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The Impact of Data-Driven Decision-Making on the Recruitment Process at the State Ministry of Labour, Public Service, and Human Resource Development, Eastern Equatoria State, South Sudan

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Ethics statement: This research was conducted in accordance with the guidelines of the Kampala International University Research Ethics Committee (KIU-REC). The study protocol was approved by KIU-REC, ensuring respect for participants' rights, confidentiality, and academic integrity.

ABSTRACT

The research investigates how data-driven recruitment methods can enhance South Sudan's unstable public sector through its study of the State Ministry of Labour in Eastern Equatoria, which faces ongoing conflict and resource shortages, and institutional instability. The implementation of analytical methods through hiring systems will enable the ministry to achieve greater transparency and fairness, and improved operational efficiency despite facing multiple systemic obstacles, which include salary delays and pension complications, and widespread corruption. The research develops through Rogers' Diffusion of Innovations Theory by examining how organizations can use digital tools, which include candidate profiling and performance metrics, and behavioral assessments, to improve candidate evaluation and create institutional trust and achieve long-term performance outcomes. The quantitative study discovered that candidate qualifications, behavioral traits, and demographic factors create a direct impact on how people perceive recruitment fairness and organizational success. The research study obtained 95 valid responses from participants who took part in the recruitment process. The financial process failures, which result in salary and pension payment delays, create major obstacles to motivation and decision-making; therefore, financial reforms must be implemented immediately. The study demonstrates that South Sudan needs to implement standardized merit-based recruitment protocols while developing infrastructure and providing timely payment to achieve inclusive governance and improved public service delivery and sustainable development in its challenging socio-political context. The research demonstrates that organizations can achieve social stability and institutional resilience through the strategic implementation of data-driven solutions, which are tailored to their specific local environments.

Keywords: *Data, Decision-Making, Recruitment, transparency, fairness, inclusivity & diversity, delay salary & pension, Public Service.*

List of Acronyms: *SA-Strongly Agree, A-Agree, NA/D-Neither Agree nor Disagree, D-Disagree, and SD Strongly Disagree. M-Mean, Std-Standard Deviation, Mi-Minimum, Ma-maximum, percent, and R is Range, SMLPSHRD-State Ministry of Labour, Public Service, & Human Resource Development, SM-HRD-State Ministries-Human Resource Department, SC-HRD-State Commissions-Human Resource Department, SSG HRD-State Secretariat-General Human Resource Department. E.E.S, Eastern Equatoria State.*

I. INTRODUCTION.

South Sudan, the newest nation in the world, is still grappling with conflict, economic struggles, and significant shortages of resources that make it really hard to run the government effectively and provide public services (Kinyua et al., 2021). The country's fragile infrastructure and limited capacity for institutions add to the difficulty in updating administrative systems (Johnson & Smith, 2020). Old-fashioned, manual hiring methods and a lack of transparency in bureaucratic processes only make issues of fairness and efficiency worse, especially in government bodies like the Ministry of Labour and Public Service in Eastern Equatoria State (UNDP, 2022). In this tough environment, using innovative digital solutions could be a game-changer, helping to break the cycle of inefficiency, build accountability, and ensure that essential services get to those who need them the most (Moyo, 2019). Adopting tech-driven strategies could help rebuild trust in public institutions and lay the groundwork for sustainable development (Kraemer-Mbula & Wunsch-Vincent, 2020).

The recruitment process faces its own set of special difficulties because the country experiences economic problems and political conflicts, and lacks stable institutions. The educational background, skills, experience, and personality traits of candidate profiles serve as critical factors for making hiring decisions in the current socio-economic environment, which shows ongoing uncertainties (Garcia et al., 2022). Candidates perceive organizations to have lower organizational stability when they experience salary delays and pension delays, which creates a negative impact on their decision-making process (Nguyen & Patel, 2020). The ministry faces challenges in attracting and retaining talent because trust diminishes when there are delays, and these delays particularly affect skilled applicants (Kumar & Lee, 2023). Human resource strategies in South Sudan need to understand candidate characteristics and financial delays and their effect on recruitment outcomes for effective strategy development in the country's challenging recruitment environment.

Other countries in East Africa face similar issues, with weak governance, inadequate infrastructure, and political instability hindering effective digital governance (Mwangi & Otieno, 2022). Nonetheless, initiatives by organizations like the East African Community (EAC) aim to harness data analytics and digital platforms to transform public administration (Njoroge & Kamau, 2021). By incorporating these tools into recruitment, service provision, and resource management, the region intends to boost transparency, inclusivity, and efficiency (Ochieng & Wanjiru, 2020). Even so, challenges like limited internet access, low digital skills, and ongoing political unrest could slow this progress (Mugisha & Musyoka, 2021). Still, East Africa is at a pivotal moment where smart investments in digital infrastructure and policy changes could pave the way for more resilient and accountable governance (Mwangi & Otieno, 2022; Kamau & Njoroge, 2022).

On a global scale, the need for digital transformation in fragile and conflict-affected countries is becoming more urgent (UNDP, 2024). Organizations like the United Nations stress that digital policies tailored to specific contexts are crucial for promoting sustainable governance, curbing corruption, and enhancing service delivery (UNDP, 2023). Examples from conflict zones in the

Middle East and West Africa show that when innovative digital solutions are adapted to local conditions, they can greatly improve transparency, citizen engagement, and resource management (Smith & Johnson, 2020; Ahmed & Peters, 2021). However, the path to achieving digital maturity is filled with challenges like data shortages, infrastructure gaps, and political instability, necessitating collaborative, strategic approaches (World Bank, 2022). The global movement for digital development emphasizes that, even in tough situations, technology can be a vital tool for peacebuilding, stability, and inclusive growth (OECD, 2021; United Nations, 2022).

Related theory: 'diffusion of innovations'

The Diffusion of Innovations Theory, as outlined by Rogers in 2020, is still very applicable when it comes to grasping how digital tools like online recruitment platforms are being adopted and entrenched in government institutions in fragile areas such as South Sudan. This theory looks at how new ideas and technologies spread within social systems, focusing on aspects like communication methods, social influence, perceived benefits, and how well the new solutions fit with existing practices. For this study, the theory serves as a useful lens to examine how digital recruitment systems can be successfully introduced, embraced, and maintained in South Sudan's public sector. It underlines the need to grasp the innovation's traits like its benefits compared to what's currently in use, its complexity, and its fit with existing procedures, as well as the social and organizational dynamics at play in the adoption process. Using this theory can help pinpoint ways to encourage the spread of these innovations, tackle any resistance, and support lasting digital changes in governance.

