

# Perceptions of School Managers on the Impact of Integration of ICT in Human Resource on Management of Schools in Nairobi City County, Kenya

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## Abstract

The aim of this study is to investigate the perceptions of principals and deputy principals of secondary schools in Nairobi City County on the impact of integration of information communication technology (ICT) in human resource on the management of secondary schools in Nairobi City County. The study employed the descriptive research survey method. The research instruments used were questionnaires, an interview guide and an observation schedule. Quantitative data was analyzed using descriptive statistics and presented in the form of tables. Qualitative data was coded according to content and analyzed based on emerging themes and presented in narrative form. The findings of the study was that there was no significant impact of integrating ICT in human resource on secondary school management in Nairobi City County. Among the recommendations made are that the ministry of education should create and adopt a nationally accepted ICT policy for purposes of uniformity in the management of schools.

**Keywords:** Information Communication Technology, Human Resource Management, ICT Integration

## 1. Introduction

Human resource management which includes staff and student management is one of the management tasks performed on a daily basis in schools (Okumbe, 2001). Kipsoi, Chang'ach and Sang (2012) suggested that integrating ICT in staff and student administration can help in processing records quickly thereby making data retrieval easier and bringing about efficiencies in human resource management. The other ways in which ICT can be integrated in human resource management as outlined by Benwari and Dambo (2014) include attendance taking where the school management information system can be used for clocking in and out by teachers and other staff; students' information ranging from their admission status, personal records, including discipline can be recorded and updated electronically; different school documents can be easily managed and information such as memos and email can be generated and sent to staff or parents as appropriate. According to Wango (2010), the guidance and counselling staff can use ICT to quickly access students records and monitor progress in addition to accessing curriculum, attainment and attendance data for students for whom they have responsibility and schedule meetings with them as appropriate.

A study conducted in Australia based on interviews with 21 public secondary school principals in Australia on the impact of integrating ICT on school management, the school principals reported that the management information system gave them ready access to critical information quickly thus reducing their workload and making the administrative process more efficient (Gurr, 2000). Similarly, Oguta, Egessa and Musiega, (2014) in a study conducted to examine the effects of ICT application in the management of secondary schools using a sample of 32 schools in Bungoma County, established that ICT helped control time use and wastage. Further, the respondents indicated that schools which applied ICT in human resource management tended to do well in exams due to the optimal use of time. In Kenya, due to the government's policy of encouraging the use of ICT in educational management, many education managers especially in Nairobi City County have invested in ICT equipment. This study was therefore designed to elicit their perceptions on the impact of integrating ICT in human resource management.

