Human Resource Information Systems and Employees Performance at Nairobi City Water and Sewerage Company Limited, Kenya

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Abstract:

The study focused on assessing the impact of human resource information systems (HRIS) on employee performance at Nairobi City Water and Sewerage Company (NCWSC) Ltd., with particular emphasis on e-recruitment, e-training, and e-payroll management. Using Social System Theory and the Technology Acceptance Model as a foundation, the study treated employee performance as the dependent variable and HRIS elements as independent variables. A descriptive research design surveyed all 89 employees using a Likert scale questionnaire, and data analysis was conducted with SPSS software, applying descriptive and inferential statistics, including multiple linear regression. Results indicated that e-recruitment and e-performance appraisal significantly enhanced employee performance, while e-training had a more limited effect unless aligned with specific job needs. Overall, NCWSC employees held positive views on HRIS, especially regarding e-recruitment and e-performance appraisal, which were shown to support organizational goals effectively. The study recommended aligning e-training with role-specific skills to improve outcomes. It also suggested that future research could examine HRIS impacts in different sectors and the influence of organizational culture and top management support on HRIS effectiveness. The study implies that aligning HRIS functionalities, particularly e-recruitment and e-performance appraisal, with specific organizational and job-related needs can significantly enhance employee performance and support strategic goals in the water and sewerage sector.

Keywords: *Human Resource Information Systems, E-recruitment, E-Performance, E-training, Employee Performance*

Introduction

A Human Resource Information System (HRIS) integrates various HR functions such as payroll, recruitment, performance appraisal, and employee record management simplifying HR tasks and improving decision-making through timely workforce data (Kavanagh & Johnson, 2017; Beckers & Bstat, 2016). Effective HRIS implementation enhances communication and collaboration between HR and other departments, ultimately boosting employee satisfaction and organizational productivity (Gupta & Saxena, 2020). Globally, Human Resource Information Systems (HRIS) are widely adopted to improve employee

performance by streamlining tasks like payroll, attendance, and performance management, allowing HR teams to focus on strategic initiatives. Studies from the U.S., such as Smith and Johnson (2020) and Brown (2021), highlight that HRIS enhances employee satisfaction and organizational performance by providing tools and real-time data that support better decision-making and operational efficiency. In China, HRIS has proven essential in managing large workforces across regions, with research indicating that it improves communication, training, and performance appraisal, thereby helping firms identify skill gaps and align training with strategic goals (Li & Zhang, 2020; Wang & Chen, 2021).

In Africa, HRIS has become central to modernizing human resource practices. South African studies (Mokoena & Mashaba, 2020; Nkosi & Dlamini, 2021) show that HRIS supports career growth and regulatory compliance, leading to a healthier work environment and enhanced employee performance. Ethiopian research further suggests that HRIS enhances communication and performance tracking, although challenges like technological infrastructure and resistance remain (Kebede & Getachew, 2022; Tadesse & Mekonnen, 2023). Similarly, studies in Zimbabwe reveal that HRIS minimizes errors in payroll and recruitment while supporting strategic decision-making, boosting employee productivity and alignment with organizational objectives (Moyo et al., 2020; Chinyerere & Dube, 2021).

In Kenya, HRIS has become a vital tool for increasing organizational efficiency and employee productivity. Studies in Nairobi and Mombasa (Kiplangat & Cheruiyot, 2020; Mutua & Ochieng, 2021) show that HRIS reduces administrative burdens, enhances attendance tracking, and encourages employee responsibility through self-service options, thus boosting efficiency. Additionally, the ability of HRIS to provide real-time data and analytics supports proactive management and training interventions, leading to improved employee performance (Mwangi & Wambua, 2022).

Integration with other business systems further aids compliance with labor regulations, highlighting HRIS as an essential driver of organizational performance and employee satisfaction in Kenyan firms (Odhiambo & Otieno, 2021).