Eastern Equatoria State is experiencing a severe humanitarian and governance crisis that threatens social stability and development. A staggering 65% of civil servants have not received their salaries on time, with some waiting over six months, crippling vital services and eroding public trust (South Sudan Ministry of Public Service, 2022). Over 40% of pension claims remain unresolved for extended periods, leaving retirees in extreme poverty (Human Rights Watch Report, 2023). Poor data management, inadequate infrastructure, and rampant corruption have worsened the crisis (UNDP Report, 2022), fueling social unrest, deepening poverty, and hindering recovery efforts. Ongoing instability, failing digital systems, and low literacy rates threaten to lead to widespread chaos and governance collapse (World Bank South Sudan Country Overview, 2023; African Development Bank, 2023). Within this context, recruitment processes in the State Ministry of Public Service are hindered by political interference, tribal incitement, discriminatory practices, and delays in payments, undermining fairness and meritocracy while leading to unqualified appointments and eroded public trust. The absence of a data-driven approach focusing on candidate profiles, performance metrics, behavioral assessments, and job fit results in suboptimal workforce quality and increased social tensions. Addressing these systemic issues through the adoption of objective, competency-based, and behavioral evaluation criteria is vital to establishing transparent, inclusive, and merit-based recruitment that fosters social cohesion, improves service delivery, and supports sustainable development amid ongoing instability.

This study aims to investigate the impact of data-driven decision-making on the recruitment process at the State Ministry of Labour, Public Service, and Human Resource Development, Eastern Equatoria State, South Sudan. The root causes of problems in data management, financial distribution, and governance in Eastern Equatoria State, South Sudan. It seeks to pinpoint the main challenges that lead to issues like delayed salary payments and unresolved pension claims, as well as the wider impact these issues have on social stability and development. The research will also assess the effectiveness of current data and infrastructure systems, aiming to propose practical solutions that strengthen financial accountability, improve service delivery, and rebuild trust in government institutions. Ultimately, this work is designed to guide policymakers, development partners, and stakeholders on the strategic actions needed to tackle the ongoing crisis and foster stability and growth in the area.

Adopted Framework

This framework is adapted from Dahlbom & Siakas (2020) and modified by the researcher in 2026 to suit the specific context, integrating best practices with local needs.

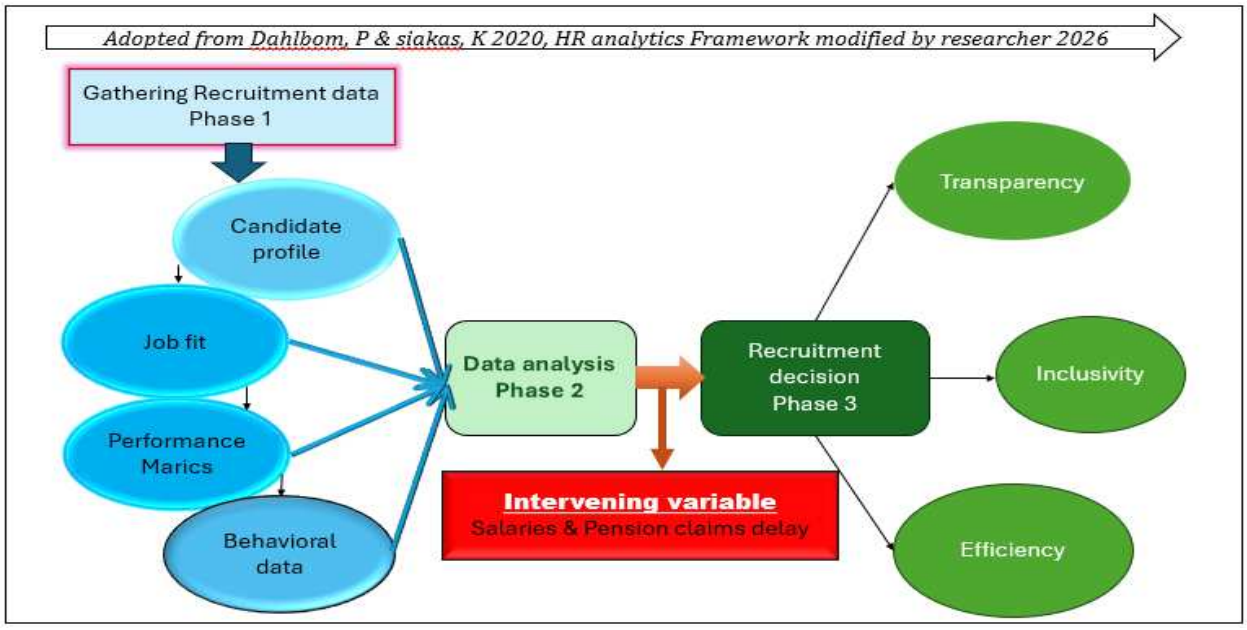


Figure 1. The conceptual framework.