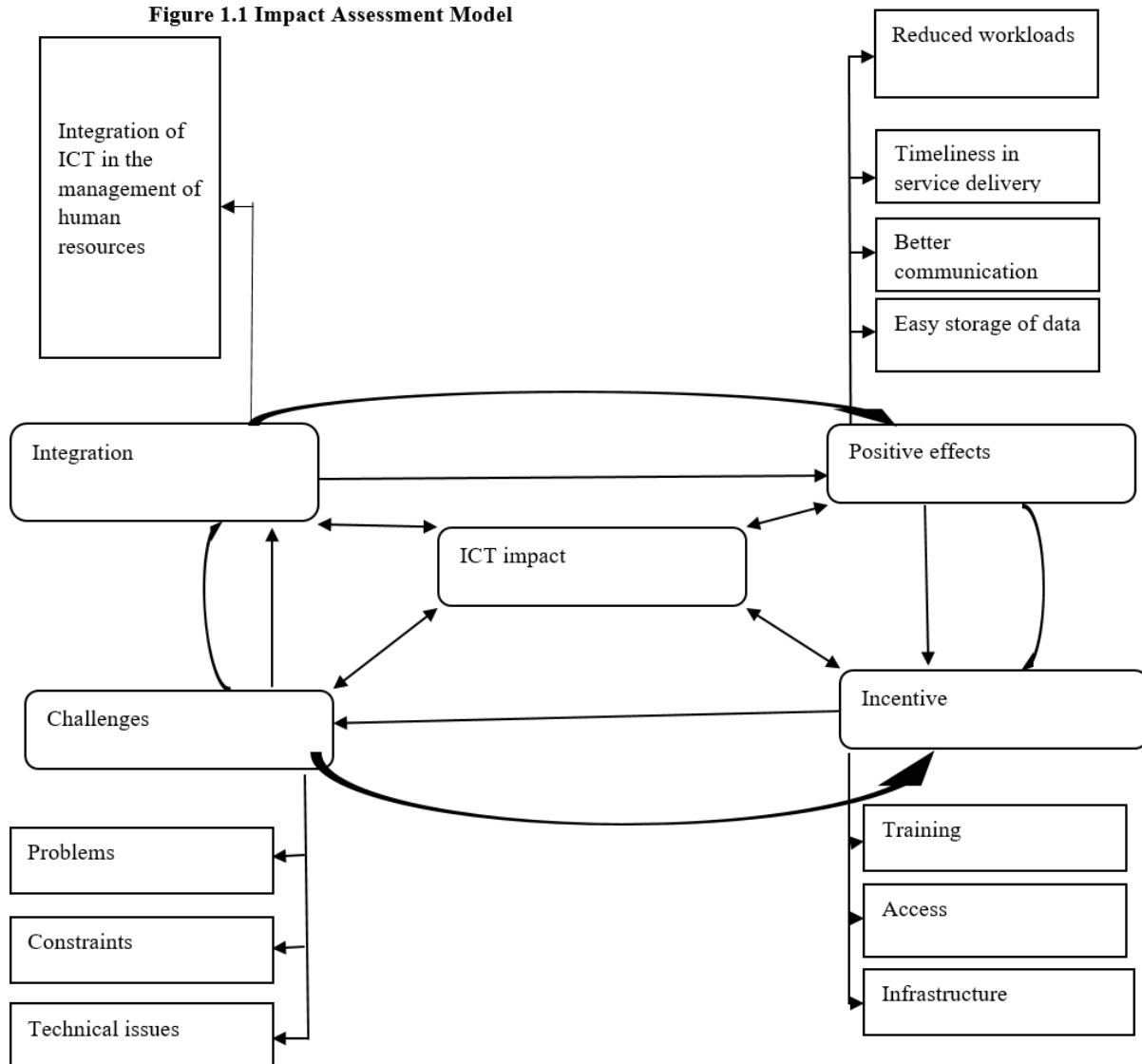
### 1.1 Purpose of the research

The purpose of this research is to investigate the perceptions of principals and deputy principals on the impact of integration of ICT in management of human resources on the management of secondary schools in Nairobi City County

### 1.2 Conceptual framework

The study was guided by the impact assessment model designed by Shitu and Shittu, (2013). The model is depicted in Figure 1.1

**Figure 1.1 Impact Assessment Model**



Adapted and modified from ICT impact assessment model (Shittu & Shittu, 2013).

According to Shittu and Shittu (2013), the impact assessment model represents a conceptual framework for research in impact assessment and is made up of four themes or elements namely: integration, positive effects, challenges and incentives. Its form is cyclical because the assessment process can start from any stage. Shittu and Shittu (2013) affirm that the cyclical representation also indicates the central elements in the model provide to ICT impact. To assess the ICT impact in this modified model, the first element is integration of ICT in human resource management. This can be assessed earlier or the second element which is the positive effects such as better communication and reduced workloads. Next is the incentives in the form of training, access and infrastructure which can be assessed before the challenges in the form of problems and technical issues.

