	1
TSC strictly operates routinely through formalized structures and processes	10.0%	8.6%	12.1%	48.6%	2
The TSC responds to changes in its environment effectively	12.9%	48.9%	9.4%	23.7%	5
TSC is more devoted to improving efficiency of existing operations than exploring new ideas	9.4%	11.5%	14.4%	46.0%	1
There is inter departmental networking at TSC	17.3%	31.7%	6.5%	33.8%	1
Directors of various departments hold regular meeting	6.5%	13.8%	8.0%	51.4%	2
There is a functional staff welfare at the TSC	6.4%	4.3%	7.9%	47.9%	3
Staff choose their own representatives in the welfare	5.7%	4.3%	2.9%	41.4%	4

4.2.2 Effect of External Environment

Majority of respondents 76.4% were of the opinion that government support was key to adoption of HRIS. This opinion is supported by Miles and Snow (2003). They state, that every organization is embedded in a network of external influences and relationships which can be labeled as its environment. The environment is not a homogeneous entity but rather is composed of complex combination of factors such as product and labor market conditions, industry customs and practices, government regulations, and relations with financial and raw material suppliers. 80.7% were positive that adoption of HRIS would enhance service delivery. Lawler et al (2004) is of the same opinion. He says HRIS provide HR professionals with the opportunities to enhance their contribution to the strategic direction of the firm.

77.1% indicated that the relationship of the TSC and its clients as well as other organizations led to demand of HRIS while 77.8% were of the opinion that global trends have an influence on adoption of HRIS at the TSC. Aberejio (2009) is in agreement that the demands from potential customers to possess an innovation have a strong impact on the adoption of IT in organizations (see table 3).

Table 3.
Effect of External Environment

Statement	SD	D	N	A
Government support is key to adoption of HRIS in TSC	7.1%	7.9%	8.6%	34.3%
Adoption of HRIS will enhance service delivery at the TSC	2.1%	2.9%	4.3%	31.4%
The government has installed infrastructure for adoption of HRIS at TSC	6.4%	18.6%	25.7%	40.7%
HRM and IT staff get to attend national or regional conferences on HRIS	21.0%	29.0%	23.2%	18.8%
Information technology staff has been sensitized about the maintenance of HRIS infrastructure	6.0%	11.9%	26.9%	47.0%
The relationship of the TSC and its customers and other organizations has led to the demand for HRIS	2.9%	11.4%	8.6%	50.0%
Global trends have an influence on adoption of HRIS the TSC's operations	5.0%	7.9%	9.3%	45.7%
The TSC benchmark adoption of HRIS with other institutions within and outside the country	8.6%	21.4%	16.4%	37.1%

4.2.3 Regression model for internal structure of the organization

Hypothesis; *there is no association between internal structure of an organization and adoption of HRIS in TSC operations in Kenya.*

To test the hypothesis linear regression model was used as shown in table 4. The coefficient determinant, R- square without the moderating variable was 0.284 and 0.364 with the moderating variable. This therefore implies internal structure of the organization explained at least 28.4 % of variability of adoption of HRIS, without moderating variable and 36.4% when there was a moderating variable.

Table 4.1: Model Summary for Internal structure of the organization and adoption of HRIS

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	.533 ^a	.284	.278	4.80261	1.555
2	.604 ^a	.364	.359	4.47889	1.482

a. Model 1 and 2 Predictors: (Constant), ISO and ISO*EEE

KEY. ISO (X)- internal structure of organization. EEE- Effect Of External Environment

b. Dependent Variable: Adoption of HRIS (Y)

4.2.4 Analysis of Variance ANOVA

Further analysis were done using the ANOVA and the results for regression coefficients revealed that the significance of p values was 0.000 which is less than 0.05 hence the null hypothesis was rejected. The implication was that there was a significant relationship between internal structure of the organization and adoption of HRIS. This is as shown in the table 4.30 below.

Table: 4.2 ANOVA^a for internal structure of organization (X)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1151.525	1	1151.525	49.925	.000 ^b
	Residual	2906.194	126	23.065		
	Total	4057.719	127			
2	Regression	1367.951	1	1367.951	68.192	.000 ^b
	Residual	2387.189	119	20.060		
	Total	3755.140	120			

a. Dependent Variable: Adoption of HRIS (Y)

b. Model 1 and 2 Predictors: (Constant), ISO(X) and ISO*EEE

Coefficient

Further analysis was conducted using the coefficient regression equation between internal structure of the organization and adoption of HRIS can be expressed as; $Y = \beta_0 + \beta_1 X_3$ which results to $Y = 14.271 + 0.542 X_3$ when there is no moderator and $Y = 18.537 + 0.1 X_3$ with moderator from the coefficient table 4.31.

The p values with and without the moderating variable (effect of external environment) are 0.000. which were less than 0.05. This further implies that there was a significant relationship between internal structure of the organization and adoption of HRIS.