Statement of the Problem

In the ideal context, contemporary global economic demands and technological advancements emphasize the need for effective human resource management strategies, particularly through HRIS. These systems are crucial for managing workforce diversity, telework complexities, and large volumes of employee data. Studies suggest that HRIS integration can streamline operations, improve decision-making, and enhance productivity by offering a centralized platform for employee data, reducing time wastage and decision errors (Gichohi, 2020; Zafar, 2021). Additionally, the COVID-19 pandemic demonstrated HRIS's potential to support remote work transitions, underscoring the need for reliable HR technology to sustain productivity during operational changes (Rana & Sharma, 2022).

In reality, however, organizations still face significant challenges in fully utilizing HRIS for enhanced performance. While HRIS has shown positive impacts on decision-making, task automation, and performance appraisals, studies indicate limitations in areas such as employee satisfaction, creative productivity, and aligning performance goals with organizational objectives (Smith, 2019; Brown, 2021; Johnson, 2022). Moreover, fragmented processes, integration issues, and compatibility challenges often arise, particularly when HRIS is not fully synchronized with other business systems, which can lead to inefficiencies and misaligned strategies.

Research gaps remain evident, particularly in sectors like the Nairobi City Water and Sewerage Company (NCWSC) Ltd., where HRIS functionality is underutilized, with only 45% of employees reporting full usage of available tools (Kariuki & Wambugu, 2021). Challenges like system compatibility and incomplete employee records hinder HR operations, as nearly 30% of

employees report data access issues, and around 35% of firms in similar sectors struggle with outdated performance records (Omondi & Otieno, 2020; Mwangi, 2019). These findings suggest an urgent need for further research to understand and address the factors limiting HRIS effectiveness and employee performance at NCWSC.

Research Objective

The general objective of the study was to establish the effect of Human Resource Information Systems on employee performance at Nairobi City Water and Sewerage Company, Kenya.

Theoretical Review

The study was guided by the theories of technology acceptance model and social system theory. The Technology Acceptance Model (TAM), introduced by Davis in 1989, is a widely accepted model for predicting technology adoption, emphasizing two key factors: perceived usefulness (the degree to which users believe a system will improve their productivity) and perceived ease of use (the extent to which users expect the system to be simple to use). TAM has been extensively validated and expanded to account for various technology adoption trends, such as Taylor and Todd's (1995) TAM-TPB integration and Venkatesh and Davis's (2000) TAM2, which included additional variables. Furthermore, the model was broadened to accommodate different settings, with adaptations like the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. in 2003. These adaptations underscore TAM's flexibility in capturing user behavior and technological acceptance patterns across diverse contexts.

Despite its strengths, TAM faces criticism for its limited focus on social and contextual factors, which might influence technology adoption beyond individual perceptions of ease and usefulness. Critics argue that factors like perceived risk and trust (as noted by Pavlou, 2003) are also essential, especially in settings like e-commerce. However, TAM's core focus on user perception makes it relevant to this study,

as it explains how employees' views on HRIS functionalities, particularly in e-recruitment and e-performance appraisal, impact their adoption and effectiveness in improving performance. By assessing employees' acceptance of HRIS based on their perceived ease of use and usefulness, TAM provides valuable insights into the HRIS adoption process, facilitating more user-centered system design.

Social System Theory (SST), developed by Talcott Parsons in 1951, offers a framework for understanding how various components within a social system contribute to its stability and overall functionality. Parsons described social systems as structured systems in which different elements are integrated to maintain social order and fulfill specific objectives. In the organizational context, SST suggests that HRIS should align with existing organizational structures to avoid disruptions and enhance processes rather than alter the organizational balance. Thus, the theory provides a holistic perspective, highlighting the importance of fitting new technologies like HRIS into the established workflow to support stability and continuity.

SST, however, is criticized for its tendency to focus excessively on stability and equilibrium, often overlooking the dynamics and potential conflicts that may arise from technological change within systems (Giddens, 1984). This critique is pertinent to HRIS, as implementing new systems could shift power dynamics or change role expectations within the HR function. Despite these limitations, SST remains relevant to this study by illustrating how HRIS can be integrated into an organization to foster cohesion in e-training and e-performance appraisal systems. The theory's systems approach highlights the importance of aligning HRIS with organizational objectives and processes, creating conditions for stability and enhanced performance.