## 2. Method

### 2.1. Research Design

The study was conducted using a descriptive research design. According to Majumdar (2005) the principal objective of descriptive research is to obtain a precise and accurate description of the characteristics of the phenomenon, or a particular social group or individuals and to determine the frequency with which some events or characteristics occur in the population or sample under study and the associations that exist among them. The data was collected from a cross section of principals and deputy principals to obtain a picture of the impact of integration of ICT on management practices of secondary schools in Nairobi City County. This design is appropriate for such a study because it is an effective way of collecting data from large sources relatively cheaply and produces valid and reliable generalizations (Creswell & Clark, 2007).

## 2.2. Population and sample

Nairobi County had 80 public schools and 140 private schools. Each school had one principal and at least one deputy principal. This gave a total of 80 principals and 80 deputy principals in public schools and 140 principals and 140 deputy principals in private schools as the target population. In this study stratified random sampling, simple random sampling and purposive sampling was used to select respondents from the public secondary schools while purposive sampling was used to select the respondents from the private schools. The public secondary schools in Nairobi County were categorized into 11 boys' boarding schools, 8 boys' day schools, 13 girls' boarding schools, 8 girls' day schools, 33 mixed day schools, 6 mixed boarding schools and 1 girls' day and boarding school. This study used a sample of 24 public secondary schools which is 30 per cent of the target population of the public schools. Private schools were however selected through purposive sampling. A total of 13 private schools were purposively selected from 139 private schools in Nairobi County (10%) of the total schools. A sample of 13 principals and 13 deputy were therefore selected. The sample for the private schools was included because these schools are different in terms of facilities and management practices when compared to public schools. Their inclusion in the study was for comparative purposes only.

The research instruments for data collection were: questionnaires, an observation checklist and an interview guide. The questionnaires were a combination of both closed and open-ended type of questions. The questionnaires were divided into sections with section A eliciting demographic information; Section B eliciting information on accessibility to ICT facilities; Section C eliciting information on frequency of use of ICT in human resource management and Section D eliciting information on perceptions of principals and deputy principals on the impact of integrating ICT in human resource management. An observation checklist was used to assess the use of ICT in the schools including the facilities and frequency of use. The interview guide was administered to a selected number of principals to counter check the questionnaire responses and confirm the observations made.

A pilot study was conducted in five secondary schools in Nairobi City County. The five schools were however not used in the main study. The reliability of the principals' questionnaire was found to be 0.75 while that of deputy principals was 0.71. Descriptive statistics (means and percentages) were used to analyse data.

## 2.3 Data Collection and Data Analysis

The researcher sought a research permit from the National Commission for Science and Technology and Innovation. Thereafter, the researcher visited schools to explain the purpose of the study and booked dates when to administer the instruments. On agreed dates, the questionnaires were administered personally and collected from the respondents. Quantitative data collected were coded, entered and analyzed with the aid of the Statistical Package for Social Sciences (SPSS) software programme. Quantitative data were analysed using descriptive statistics and presented in form of tables. Chi-Square ( $\chi^2$ ) was used to determine the impact of association between integration of ICT in the management of the various management tasks on the management of schools. Data obtained from the document analysis were described and analysed verbally. Qualitative data were coded according to content and analysed based on emerging themes and presented in narrative form.

## 3. Results and discussions

The study sought to establish the impact of integrating ICT in human resources on the management of schools. Integrating of ICT in human resource which includes student and staff administration can bring about efficiencies in management (Kipsoi, Chang'ach and Sang, 2012). Principals, deputy principals and Heads of Department were asked to rate the impact of integrating ICT in the various management tasks. The impact of integrating ICT in the management of human resources on school management was determined by converting the responses by principals and deputy principals as to whether or not the integration of ICT in management had generally had a positive impact on school management, which was then correlated with each aspect of human resource management task. The results are shown in Tables 1 and 2

### **Principals' and deputy principals' perceptions on the impact of integrating ICT human resources on school management**

The sub-tasks identified under management of human resources performed by principals and deputy principals were: management of attendance taking; management of student discipline; management of reporting to various agencies; management of memos to staff; management of staff information records and staff appraisal. The results of the responses are presented in Table 1.