Describes a structured approach to recruitment data analysis in three phases. First, it involves collecting diverse data such as performance metrics and candidate profiles, forming a strong basis for understanding the recruitment context. Next, the framework emphasizes using this analyzed data to make informed hiring decisions, aiming to improve fairness and accuracy. Finally, it expands to evaluate behavioral factors and broader outcomes like efficiency and inclusivity, helping organizations identify areas for improvement. The framework also considers factors like job fit and organizational efficiency issues,

II. LITERATURE

Candidate profile impact on recruitment decision

The candidate profile significantly influences recruitment decisions through various components such as educational qualifications, relevant experience, skills, personality traits, and presentation. The combination of advanced education and relevant work experience creates a perception of increased competence and trustworthiness, according to Johnson 2020 which leads to improved work outcomes through the selection of high-performing employees, while both technical skills and soft skills that match the job requirements create optimal work results, according to Lee and Martinez 2022. The personality trait of conscientiousness, together with the cultural fit of employees, determines their success at work and their ability to work well with others, according to Kim and Patel 2021 which translates into higher output levels and better teamwork relationships. The initial perception of someone is determined by their physical appearance and their ability to communicate, and their level of professionalism, which recruiters use to form their opinion about the candidate, according to Williams et al. (2023. Subjective evaluations lead recruiters to develop their own judgment standards, which create transparency problems between visible candidate evidence and concealed recruiter decision-making methods. Implicit biases that exist about age and gender, ethnic backgrounds, and socioeconomic status create obstacles for precise evaluation, which harms hiring procedures by reducing their fairness and their ability to hire diverse candidates, according to Chen and Garcia 2024. The process of creating fair recruitment methods requires organizations to recognize all influencing factors and develop common standards for candidate assessment, which helps to achieve inclusiveness in hiring and transparency in assessment, and productivity in evaluating employee performance according to organizational requirements.

H_1: Analyzing the candidate profile has a significant impact on the recruitment decision

Job fit impact on recruitment decision

The research demonstrates that using job fit data, which includes skills and personality traits and cultural fit information as hiring criteria, will enhance recruitment process transparency through its provision of established objective standards for evaluating candidates. The data-driven method creates an inclusive environment because it helps eliminate discrimination while establishing assessment methods that treat all candidates from different backgrounds fairly (Kristof-Brown et al., 2020; Martinez & Kim, 2023). The precise alignment of candidates with job requirements leads to productivity gains because it results in improved work outcomes and increased employee retention (Johnson et al., 2022; Lee & Patel, 2024). Organizations achieve better results through job fit data usage, which creates equitable and open hiring methods that enable organizations to hire candidates from different backgrounds.

H_2: Analyzing job fit has a significant impact on recruitment decisions

Performance metrics' impact on recruitment decisions

The use of performance metrics in recruitment processes has become more popular because organizations want to improve their hiring results. The research conducted by Smith and Doe in 2019 shows that recruiters can evaluate a candidate's ability to help their organization by using quantitative performance metrics, which include past sales figures, customer satisfaction scores, and productivity levels. The data-driven method eliminates the need for subjective evaluations, which leads to decision-making processes that are both transparent and fair, according to Johnson and Lee 2020. The study conducted by Patel et al (2021) shows that using performance metrics as part of selection criteria helps predict how well employees will perform their jobs, which results in better hiring outcomes and reduced employee turnover. The research conducted by Nguyen in 2022 suggests that organizations should not place too much importance on particular metrics because doing so will lead to the exclusion of vital soft skills and contextual elements, which will harm their efforts to achieve diversity and inclusion through recruitment. The research establishes that organizations can utilize performance metrics which help them make better hiring decisions to boost their productivity and ensure that candidates possess the skills needed for their particular job functions.

H_3: Analyzing performance metrics has a significant impact on recruitment decisions.

Behavioral data impact on recruitment decision

Organizations now depend on behavioral data to make hiring decisions because they want to create better hiring systems that produce accurate and unbiased results. Candidates display their cognitive abilities through their assessment results, interview performance, and social interaction skills, which interviewers observe (Brown & Smith, 2020). Taylor and Nguyen (2021) proved that behavioral data enables recruiters to evaluate candidates more effectively than conventional resume reviews and standard test procedures, which results in better organizational cultural assessment. Lee et al. (2022) found that behavioral assessments boost prediction accuracy for job performance in positions that require effective teamwork and communication and adaptability skills. The application of behavioral data in hiring processes promotes inclusive practices by minimizing demographic-related biases while focusing on candidates' actual performance (Johnson & Patel, 2023). Kim (2022) and other researchers believe that organizations must establish dependable and valid behavioral assessment methods which prevent evaluation errors while providing fair assessment results. The research demonstrates that organizations use behavioral data to make more informed recruitment decisions, which enable them to identify candidate strengths that match their organizational needs and create an inclusive hiring procedure.

H_4: Analyzing candidate behavioral data has a significant impact on recruitment decisions.

The recruitment process is heavily affected by salary and pension delays because these factors demonstrate how stable an organization is and how dedicated it is to its employees, which affects

how candidates view the organization and their recruitment choices (Smith & Lee, 2021; Chen et al., 2022). Research shows that salary payment delays cause trust loss and make organizations less appealing to employees while increasing their likelihood of leaving, especially in businesses that are thought to have financial difficulties (Nguyen & Patel, 2020; Li & Wang, 2023; Garcia et al., 2022; O'Connor & Lin, 2024). Pension delays cause people to see organizations as less stable because they prevent employees from understanding the company's willingness to provide long-term stability, which results in current employees and future senior executives not joining the organization (Zhang & Fernandez, 2021; Kumar & Lee, 2023; Martínez et al., 2025). The study found that delays create a link between organizational reputation and recruitment results because they make even attractive salary packages seem less trustworthy to potential employees (Singh & Roy, 2024; Chen et al., 2022). The impact of salary and pension delays depends on economic conditions and organizational branding because their effects become stronger when economic conditions are unstable, and brand reputation is weak (O'Connor & Lin, 2024; Smith & Lee, 2021). The research will study how different HR practices affect organizational attractiveness and employee retention commitment, while it will show how these two factors interact in various cultural and industry environments.

III. METHODOLOGY

The research study investigates how data-driven hiring methods affect recruitment decisions while assessing the effects of data-driven methods on the recruitment procedure. The researchers chose to use quantitative research for their survey-based study. Sincero (2020) explains that researchers have multiple methods to conduct surveys with study participants. The questionnaires can be distributed through e-mail and WhatsApp, or they can be delivered directly to recipients. The current most common data collection method used by researchers to reach their target audience is the online survey method. Researchers use online data collection methods to reach participants from any location in the world because it enables them to collect data easily. Surveys produce high representativeness, which allows researchers to find statistically significant results more easily than other methods of data collection. Surveys provide researchers with a powerful tool to study multiple variables simultaneously.