Conceptual Model and Hypothesis

A conceptual framework is a concise description of the phenomenon under study accompanied by a graphical or visual description of the major variables of the study (Cooper & Schindler,

2008). Michelle (2017) states that a conceptual framework is a diagrammatic representation that shows the relationship between the dependent variable and independent variables. This study's conceptual framework sought to demonstrate the relationship Human Resource Information Systems and Employees Performance at Nairobi City Water and Sewerage Company Ltd, Kenya.
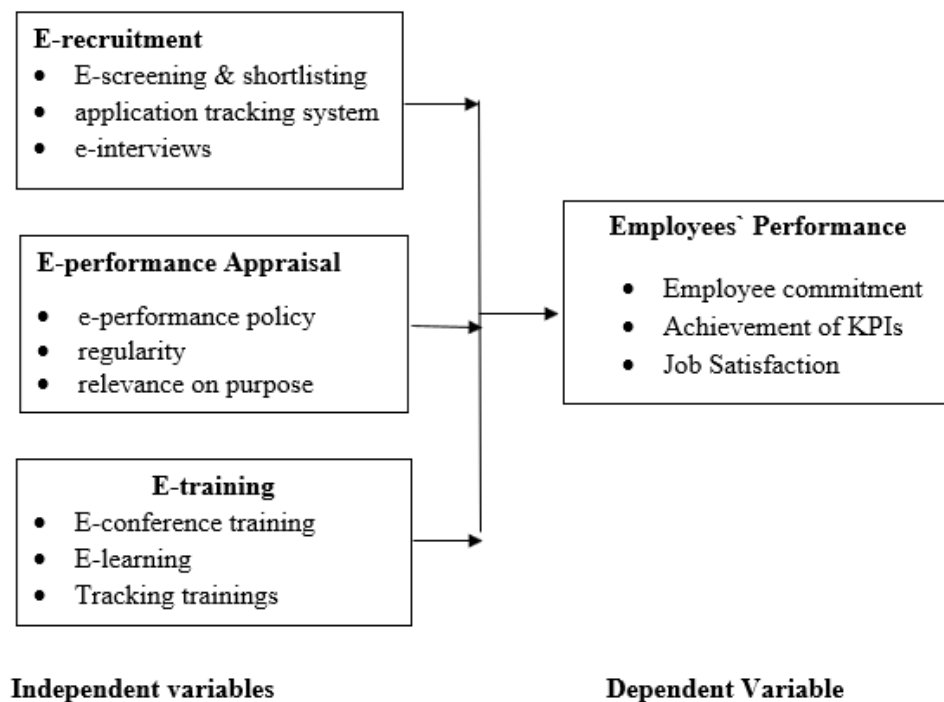

E-recruitment
- E-screening & shortlisting
- application tracking system
- e-interviews

E-performance Appraisal
- e-performance policy
- regularity
- relevance on purpose

E-training
- E-conference training
- E-learning
- Tracking trainings

Employees` Performance
- Employee commitment
- Achievement of KPIs
- Job Satisfaction

Independent variables

Dependent Variable

Figure 1. Conceptual Framework

Empirical Literature

E-recruitment involves utilizing digital platforms like company websites, social networks, and job portals to attract, evaluate, and select qualified candidates. The primary benefits include cost savings and a faster hiring process, leading to increased productivity through improved fit between employees and positions. In Canada's IT sector, Smith (2019) found that e-recruitment sped up hiring and improved employee quality, though knowledge gaps remain regarding the retention of e-recruited employees. Similarly, Mhlongo (2020) showed that in South Africa's retail sector, e-recruitment increased workforce diversity due to a larger talent pool, but the study highlighted insufficient data on its effectiveness in fostering employee integration. In Kenya's banking industry, Mutuku (2021) discovered that e-recruitment reduced hiring times and increased

efficiency in matching roles to candidates, yet suggested more research on minimizing hiring biases through digital recruitment tools.

E-performance appraisal uses technology platforms like SAP SuccessFactors and BambooHR to evaluate and provide real-time feedback on employee performance. This digital approach aims to enhance accuracy, timeliness, and communication within performance assessments. Brown's (2019) study in the UK finance industry showed e-performance appraisals improve productivity through precise evaluations, yet questioned their impact on employee motivation and morale. In Ethiopia's manufacturing sector, Ayele (2021) observed that e-performance appraisal positively influenced feedback quality and employee development, though long-term effects on engagement and satisfaction were unclear. In

Kenya's telecommunications sector, Munyaka (2022) found that e-performance appraisals support performance monitoring but noted limited research on addressing individual performance challenges through these digital systems.