**Table 1: Responses to the impact of integrating ICT in human resource by school managers**

		Principals				Deputy Principals			
		Low	Moderate	High	Total	Low	Moderate	High	Total
Attendance taking	Impact	9(56)	5(31)	2(13)	<b>16(100)</b>	11(52)	5(24)	5(24)	<b>21(100)</b>
	No impact	12(60)	6(30)	2(10)	<b>20(100)</b>	7(47)	5(33)	3(20)	<b>15(100)</b>
	<b>Total</b>	<b>21(58)</b>	<b>11(31)</b>	<b>4(11)</b>	<b>36(100)</b>	18(50)	10(28)	8(22)	<b>36(100)</b>
Student discipline	Impact	12(75)	3(19)	1(6)	<b>16(100)</b>	11(52)	7(33)	3(14)	<b>21(100)</b>
	No impact	14(70)	5(25)	1(5)	<b>20(100)</b>	9(60)	4(27)	2(13)	<b>15(100)</b>
	<b>Total</b>	<b>26(72)</b>	<b>8(22)</b>	<b>2(6)</b>	<b>36(100)</b>	<b>20(56)</b>	<b>11(31)</b>	<b>5(14)</b>	<b>36(100)</b>
Reporting to various agencies	Impact	3(19)	4(25)	9(56)	<b>16(100)</b>	5(24)	8(38)	8(38)	<b>21(100)</b>
	No impact	2(10)	8(40)	10(50)	<b>20(100)</b>	6(40)	4(27)	5(33)	<b>15(100)</b>
	<b>Total</b>	<b>5(14)</b>	<b>12(33)</b>	<b>19(53)</b>	<b>36(100)</b>	<b>11(31)</b>	<b>12(33)</b>	<b>13(36)</b>	<b>36(100)</b>
Memos to staff	Impact	1(6)	8(50)	7(44)	<b>16(100)</b>	5(24)	9(43)	7(33)	<b>21(100)</b>
	No impact	2(10)	7(35)	11(55)	<b>20(100)</b>	3(20)	7(47)	5(33)	<b>15(100)</b>
	<b>Total</b>	<b>3(8)</b>	<b>15(42)</b>	<b>18(50)</b>	<b>36(100)</b>	8(22)	16(44)	12(33)	<b>36(100)</b>
Staff information records	Impact	13(81)	1(6)	2(13)	<b>16(100)</b>	8(38)	9(43)	4(19)	<b>21(100)</b>
	No impact	16(80)	4(20)	0(0)	<b>20(100)</b>	5(33)	6(40)	4(27)	<b>15(100)</b>
	<b>Total</b>	<b>29(81)</b>	<b>5(14)</b>	<b>2(6)</b>	<b>36(100)</b>	13(36)	15(42)	8(22)	<b>36(100)</b>
Staff appraisal	Impact	9(56)	6(38)	1(6)	<b>20(100)</b>	13(62)	8(38)	0(0)	<b>15(100)</b>
	No impact	14(70)	5(25)	1(5)	<b>16(100)</b>	10(67)	4(27)	1(7)	<b>21(100)</b>
	<b>Total</b>	<b>23(64)</b>	<b>11(31)</b>	<b>2(6)</b>	<b>36(100)</b>	<b>23(64)</b>	<b>12(33)</b>	<b>1(3)</b>	<b>36(100)</b>

Note: Figures in parentheses represent percentages

The analysis in Table 1 shows that while the proportion of principals who rated integrating ICT in the management of attendance taking as having a high impact was 13 percent followed by moderate impact at 31 percent and low impact at 56 percent, the proportion of deputy principals who rated integration of ICT in the management of this task as having a high impact was 24 percent followed by moderate impact at 24 percent and low impact at 52 percent. The fact that the proportion of the principals and deputy principals who rated integrating ICT in attendance taking as having a low impact was over 50 percent implied that ICT was not widely used in management of attendance taking and that the task was largely done manually. In addition, findings from open-ended questions and interviews with some principals revealed that due to time constraints the training that they received was limited to basic applications. This finding is in contrast to what is happening in countries such as UK and India where biometric technologies are routinely used (Hope, 2015; Hooda and Malik, 2012).