Table: 5 Coefficient for Internal Structure of Organization

Model		Unstandardized		Standardized	t	Sig.	Collinearity	
		Coefficients	Std. Error				Coefficients	Statistics
		B		Beta				
1	(Constant)	14.271	2.121		6.729	.000		
	ISO	.542	.077	.533	7.066	.000	1.000	1.000
2	(Constant)	18.537	1.317		14.080	.000		
	ISO*EEE	.010	.001	.604	8.258	.000	1.000	1.000

a. Dependent Variable: Adoption of HRIS

Key. ISO –Internal Structure Of The Organization. EEE- Effect Of External Environment

4.3 Discussion

From the analysis above it was therefore concluded that the null hypothesis be rejected and the alternative be accepted; there is a significant relationship between internal structure of the organization and adoption of HRIS. According to (Ivancevich et al 2006), an organization's structure is considered to be the "anatomy of the organization, providing a foundation within which the organization functions. This underscores the importance of internal structure of an organization in adoption of new technology and for this case HRIS.

Acknowledgment

I would like to register my heartfelt gratitude to my supervisors professor Elegwa Mukulu and Dr. Kabare Karanja for their priceless assistance and support. To my friends, colleagues and family, you were there. Finally, to God be the glory, the giver of all good things.

References

- Armstrong, M. (2006). *Human resource management practice*. (10th ed.). London :Koga Page.
- Compare HRIS: Strategy implementation by human resources,
[Http://www.comparehris.com/Human Resources Strategy Implementation](http://www.comparehris.com/Human_Resources_Strategy_Implementation),
 retrieved on 3rd March, 2013
- Cooper, D.R., & Schindler, P.S. (2003). *Business research: The excitement of exploring new territory*. New York: Mc Graw Hill.
- Damanpour, F. & Schneider, M. (2006). *Phases of adoption of product and process innovation in organizations*. Journal of management studies, 38 (1)
- Dery, K., Grant, D., & Wiblen, S. (2006). *Human resource information systems: Replacing or enhancing human resource information system*.
http://sydney.edu.au/business/data/assets/pdf/003/72273/IIRA/Dery-et_al,
 retrieved on
 March 14, 2013
- Dery, K., Hall, R., & Wailes, N. (2006). ERPs as 'technologies- in- practice': Social construction, materiality and the role of organizational factors. *New technology, work and employment*, 21(3): 229-241.
- Gall, W.R. & Meredith, D. (2003). *Education research. An introduction*. 8th ed. Wadsworth
- Hall, B., & Khan, B. (2002). *New economy hand book*. Nov. 2002. University of California
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate Data Analysis*. 7th

Edition. Prentice Hall, Upper Sandle River, New Jersey.

- Hammerman, P.(2005). *Human resource and administrative B2E: Maturing and expanding business*. <http://www.business.com> Outsourcing/hrm_hris> retrieved on 21st Feb, 2013
- Heathfield, S. *Human resource information systems: Human resources guide*. [Http://humanresources.about.com/od/glossary/a.htm](http://humanresources.about.com/od/glossary/a.htm) ,retrieved on November, 2013
- Indrit, T., Cate., & Sally, R. (2011). *Exploring the public sector adoption of HRIS: Industrial management and development systems*. 111(3): 470- 488.
- Ikhlas, A., & Zaid, A. (2010). *International journal of business and management: Human resource information systems in Jordan universities*. <http://ccenet.org/journal/index.php/ijbm/article/view/7638>, retrieved on 7th May, 2013
- Indiana, U. (2011). 'Test normality of variable, knowledge base.' 2014 from www.kb.iu.ed/data/glos.html, retrieved on 6th July
- Islam, F.B. (2010). *Relationship between human resource information system and strategic capability among employees in Jordanian companies*. http://etd.uum.edu.my/2286/1/isam_Bourini.pdf, retrieved on 13th March, 2013
- Ivancevich, J.M., Konopaske. R., & Matteson, M.T. (2006). *Organizational behavior and management*.
- Khaemba, P., & Okemo,M.(2007). *Expansion of university education*, Elimu news, December 2007, 8-9. Nairobi: Ministry of Education.
- Knox, K. (2004). A researcher's dilemma- philosophical and methodological pluralism: *Electronic journal of business research methods*, 2 (2), 119-128
- Kothari, C.R. (2007). *Research methodology: methods and techniques*. New Delhi: New Age International Publishers.(7th ed.). Newyork: Mc Graw- Hill.
- Kraemer, K.L., Danzinger,J.N., & Dunkle,D.E.(1993). *The usefulness of computer based information to public managers*.MIS quarterly, 17(2):285-296
- Lawler, E.E., Levenson,A.,& Boudreau,J.W.(2004). HR metrics and analytics: use and impact. *Human resource planning*, 27(4): 27-35.
- Lengnick-Hall, M.L.,& Moritz,S. (2003). The impact of e-HR on the human resource management function, *Journal of labor research*, 24(3): 365-379. <http://ccenet.org/journal/index.php/ijbm/article/view/7638>, retrieved on 20th May, 2013.
- Leven.H. (1960). *Robust tests for equality of variance. Contributions to Probabaility and Statistics: Essays in Honour of Harold Hotelling*. Stanford CA: Stanford university Press.
- Lucey, T (2002). *Management information systems*. (8th ed.) London: Continuum.
- Light, B., Holland, C.P.,& Willis,K. (2002). ERP and Best of Breed: *A comparative analysis, business process managementjournal*,7(3): 216- 224
- Lippert, S.K., & Swiez, P.M. (2005). *Human resource information systems and Technology trust: journal of information science*. Sage publications. (3)