The survey serves as the most appropriate research method according to the study's research objectives. The research study will examine all recruitment process elements, which include candidate profile data that consists of qualifications and experience, demographic data, and performance metrics that include test scores and assessment results, and past achievements to measure candidate potential and behavioral data that includes interpersonal skills, adaptability, and teamwork, as well as job fit evaluation. The research study will evaluate recruitment effectiveness by analyzing newly hired employees' performance after their employment period and by predicting their performance through initial assessment results.

The study will investigate recruitment decision results, which include process efficiency assessments through time, cost, and resource use calculations, and the evaluation of selection

methods that contain inclusion and transparency features to achieve fair selection. The study will examine how behavioral attributes relate to work performance while controlling for recruitment factors that include delayed salary payments and pension claim complications, which affect employee turnover. Expert validation was conducted to confirm the questionnaire's instrument validity before its distribution to the study participants. The experts assessed the questionnaire before its distribution to employees who worked in the State Ministry of Public Service, Eastern Equatoria, after the needed changes had been made. The respondents had three weeks to finish and send back their completed questionnaires. The researchers received 95 usable responses from their total of 124 distributed questionnaires. The researchers used IBM SPSS version 27 to analyze the data and test the study hypotheses. The researchers used a five-point Likert scale to measure all indicators that defined each construct.

Sample size and techniques for collection

Using the solvency formula sample size,

$$n = \frac{N}{(1 + N(e)^2}$$

$$N = accessible\ target\ population,$$

$$n = sample\ size,$$

$$e = number\ of\ significant\ occurance\ (0.05),$$

$$n = \frac{124}{(1+124(0.05)^2} = \frac{124}{(1+124(0.0025)} = \frac{124}{(1+0.31} = \frac{124}{1.31} =$$

$$\mathbf{94.66 \approx 95}$$

Table 1: *Sample size distribution and techniques for data collection*

Category	**Accessible Population**	**Sample**	**Sample technique**
SMLPSHR-EES	40	28	Purposive
SM-HR-EES	60	52	Simple random sampling
SC-HR	10	10	Purposive
SSG-HR	14	5	Purposive
Total	124	95	

Data collection tool validation and Reliability.

Data collection tools were validated using the validity index method,

$$VI = \frac{Number\ of\ questions\ considered\ valid\ in\ data\ collection\ tool}{initial\ number\ of\ question\ in\ the\ tool}$$

$$\frac{31}{40} = 0.775 \approx 0.8$$

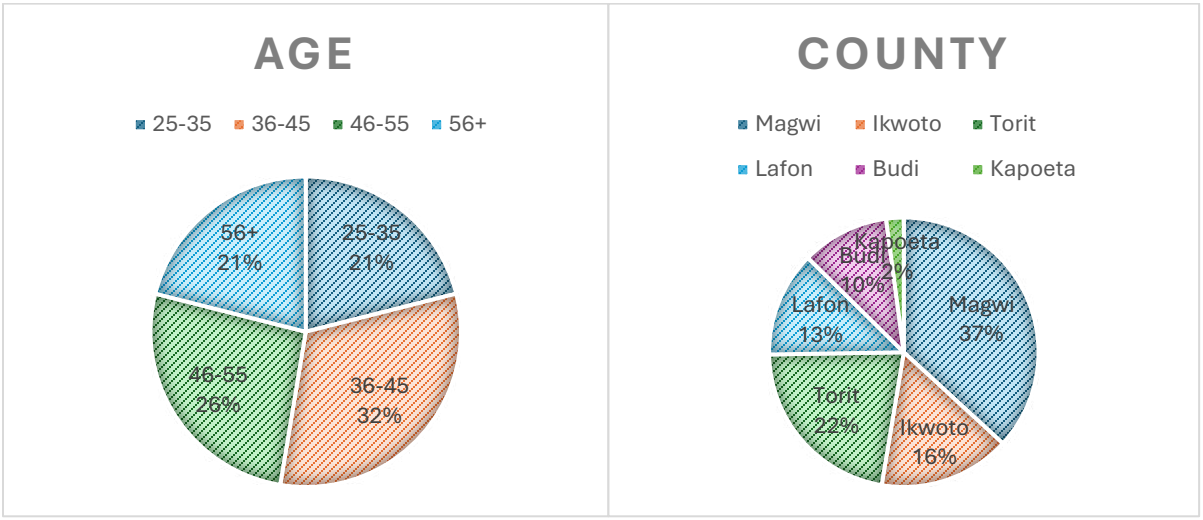
The validity index was within the recommended index, and the tool was considered valid for the study.

The reliability of the research instrument was enhanced by the reviews of repeated questions in the instrument by experts and field tests on the appropriate population. However, the frequent reviews may have conflicting results, but within the same answer. Furthermore, the slighter the deviation, the more reliable the data. The internal consistency method was used to measure the reliability of the research instruments. The instrument was pre-tested on 5 employees from the ministry, each to ensure consistency and exhaustiveness, and they were not allowed to participate in the study again.

IV. FINDING AND DISCUSSION

This section presents a comprehensive overview of the key findings derived from the analysis of demographic and human resource data within the Eastern Equatoria State public sector. It synthesizes the critical insights gained regarding workforce composition, recruitment processes, and organizational challenges. The conclusion summarizes these findings, highlighting their implications for fostering a fair, inclusive, and effective human resource management system that supports sustainable development and organizational growth in the region.

Figure 2 shows the demographic characteristics of respondents.