Whereas the proportion of principals who rated the integration of ICT in the management of student discipline as having a high impact on management was 6 percent followed by moderate impact at 19 percent and low impact at 75, the proportion of deputy principals who rated integration of ICT in the management of student discipline were as having a high impact was 14 percent followed by moderate impact at 33 percent and low impact at 52 percent. The finding that the proportion of deputy principals and principals who rated the integration of ICT in this task as having a low impact was over 50 percent would suggest that the principals and deputy principals lacked the skills necessary for database creation through which data of students can be compiled and analyzed for decision making, and that they preferred using the conventional way of handling disciplinary issues using paper-based records, an observation that concurs with a study by Afshari, Bakr, Luan, Foori and Samah (2010) on computer use by secondary school principals in Iran which found principals to be lacking in proficiency on databases as compared to other technology competencies. The principals and the deputy principals therefore did not find ICT having a significant impact on the management of schools.

The other task areas which would require the creation of databases and where ICT integration was reported as having a low impact on the management of schools were the management of staff records and staff appraisal. With regard to the management of staff records, while the proportion of principals who rated it as having a high impact were 13 percent followed by moderate impact at 6 percent and low impact at 81 percent, the proportion of deputy principals who rated the integration of ICT in the management of staff records as having a high impact were 19 percent followed by moderate impact at 43 percent and low impact at 38 percent. Closely related to

management of records, is staff appraisal management where the proportion of principals who rated the integration of ICT in the management of staff appraisal as having a high impact were 6 percent followed by moderate impact at 38 percent and low impact at 56 percent. On the other hand, the proportion of the deputy principals who rated the integration of ICT in the management of staff appraisals as having a moderate impact were 38 percent followed by low impact at 62 percent. The high proportion of principals and deputy principals who rated integration of ICT in management of appraisals as having a low impact on school management could be attributed to the continued use of the traditional methods of appraisals, an observation that is similar to that in Philippines which found appraisal to be still much dependent on traditional pen and paper rather than through ICT tools (Vinluan, 2011).

While the proportion of principals who rated integration of ICT to manage reporting to various agencies as having a high impact were 56 percent followed by moderate impact at 25 percent and low impact at 19 percent; the proportion of deputy principals who rated the integration of ICT to manage reporting to various agencies as having a high impact were 38 percent followed by moderate impact at 38 percent and low impact at 24 percent. The relatively high percentage of principals rating integrating of ICT in this task as having a high impact could be attributed to the policy requiring some aspects of reporting such as staff/school returns and registration of students for national examinations to be done using Education Management Information System (EMIS) and online respectively (Republic of Kenya, 2015).

With regard to memos to the staff, the proportion of principals who rated the integration of ICT in the management of staff memos as having a high impact were 44 percent, followed by moderate impact at 50 percent and low impact at 6 percent while the proportion of deputy principals who rated the integration of ICT in the management of staff memos as having a high impact were 33 percent followed by moderate impact at 43 percent and low impact at 24 percent. The finding suggests that apart from memos which could be printed or e-mailed to the staff, the principals and deputy principals interspersed the use of ICT with other modes of communication such as staff briefings which would appear to be the preferred mode thus the impact on school management appears to be minimal. This assertion supports a study by Lydiah and Nasongo (2009) who found that most head teachers in high performing schools encouraged teamwork by among other things ensuring regular staff meetings and constant briefings and consultations which are invariably face to face encounters.