- Maumbe, M.B., & Okello, J.J. (2013). *Technology, sustainability, and rural development in Africa*. Hershey UK: Idea group inc.
- Miffin, H.(2009).*The American heritage dictionary of the English language*. (4th ed.) New York: Houghton Mifflin Company.
- Millar, L.(2009). Training in electronic records management: *Managing personnel records in an electronic environment*. (3) 131-148
- Ministry of education National strategy for university education, (2006). *Investing in the future of university education*. Nairobi: Ministry of Education.
- Miles, R. E., & Snow, C.C (2003). *Organizational strategy, structure, and process*. Los Angeles: Stanford business classics.
- Mugenda, G.A. (2008). *Social science research. Theory and principles*. Nairobi: Applied research and training services.
- Mugenda, M.O.,& Mugenda,G.A.(2003).*Research methods. Quantitative and qualitative approaches* .Nairobi: African centre for technology studies.
- Mullins, J.L. (2007). *Management and organizational behavior*. (8th ed.). Edinburg: Pearson education ltd.
- Musimba, P.M. (2010). *Determinants of internationalization of information and communication technology in small and medium enterprises in Kenya*. Unpublished doctoral dissertation, Jomo Kenyatta University of Agriculture and Technology.
- Mutunga, P.K., & Nooirjer,P.G.(2006). *Programming mission report*. Moi University VLIR-UOS. May 2006.
- Nachmias, C. F., & Nachmias, D. (2003). *Research methods in the social sciences*. (5th ed.). London: Arnold.
- Nah, J.F., Lau, L., & Kuarg, J. (2001). Critical factors for successful enterprise systems. *Business process management journal*,7(3), 285- 296.
- Ngai & Wat. (2007). *HRIS: A review and empirical analysis*, Checheny, India: Emerald group publishing limited.
- Ming'ala, J.O.(2002). *Data analysis using SPSS*. Nairobi:
- Obwogi, J. (2011). *Factors that affect quality of teaching staff in universities in Kenya*: Unpublished doctoral dissertation, Jomo Kenyatta university of Agriculture and Technology.
- Olivera,T., & Martins, M.F. (2011). Literature review of information technology adoption models at firm level. 14(1).
- Orodho, J. (2005). *Elements of education and social methods*, Nairobi: Masola publishers.
- Robson, C. (2003). *Real world research*. (2nd ed). Melbourne: Blackwell publishing.
- Pin Heiro, A. (2010) How do managers control technology intensive work? *Journal of*

technology management and innovation. 5(2).

Quaddus, M., & Hoffmeyer, G. (2007). An investigation into factors influencing the adoption of

B2B trading exchange in small business. *European journal of information systems.*

Robson, C. (2003). *Real world research.* (2nd ed). Melbourne: Blackwell publishing.

Rogers, E.M. (1995). *Diffusion of innovations.* (4th ed). New York: Free press.

Ryder, J.A. (2005). Future of HR technology. *HR magazine. 50th anniversary editon:* 67-68

Saunders, M., Lewis, P., & Thornhill, P. (2007). *Research methods for business students.* (4th

ed). Edinburg : Pearson Education

Shenoy ,G.V., & Pant, M. (1994). *Statistical methods in business and social sciences.* New Delhi: Macmillan.

Soares- Aguir, A., & Parma-Dos-Reis, A. (2008). Why do firms adopt e- procurement systems? *Using logistic regression to empirically test a conceptual model, IEEE transactions on*

engineering management, 55(1)

Swanson, A.R., & Holton III. (2001). *Foundations of human resource development.* San

Francisco: Berrett-koehler.

Tornatzky, L., & Fleischer, M. (1990). *The process of technology innovation.* Lexington : Lexington Books.

Uma, Sekaran. (2003). *Reaserch methods for business. A skill building approach.* (4thed.). New

York: Wiley & sons.

Vries, D., Blair, G., & Morga, K. (2009). Evaluation of the capacity project's human resources information systems, (HRIS), *Strengthening process in Swaziland, Uganda and Rwanda,* 36(2) 261-275.

Wachira, N. F. (2010). The public service human resource management network. *Improving the*

management of HR in public service through application of information and communication technologies. Nairobi.

World Bank. (2002). *Constructing knowledge societies. New challenges for tertiary education.* Washington DC: World Bank.

Zahid, H., & Peter, P. (2004). HRIS as a means of fulfilling job roles more professionally for HR

manager. *Working paper,* Bradford university school of management.

Zhu, K., & Weyant, J.P. (2003). *Strategic decisions of new technology adoption under asymmetric information: A game theoretic model,* 34(4).