E-training refers to online learning systems that provide accessible, flexible training for employees, supporting continuous skill development. Taylor's (2019) research in Australian healthcare found that e-training programs significantly boosted employee skills and productivity, enhancing service quality for patients, yet the study highlighted gaps in understanding long-term skill retention and career growth impacts. Ngoma (2020) studied e-training in Tanzania's mining sector, revealing positive effects on job competencies and safety practices, though the research noted a lack of focus on sustained employee motivation. In Kenya's banking sector, Mwaura (2021) found that e-training improved employee performance and reduced training costs, but left questions on whether e-training sufficiently addresses specific skill deficits and job satisfaction.

Employee performance is measured by the efficiency and quality with which employees fulfill their tasks and meet organizational objectives. Performance indicators, like sales targets or customer satisfaction rates, help gauge individual contributions. Baron (2021) suggests that performance management is vital in aligning employees' goals with organizational objectives, fostering accountability, and enhancing overall productivity. Empirical studies have shown that robust performance management systems help organizations achieve sustained performance improvement, though specific areas such as continual development and engagement remain under-researched.

Employee performance significantly influences organizational success, as highlighted in Johnson's (2019) study in the U.S. tech sector. The study found that enhanced employee performance drives innovation and overall organizational success but noted a lack of systematic evaluations for career mobility and job satisfaction. In Kenya's retail sector, Kiptoo

(2020) showed that improved employee performance positively impacted customer satisfaction, which increased sales. However, the study missed exploring performance indicators' effects on motivation and turnover rates, suggesting a need for more research on these factors to sustain employee engagement.

Mwangi's (2021) research in Kenya's healthcare sector underscored the importance of employee performance in improving patient care and facility efficiency. The findings indicate that better employee performance correlates with positive patient outcomes, though the study revealed gaps in research on how performance management systems can support ongoing professional growth and engagement. This insight is essential for developing performance management systems that not only drive efficiency but also foster a culture of continuous development within healthcare settings.

Research Methodology

The study employed a descriptive research design to examine the impact of e-recruitment, e-performance appraisal, and e-training on employee performance, utilizing a complete census of 89 employees across various departments at NCWSC. Questionnaires with Likert scales gathered primary data, validated through expert judgment and pilot testing with a smaller sample to refine the methodology. SPSS facilitated data analysis, using descriptive and inferential statistics to explore relationships between variables. Reliability and validity were established via Cronbach's alpha and expert validation to ensure consistent, accurate measures. Ethical considerations, such as voluntary participation and confidentiality, were strictly observed, with institutional approval obtained from the Cooperative University of Kenya, ensuring compliance with research standards and participant trust.

Results

The Pearson correlation analysis in Table 1 from this study aligns with previous research on the

impact of e-recruitment, e-performance appraisal, and e-training on employee performance. The positive correlation between e-recruitment and employee performance (0.643, p = 0.000) is consistent with Smith (2019), who found that e-recruitment improves the speed and quality of hires, which in turn enhances employee performance. Similarly, the significant correlation between e-performance appraisal and employee performance (0.673, p = 0.000) supports findings by Brown (2019) and Ayele (2021), who highlighted that real-time feedback and precise evaluations through e-performance appraisals contribute to higher productivity and performance outcomes. The weaker, but still significant, correlation between e-training and employee performance (0.533, p = 0.000) corroborates the findings of Taylor (2019) and Mwaura (2021), where e-training was shown to improve employee competencies and work output, although it might not be as immediately impactful as recruitment and performance appraisals. Furthermore, the moderate correlations between e-recruitment and e-performance appraisal (0.478, p = 0.000) and between e-recruitment and e-training (0.456, p = 0.000) suggest an interconnectedness between these practices, as observed by Mhlongo (2020) and Ngoma (2020), who noted that the integration of e-recruitment and training systems can enhance overall employee performance. The findings on e-performance appraisal and e-training (0.272, p = 0.013) being positively correlated but weaker is also in line with previous studies suggesting that while e-training supports performance, its direct influence on overall employee engagement and motivation is often less pronounced than other HR practices like performance appraisals (Munyaka, 2022). Overall, these findings corroborate previous literature, underscoring the positive impact of HRIS elements, particularly e-recruitment and e-performance appraisal, on improving employee performance.