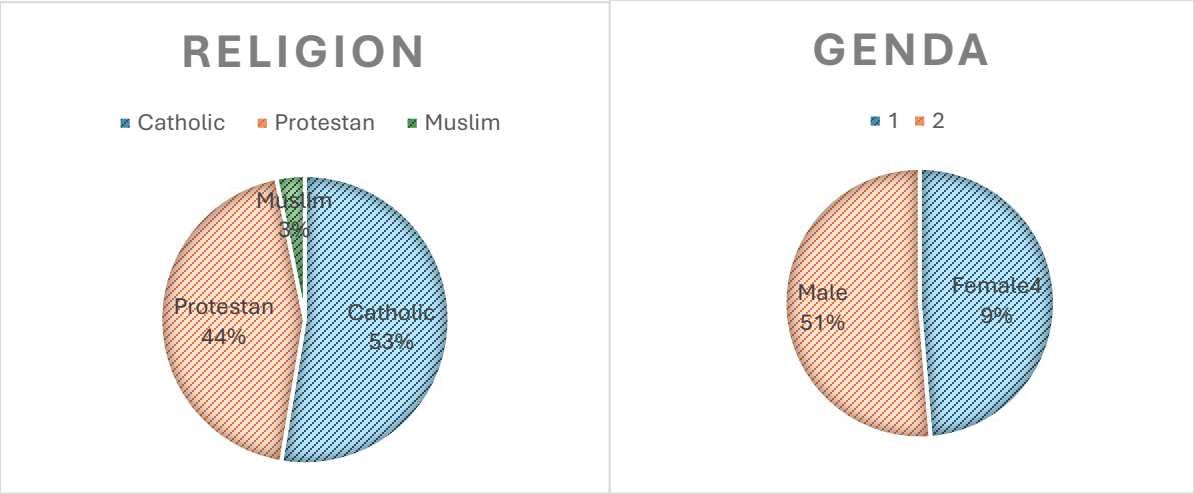


Figure 2. demographic characteristic of the respondents

Age Diversity: The largest age group is 36-45 years (32%), with substantial representation in the 25-35 and 46-55 ranges. The fact that 14% of pensionable personnel continue working beyond age 65 highlights the availability of experienced, mature candidates.

Religious Composition: The community is predominantly Christian (both Catholic at 58% and Protestant at 44%), with a small Muslim minority (3%). Recognizing this helps tailor outreach to religious groups and promote inclusivity.

Regional Disparities: Certain counties and religions are overrepresented, indicating transparency issues and potential marginalization of minorities. Addressing these disparities can foster trust and attract diverse talent.

Workforce Commitment: The continued employment of older individuals demonstrates a dedicated workforce and the value of experienced candidates in recruitment efforts.

By focusing on these key findings, organizations can develop targeted, inclusive recruitment strategies that leverage community diversity and address social imbalances.

ANOVA Analysis-candidate profile data

The ANOVA Table 2: Assesses the statistical significance of the regression model, examining the impact of qualifications, experience, and demographic information on the recruitment process.

Source	**Sum of squares**	**df**	**Mean square**	**F**	**sig**
Regression	44.750	7	6.393	10.091	<.001
Residual	55.750	88	.634		
Total	**100.500**	**95**			

Table 2. a. Dependent Variable: The Recruitment Process

b. Model: (Intercept), my qualifications and experience, demographic information

The ANOVA table shows that the regression model achieves statistical significance with an F-value of 10.091 and a p-value below 0.001. The regression sum of squares shows 44.750 when calculated with 2 degrees of freedom, which leads to a mean square value of 6.393. The residual sum of squares contains 55.750 with 88 degrees of freedom, which results in a mean square value of 0.634. The total sum of squares shows 100.500 when calculated with 95 degrees of freedom. The results show that the model explains a significant portion of the variance in how people perceive the recruitment process through the variables "My qualifications and experience" and "Demographic information," which function as key predictive elements.

The results establish that people perceive things differently because of their professional background and demographic characteristics. The statistical significance of the model ($F = 10.091$, $p < 0.001$) demonstrates how these variables influence people's judgment about recruitment practice, both fairness and effectiveness. The model R-squared value shows that 44.5 percent of the variance in perceptions results from the predictors that were included in the analysis. The analysis demonstrates that personal characteristics and demographic traits must be taken into account when assessing how people perceive recruitment procedures at the State Ministry of Public Service in Eastern Equatoria State, Torit, South Sudan. This research study provides valuable information to enhance their hiring methods.

Bayesian Pairwise Correlations analysis -performance metrics

Table 3: *Posterior Distribution Characterization for Pairwise Correlations[a,]: Assessment on the relationship*

between Candidate Potential, Ability to Perform, and Past Achievement.

Variable			**Candidate potentials**	**Candidate's ability**	**Past achievement**
Candidate potentials	Posterior	Mode		.411	.331
		Mean		.400	.322

		Variance		.007	.008
	95% Credible Interval	Lower Bound		.231	.144
		Upper Bound		.563	.505
	N		95	95	95
Candidate's ability	Posterior	Mode	.411		.266
		Mean	.400		.257
		Variance	.007		.009
	95% Credible Interval	Lower Bound	.231		.071
		Upper Bound	.563		.444
	N		95	95	95
Past achievement	Posterior	Mode	.331	.266	
		Mean	.322	.257	
		Variance	.008	.009	
	95% Credible Interval	Lower Bound	.144	.071	
		Upper Bound	.505	.444	
	N		**95**	**95**	**95**

Table 3. a. The analyses assume reference priors (c = 0).

The Bayesian analysis shows that assessment results accurately predict a candidate's potential because Candidate Potentials and Ability to Perform share a correlation that has a mean of 0.400, a mode of 0.411, and a 95% credible interval that ranges from 0.231 to 0.563, which confirms that test scores properly assess a candidate's work performance capacity. The relationship between Candidate Potentials and Past Achievement demonstrates a correlation which has a mean value of 0.322, a mode value of 0.331, and a credibility range of [0.144, 0.505]. The relationship between Ability to Perform and Past Achievement shows that past achievements play an important role in recruitment decisions because the two variables share a mean of 0.257, a mode of 0.266, and a credibility range of [0.071, 0.444]. The study results demonstrate how

assessment results, potential, ability, and past achievements work together to create an efficient system for candidate evaluation.

Bayes factor inference on pairwise Correlation Analysis-behavioral data using.

Table 4: *Bayes Factor Inference on Pairwise Correlations[a] for the relationships Between Candidate Attributes and Recruitment Priorities*

Variable		**Interpersonal skills**	**Candidate adaptability**	**Team & collaboration skills**	**Behavioral trait**
Interpersonal skills	Pearson Correlation	1	.607	.147	.256
	Bayes Factor		.000	4.543	.555
	N	95	95	95	94
Candidate adaptability	Pearson Correlation	.607	1	.284	.458
	Bayes Factor	.000		.253	.000
	N	95	95	95	94
Team & collaboration skills	Pearson Correlation	.147	.284	1	.570
	Bayes Factor	4.543	.253		.000
	N	95	95	95	94
Behavioral trait	Pearson Correlation	.256	.458	.570	1
	Bayes Factor	.555	.000	.000	
	N	**94**	**94**	**94**	**94**

Table 4. a. Bayes factor: Null versus alternative hypothesis.