A Chi-Square test was done to determine the impact of association between integrating ICT in human resources of schools by principals and deputy principals and the management of secondary schools in Nairobi City County. The results are shown in Table 2

**Table 2: Chi-Square Test of the impact of integrating ICT in human resources by principals and deputy principals**

		Value	df	Asymp.Sig (2-sided)	Cramer's V
Attendance taking	<b>P</b>	.076	2	.963	.046
	<b>DP</b>	.397	2	.820	.105
Students' discipline	<b>P</b>	.214	2	.899	.077
	<b>DP</b>	.226	2	.893	.079
Reporting to various agencies (TSC, MoE, sponsors etc)	<b>P</b>	1.168	2	.558	.179
	<b>DP</b>	1.144	2	.564	.179
Memos to staff	<b>P</b>	.858	2	.651	.154
	<b>DP</b>	.086	2	.958	.049
Staff information records	<b>P</b>	4.566	2	.405	.102
	<b>DP</b>	.298	2	.862	.091
Staff appraisal	<b>P</b>	.741	2	.690	.144
	<b>DP</b>	2.133	2	.344	.222
<b>Overall p-values</b>	<b>P</b>			<b>.962</b>	
	<b>DP</b>			<b>.978</b>	

The Chi-Square Test in Table 2 shows that there was not a significant impact between integrating ICT in the following tasks and the management of schools: Integrating ICT in the management of attendance taking had p-value .963,  $p > 0.05$  for principals and .820,  $p > 0.05$  for deputy principals; integrating ICT in the management of students' discipline had p-value .899,  $p > 0.05$  for principals and .893,  $p > 0.05$  for deputy principals; integrating ICT in the management of reporting had p-value .558,  $p > 0.05$  for principals and .564,  $p > 0.05$  for deputy principals; integrating ICT in the management of staff memos had p-value .651,  $p > 0.05$  for principals and .958,  $p > 0.05$  for deputy principals; integrating ICT in management of staff records had p-value .405,  $p > 0.05$  for principals and .862,  $p > 0.05$  for deputy principals; integrating ICT in management of staff appraisal had p-value .690,  $p > 0.05$  for principals and .344,  $p > 0.05$  for deputy principals. Overall, there was not a significant impact between integrating ICT in human resource management and the management of schools given that the

overall p-values was .962,  $p > 0.05$  for principals and .978,  $p > 0.05$  for deputy principals.

However, the Table shows that the following tasks had a moderate impact of association with school management: Integration of ICT in the management of reporting had a Cramer's  $V = .179$  for principals and Cramer's  $V = .179$  for deputy principals; integration of ICT in the management of staff appraisal had Cramer's  $V = .144$  for principals and Cramer's  $V = .222$  for deputy principals and integration of ICT in the management of memos to staff had a Cramer's  $V = .154$  for principals.

The tasks which had a weak impact of association with school management were as follows: Integration of attendance taking which had Cramer's  $V = .046$  for principals and .105 for deputy principal; integration of ICT in the management of students' discipline which had a Cramer's  $V = .077$  for principals and .079 for deputy principals and integration of ICT in the management of staff records which had a Cramer's  $V = .102$  for principals and .091 for deputy principals. These findings could be attributed to the fact that ICT was not fully integrated in the performance of these tasks.

#### 4. Conclusion and Recommendations

From the study findings it was concluded that there was not a significant impact between the integration of ICT in human resource and the management of schools in Nairobi City County.

Based on this finding, the following recommendations were suggested:

1. The Ministry of education should create and adopt a nationally accepted ICT policy for purposes of uniformity in the management of schools
2. The use of ICT usage in daily tasks should be encouraged in order to realize the full impact of ICT in management. This could include using ICT for routine tasks such as attendance taking and appraisals of staff.
3. School managers should be exposed to more targeted training since studies have shown that ICT integration-focused courses have a stronger impact on overall usage of ICT than basic ICT courses (Mulkeen, 2003)

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