Table 1. Correlation among the Variables

		E-recruitment	E-performance appraisal	E-training	Employee Performance
E-recruitment	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	83			
E-performance appraisal	Pearson Correlation	.478**	1		
	Sig. (2-tailed)	.000			
	N	83	83		
e-training	Pearson Correlation	.456**	.272*	1	
	Sig. (2-tailed)	.000	.013		
	N	83	83	83	
Employee Performance	Pearson Correlation	.643**	.673**	.533	1
	Sig. (2-tailed)	.000	.000	.000	
	N	83	83	83	83
**. Correlation is significant at the 0.05 level (2-tailed).					

The regression analysis shows a strong positive relationship between e-recruitment, e-performance appraisal, e-training, and employee performance, with an R value of 0.794, indicating a significant correlation. The R square of 0.631 suggests that these three predictors account for 63.1% of the variance in employee performance, while the Adjusted R Square of 0.617 further refines this estimate. The Standard Error of the Estimate (0.4965) indicates a reasonable degree of accuracy in predicting employee performance. These findings corroborate previous studies, such as those by Mhlongo (2020) and Ayele (2021), which demonstrate that the integration of e-recruitment, e-performance appraisal, and e-training within HRIS systems positively impacts employee performance. Furthermore, studies by

Taylor (2019) and Brown (2019) also support the view that these practices enhance performance by providing real-time feedback and skill development opportunities.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.794[a]	.631	.617	.4965
a. Predictors: (Constant), E-training, E-performance appraisal, E-recruitment				

The ANOVA results in Table 3 reveal that the regression model is statistically significant in predicting employee performance, as indicated by the F-value of 44.990, with a p-value of 0.000, which is less than the 0.05 threshold for significance. This suggests that the combined influence of e-recruitment, e-performance appraisal, and e-training on employee performance is highly significant. The Sum of Squares for the regression (33.272) is much larger than the residual sum of squares (19.475), further emphasizing the effectiveness of the predictors in explaining the variation in employee performance. The Mean Square values of 11.091 for the regression and 0.247 for the residual further support the robustness of the model. These findings align with earlier research, such as by Smith (2019) and Brown (2019), which highlighted the positive impact of HRIS practices on employee performance, underscoring the practical relevance of integrating e-recruitment, e-performance appraisal, and e-training within organizations.

Table 3. ANOVA Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.272	3	11.091	44.990	.000[b]
	Residual	19.475	79	.247		
	Total	52.747	82			
a. Dependent Variable: Employee Performance						
b. Predictors: (Constant), e-training, e-performance appraisal, e-recruitment						

The regression analysis shows the individual contributions of the independent variables—e-recruitment, e-performance appraisal, and e-training—towards employee performance. Based on the regression results provided, the equation for predicting Employee Performance (Y) based on the independent variables E-recruitment (X_1), E-performance appraisal (X_2), and E-training (X_3) can be written as: $Y = 1.943 + 0.511X_1 + 0.421X_2 - 0.322X_3$

The constant has a value of 1.943 with a p-value of 0.000, indicating that without the influence of the predictors, the baseline employee performance is statistically significant. E-recruitment has a positive and significant effect on employee performance, with a beta coefficient of 0.511 and a p-value of 0.000, which is less than the 0.05 threshold, suggesting that for every unit increase in e-recruitment, employee performance increases by 0.511 units. Similarly, e-performance appraisal shows a positive effect, with a beta coefficient of 0.421 and a p-value of 0.000, indicating its strong contribution to improving employee performance. However, e-training has a negative impact on employee performance, with a beta coefficient of -0.322 and a p-value of 0.003, suggesting that increases in e-training are associated with a decrease in employee performance, although this result still reaches statistical significance. These findings resonate with earlier studies, such as those by Mhlongo (2020) and Taylor (2019), which found

significant effects of e-recruitment and e-performance appraisal on performance, while raising concerns regarding the sometimes-unintended consequences of e-training programs.