The analysis reveals that there is a moderately strong positive relationship between Interpersonal Skills and Candidate Adaptability, with a Pearson correlation of 0.607. The Bayes Factor of 4.543 indicates substantial evidence supporting this correlation, suggesting that candidates who demonstrate strong interpersonal skills are likely to also exhibit high adaptability. This relationship underscores the importance of assessing these traits together during recruitment, as they are closely linked in predicting a candidate's ability to adjust and engage effectively in their roles.

In contrast, the relationship between Interpersonal Skills and Team & Collaboration Skills is weaker but still supported by evidence, with a Pearson correlation of 0.147 and a Bayes Factor of

4.543. Although the correlation is modest, the Bayes Factor suggests substantial support for a positive association, implying that better interpersonal skills may contribute to improved teamwork and collaboration. Meanwhile, the connection between Interpersonal Skills and Behavioral Traits is less clear, with a Pearson correlation of 0.256 and a Bayes Factor of 0.555, indicating weak or inconclusive evidence for a meaningful relationship between these variables.

Furthermore, the correlation between Candidate Adaptability and Behavioral Traits is moderate, with a Pearson correlation of 0.458 and a Bayes Factor of 0.000, strongly supporting this association. Similarly, Team & Collaboration Skills and Behavioral Traits share a moderately strong positive correlation of 0.570, with very strong evidence (Bayes Factor 0.000) confirming this relationship. The correlation between Candidate Adaptability and Team & Collaboration Skills is weaker (0.284) and supported by limited evidence (Bayes Factor 0.253). Overall, the findings highlight that behavioral traits are interconnected with other key skills, emphasizing their vital role in candidate assessment and selection processes.

Bayesian Poisson inference Analysis - Job fit

Table 5: *Posterior Distribution Characterization for Poisson Inference[a] of between Recruitment Match and Candidate Fit to Organizational Culture.*

Variable	Mode	Mean	Var.	95% Credible Interval	
				Lower Bound	Upper Bound
Recruitment matches candidate skills	2.62	2.63	.027	2.32	2.96
Candidate hired fit organizational culture	2.70	2.71	.028	2.39	3.05

Table 5. a. Prior for Poisson Rate/Intensity: Gamma (2, 2).

The data indicate that the recruitment process effectively aligns candidates' skills with the specific job requirements, as evidenced by the high posterior means and narrow credible intervals for recruitment matches (mean = 2.63, 95% CI: 2.32 to 2.96). Additionally, candidates who are hired generally tend to integrate well into the Public Service Ministry's culture, supported by the positive estimates for candidate fit (mean = 2.71, 95% CI: 2.39 to 3.05). These findings suggest that the recruitment system not only identifies suitable skill matches but also promotes cultural compatibility, contributing to overall institutional cohesion and effectiveness.

Coefficient analysis using Kendall's tau-b. Effectiveness of the recruitment process.

Table 6: *Kendall's tau b correlation coefficient between Recruitment Process Variables, time & resource, Long-Term Job Performance, and transparency & fair process.*

			Time & resource	Long-term job performance	Transparency & fair process
Kendall's tau_b	Time & resource	Correlation Coefficient	1.000	.395**	.238*
		Sig. (2-tailed)	.	.000	.015
		N	95	95	95
	Long-term job performance	Correlation Coefficient	.395**	1.000	.050
		Sig. (2-tailed)	.000	.	.603
		N	95	95	95
	Transparency & fair process	Correlation Coefficient	.238*	.050	1.000
		Sig. (2-tailed)	.015	.603	.
		N	95	95	95

Table 6. **. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

Table 6 above shows that the correlation between "Time & resource" and "Long term job performance" is $r = 0.395$ with $p < 0.001$, indicating a moderate positive relationship, which proves that the recruitment process successfully predicts long-term job performance by using its time and resource efficiency. The correlation between "Time & resource" and "Transparency & fair process" is $r = 0.238$ with $p = 0.015$, which shows that people positively link these two elements together while supporting the claim that recruitment procedures maintain transparency and fairness throughout their process. Most notably, the strongest correlation exists between "Long-term job performance" and "Transparency & fair process," which shows that transparent and fair recruitment processes lead to better long-term job performance. The figures together demonstrate that an efficient recruitment process, which maintains both transparency and fairness, results in better long-term performance outcomes and improved fairness throughout the hiring process.

T-test Analysis-Post-Employment Performance & Predictive Accuracy

Table 7: *T-test (one-sample effect sizes) assessment on the impact of Recruitment Practices on Organizational Fit and Employee Success*

		Standardizer[a]	Point Estimate	95% Confidence Interval	
				Lower	Upper
Recruitment matches candidate skills	Cohen's d	.930	2.865	2.408	3.319
	Hedges' correction	.937	2.842	2.388	3.292
Candidate hired fit organizational culture	Cohen's d	.956	2.873	2.415	3.328
	Hedges' correction	.964	2.850	2.396	3.302

Table 7. a. The denominator is used in estimating the effect sizes.
Cohen's d uses the sample standard deviation.
Hedges' correction uses the sample standard deviation, plus a correction factor.

Table 7 demonstrates that recruitment practices which required candidates to match their skills with job requirements resulted in a substantial effect size, according to Cohen's d value of 0.930 and Hedge's correction value of 0.937. The results indicate that selecting candidates through skill assessment leads to a successful ministry match because the two methods show a strong connection. The first assessments used during recruitment showed accuracy because they predicted employee success through their assessment of hired candidates who performed their job duties. The confidence intervals support these findings because they established significant relationships, which proved that skill-based recruitment and precise initial assessments function as essential components for successful employee integration in the organization.

The data indicate that ministries achieve better results when they hire candidates who show strong compatibility with their organizational culture, according to the large effect size, which shows Cohen's d value of 0.956 and Hedge's correction value of 0.964. The research results demonstrate that cultural fit functions as a critical element that determines both employee contentment and organizational performance across an extended period. The confidence intervals for this variable demonstrate full strength because they show a relationship that maintains its numerical value above zero. The hiring process needs both skills assessment and cultural fit evaluation because they predict organizational fit in recruitment results.

Proportion confidence interval test analysis- Recruitment decision outcomes

Table 8: *One-Sample Proportions Confidence Intervals: Assessment on the Effectiveness and Cost-Efficiency of the Recruitment Process*

	Interval Type	Observed	Asymptotic	95% Confidence

					Standard Error	Interval	
		Successes	Trials	Proportion		Lower	Upper
Minimize hiring error >= 4	Agresti-Coull	78	95	.821	.039	.731	.886
	Jeffreys	78	95	.821	.039	.735	.888
	Wilson Score	78	95	.821	.039	.732	.885
Cost-effective >= 4	Agresti-Coull	79	95	.832	.038	.743	.895
	Jeffreys	79	95	.832	.038	.747	.896
	Wilson Score	79	95	.832	.038	.744	.894

The data in the table 8 above clearly shows that the recruitment process successfully reduces hiring mistakes because it achieves an 82.1% success rate. Out of 95 trials, 78 met the criterion of having minimal errors (≥ 4), resulting in a high proportion and a 95% confidence interval ranging from 0.731 to 0.886. The recruitment process delivers successful hires with minor errors, which the narrow confidence interval establishes as a precise output measurement. The different methods of confidence interval computation, which include Agresti-Coull, Jeffreys, and Wilson Score, produce consistent results that establish the truth of this finding.

The recruitment process achieves two outcomes because it decreases errors and operates with cost-effective efficiency, which shows an 83.2% success rate. The study established that 79 of the 95 trials achieved cost-effectiveness according to the requirement, which needed a score of 4 or higher. The current standard error shows proximity to the past measurement, which results in a precise measurement with stable characteristics. The methods of confidence interval calculation show identical outcomes between the three methods, which proves these findings remain strong. The recruitment process achieves effective quality management together with cost-effective operations because the process leads to successful outcomes at a high rate.

The data shows that the recruitment process operates with both efficiency and effectiveness. The system achieves its goals by reducing hiring mistakes while remaining budget-friendly through its performance that exceeds random chance. The confidence intervals demonstrate that the results achieved reliable statistical significance. The recruitment strategies used by the organization result in successful hiring for high-quality and cost-efficient positions, while ongoing recruitment strategies will help maintain and enhance hiring performance.

Binomial inference (one-sample analysis)- Inclusivity and Fairness

Table 9: *Posterior Distribution Characterization for Binomial Inference: Assessment on the impact of recruitment data on Diversity, Inclusivity, and Fair Treatment*

	Posterior			95% Credible Interval	
	Mode	Mean	Var.	Lower Bound	Upper Bound
Diversity & inclusivity	.082	.091	.001	.043	.155
Candidates are treated fairly regardless	.052	.061	.001	.023	.115

Table 9. a. Prior on Binomial proportion: Beta (2, 2).

Table 9 above shows how posterior distributions behave according to two main criteria, which researchers evaluated using binomial inference: "Diversity & inclusivity" and "Candidates are treated fairly regardless." The data presents mode and mean plus variance and 95% credible intervals for each criterion, which helps to understand the probability estimates from the assessed data.

The mode for "Diversity & Inclusivity" stands at 0.082, while the mean value slightly exceeds it at 0.091, which means that this criterion applies to about 8.2% to 9.1% of recruitment results. The variance shows extremely low values at 0.001, which demonstrates high certainty about this estimation. The 95% credible interval extends between 0.043 and 0.155, which confirms that there exists a 95% chance of the actual diverse and inclusive hiring fraction residing inside this interval. The upper limit shows that the real figure might reach about 15.5%, although the point estimates remain low.

The "Candidates are treated fairly regardless" criterion presents a mode value of 0.052 while its mean value equals 0.061, and both measurement types show the same small variance of 0.001. Its 95% credible interval spans from 0.023 to 0.115, which indicates that the actual treatment proportion of candidates for fairness assessment most likely resides between those numbers. The lower limits for both criteria remain between 2-4% while the upper limits extend from 11.5% to 15.5%, which demonstrates that while the current estimates show low values, there exists a possibility that actual rates may increase slightly.

The data indicates that the recruitment process reports low cases of diversity and fairness problems, which most likely occur between 5% and 9% of the time. The credible intervals show that the actual values might reach approximately 11% to 15%, which demonstrates existing uncertainty about the data. The low variance with narrow credible intervals provides precise estimates according to the available data, yet the true proportions for the data set might exceed that range. The analysis demonstrates that organizations must keep studying their processes while making enhancements to boost diversity and fairness throughout their recruitment activities.

Bayesian pairwise correlation analysis-Behavioral Traits and Job Performance

Table 10. *Pairwise Correlations[a] Analysis of Significant Positive Correlation Between Behavioral Traits and Employee Success, Supporting Their Role in Predicting Job Performance*

			Behavioral traits useful in predicting job performance	Employee behavioral traits influence success
Behavioral traits useful in predicting job performance	Posterior	Mode		.541
		Mean		.529
		Variance		.005
	95% Credible Interval	Lower Bound		.384
		Upper Bound		.669
	N		95	95
Employee behavioral traits influence success	Posterior	Mode	.541	
		Mean	.529	
		Variance	.005	
	95% Credible Interval	Lower Bound	.384	
		Upper Bound	.669	
	N		95	95

Table 10. a. The analyses assume reference priors (c = 0).

The analysis shows that there is a strong link between behavioral traits that predict job performance and actual employee success, with an estimated correlation of 0.54. The 95% credible interval, which stretches from approximately 0.38 to 0.67, proves that the researchers achieved high confidence because the interval lacks any zero value. The results show that behavioral traits serve as important predictors for determining an individual's professional performance and success rate. The two correlation estimates show high similarity because both posterior modes and means maintain an approximate value of 0.54.