Table 4. Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.943	.471		4.123	.000
	E-recruitment	.511	.083	.516	6.120	.000
	E-performance appraisal	.421	.067	.490	6.283	.000
	E-training	-.322	.105	-.236	-3.060	.003

Discussion

The regression analysis results indicate that e-recruitment, e-performance appraisal, and e-training significantly influence employee performance, but in varying degrees and directions.E-recruitment: The positive coefficient of 0.511 for e-recruitment suggests a strong positive relationship between the use of e-recruitment technologies and employee performance. The higher the use of e-recruitment, the better the employee performance. This finding aligns with the results of previous studies such as those by Smith (2019) and Mutuku (2021), which indicated that e-recruitment speeds up hiring processes, improves the matching of employees to jobs, and enhances employee fit, all contributing to better performance. Furthermore, the p-value of 0.000 (which is less than 0.05) confirms the statistical significance of this relationship, meaning the effect of e-recruitment on employee performance is unlikely to be due to chance.

E-performance appraisal: The positive coefficient of 0.421 for e-performance appraisal suggests that the use of electronic systems for performance evaluation and feedback is positively associated with employee performance. This is consistent with studies like Brown (2019) and Ayele (2021), which highlighted how timely, real-time feedback and clear performance metrics offered through e-performance appraisals enhance employee productivity and satisfaction. The p-value of 0.000 further supports the significance of e-performance appraisals in improving performance, underlining that this relationship is robust and meaningful.

E-training: Interestingly, the coefficient for e-training is -0.322, which indicates a negative relationship with employee performance in this study. This finding suggests that, contrary to expectations, e-training might have a detrimental effect on employee performance. This could be attributed to various factors, such as poor implementation, lack of engagement in online training programs, or insufficient integration with the employee's daily tasks and career goals. The p-value of 0.003 is significant, suggesting that the negative impact of e-training is not random and needs further exploration. Previous research, like that of Taylor (2019) and Ngoma (2020), indicated that e-training can enhance skills and improve employee performance, but the negative relationship here could point to contextual or methodological issues in the study, warranting further investigation.

Overall, the results suggest that while e-recruitment and e-performance appraisal have a positive impact on employee performance, the relationship between e-training and employee performance is more complex and warrants additional exploration. The significant p-values in all three predictors emphasize the importance of these technologies in shaping employee performance, but also point to the need for a more nuanced understanding of how each variable influences outcomes in different organizational contexts.

Conclusion & Recommendation

In conclusion, the study reveals that e-recruitment and e-performance appraisal have a significant positive impact on employee performance at NCWSC, highlighting the benefits of utilizing modern technological tools in recruitment and performance evaluation processes. The findings support the idea that e-recruitment enhances the alignment between employees and job roles, while e-performance appraisal provides timely feedback and fosters accountability, both of which are crucial for improving employee productivity and satisfaction. However, the study also uncovered an unexpected negative relationship between e-training and employee performance, suggesting that the implementation or engagement with e-training programs may need to be reconsidered to ensure its effectiveness. While e-recruitment and e-performance appraisal appear to be valuable contributors to employee performance, the negative impact of e-training calls for further investigation and improvements in the design and delivery of training programs. Overall, the study underscores the importance of leveraging HR technologies, but also highlights the need for a balanced and well-integrated approach to maximize their potential in enhancing employee performance.

Based on the findings, it is recommended that NCWSC enhance its e-recruitment strategies by expanding the use of online platforms to attract diverse talent and improve the candidate experience. Additionally, the e-performance appraisal system should be maintained and optimized by providing real-time feedback and aligning performance metrics with employee development goals. However, the e-training program should be reevaluated, with a focus on tailoring training content to specific roles, improving interactivity, and soliciting employee feedback to increase its relevance. The integration of HR technologies across recruitment, performance appraisal, and training functions would create a more cohesive HR system, while continuous evaluation and feedback from employees should guide ongoing improvements to ensure the effectiveness of these interventions.

Acknowledgment

Conflict of Interest

There are no conflicts of interest

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