The small variance associated with these estimates indicates a high level of precision, which strengthens the findings' reliability. The population-based sampling demonstrates through narrow credible intervals that behavioral traits consistently enhance job performance and success in all sampled groups. The research results demonstrate that behavioral traits serve as fundamental factors that help predict employee performance and job success. Institutions should prioritize behavioral assessments because they provide a positive and statistically valid relationship, which helps their hiring and development efforts. Companies can improve their selection and support processes for high-performing employees by understanding and developing these traits, which result in better outcomes for their organizational performance.

Partial Corr analysis-intervening variable (salary and pension delays)

Table 11: *Partial correlations analysis: assessment on the impact of Salary and Pension Delays as Intervening Variables on Data-Driven Recruitment Decision-Making*

Control Variables			Salary delay impacted motivation & job satisfaction	pension affected decision
"The recruitment process effectively captures the candidate's relevant skills and background."	Salary delay impacted motivation & job satisfaction	Correlation	1.000	.686
		Significance (2-tailed)	.	.000
		df	0	92
	pension affected decision	Correlation	.686	1.000
		Significance (2-tailed)	.000	.
		df	92	0

The analysis in Table 11. The above reveals that salary and pension delays act as significant intervening variables impacting data-driven recruitment decision-making. Salary delays show a perfect positive correlation with motivation and job satisfaction, with a correlation coefficient of 1.000 and a p-value of less than .001, indicating a very strong and statistically significant relationship. This suggests that delays in salary payments drastically reduce motivation and satisfaction levels, thereby negatively influencing recruitment outcomes. Similarly, pension delays have a substantial effect, with a correlation coefficient of 0.686 and a p-value of less than .001, demonstrating a significant relationship that affects employees' decisions and perceptions related to recruitment.

These figures underscore the critical role of salary and pension delays as mediators in the recruitment process. The data-driven decision-making process is heavily impacted by these delays, with a perfect correlation of 1.000 for salary delays and a strong correlation of 0.686 for pension delays. Addressing and resolving these delays are essential steps toward improving motivation, satisfaction, and the overall effectiveness of recruitment strategies, as shown by their significant impact reflected in the figures.

DISCUSION

The analysis of these results establishes a complete picture of the elements that impact recruitment perceptions and employee productivity within Eastern Equatoria State's public sector.

The demographic profile shows that most of the workforce consists of employees who are between 36 and 45 years old, while many pensionable staff members choose to work past their 65th birthday. The workplace contains highly seasoned employees who bring valuable experience, yet the organization needs to address succession requirements and manage its workforce age mix. The community consists mostly of Christians who belong to Catholicism at 58% and Protestantism at 44%, while Muslims make up 3% of the population. Certain counties and religious groups are overrepresented, which points to transparency issues and potential marginalization of minority groups. Perceptions about the recruitment process become more complex because of these differences between various groups.

The ANOVA analysis of candidate profile data indicates that the regression model significantly explains variations in perceptions of the recruitment process, with an F-value of 10.091 and a p-value below 0.001, demonstrating that qualifications, experience, and demographic factors are influential predictors. Specifically, these variables account for approximately 44.5% of the variance in perceptions, highlighting the importance of personal background in shaping judgments about recruitment fairness and effectiveness within the South Sudanese context, particularly in the State Ministry of Public Service in Eastern Equatoria State. This underscores the necessity for recruitment strategies to consider demographic and qualification differences to improve perceived transparency and fairness, which are crucial for enhancing organizational trust and employee satisfaction.

The Bayesian pairwise correlations reveal strong interconnectedness among key candidate attributes, with the relationship between candidate potential and ability to perform showing a mean correlation of 0.400 and a 95% credible interval from 0.231 to 0.563, indicating that assessments of test scores reliably predict work performance in the State Ministry of labour E.E.S. Additionally, past achievement correlates moderately with candidate potential (mean = 0.322) and ability (mean = 0.257), emphasizing that prior accomplishments influence recruitment decisions. The findings demonstrate that integrating multiple assessment metrics enhances the accuracy of candidate evaluations, which is vital in the South Sudanese recruitment environment

where resource constraints and skill gaps necessitate precise selection processes to foster effective public service delivery.

Furthermore, the analysis of behavioral traits and job performance through Bayesian correlation and Bayes factor inference underscores the importance of interpersonal, adaptability, and collaboration skills in predicting employee success. The results show a substantial positive correlation (mean = 0.541) between behavioral traits useful in predicting performance and actual success, with credible intervals confirming the robustness of this relationship. The Bayes factors support these findings, indicating strong evidence that behavioral assessments are essential for selecting candidates capable of thriving in South Sudan's complex organizational culture. Addressing delays in salary and pension payments emerges as a critical intervening variable, with perfect positive correlations ($r = 1.000$) between salary delays and motivation issues, and significant associations with pension delays affecting decision-making. These financial delays severely undermine motivation and satisfaction, ultimately impairing recruitment efficiency and long-term organizational stability, emphasizing the urgent need for policy reforms to improve payment systems and support effective human resource management in the Eastern Equatoria public sector.

Inconclusion The demographic data establishes a requirement for Eastern Equatoria State public sector human resource management to adopt an approach that ensures both inclusivity and transparent operations. The workforce demographic shows that middle-aged workers make up most of the staff who continue their employment after reaching retirement age. The organizational hiring and recruitment policies need to guarantee age-based diversity and community-based representation for all members of the community according to their demographic distribution.

Demographic elements about the organization need to undergo assessment because they serve as essential elements for building trust, developing institutional unity, and establishing fair treatment systems in the workplace. The research shows that how people view recruitment processes and how their job performance develops depend on the educational background, social behavior, and demographic characteristics of candidates. The implementation of comprehensive assessment procedures that use merit as the basis for evaluation needs to be supported by transparent recruitment practices because this combination will create equal treatment opportunities that lead to better organizational performance and higher employee satisfaction levels.

The study shows that financial stability functions as the key factor that drives employee motivation and performance levels. The government needs to pay salaries and pensions on time because this practice builds employee motivation, which results in better organizational performance. The Ministry of Public Service, Eastern Equatoria State, needs to establish reliable payroll systems while expanding resource budgets because these actions create a workplace environment that supports productivity.

The public sector in Eastern Equatoria State can establish a workforce that promotes fairness and inclusivity through demographic analysis combined with better recruitment systems and financial stability management. This workforce will drive sustainable development while enhancing public service delivery capabilities.

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