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Performance Management and Operational Efficiency in Universities in Kenya: *A Moderating Effect of Corporate Culture*

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Abstract

Performance management evolves within organisations, appearing as either formal systems or informal daily practices. Kenyan universities, pivotal to national development, confront shrinking budgets, rising competition, and demanding stakeholders, making efficient operations imperative. This study investigated whether corporate culture moderates the link between performance management and operational efficiency. Institutional theory framed the analysis, while Schein's layered view of culture explained cultural influences. Performance management behaviours were measured with a structured questionnaire; corporate culture was captured with the Organisational Culture Assessment Instrument. A positivist, cross-sectional census surveyed registrars in all 72 Kenyan universities; 80 % responded. Composite indices for performance management and culture were created, and Data Envelopment Analysis estimated operational efficiency from longitudinal secondary data. Diagnostic tests satisfied regression assumptions. Simple regression showed performance management positively correlated with efficiency (r = 0.571). Stepwise regression confirmed a significant moderating effect of culture. Mission and clan cultures dominated, entrepreneurial traits remained weak, and several universities displayed low efficiency. Findings enrich higher-education management literature in Africa. The study recommends cultural shifts towards entrepreneurship, institutional specialisation, and stronger efficiency orientation.

Keywords: corporate culture, data envelopment analysis, operational efficiency, performance management, universities

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INTRODUCTION AND STUDY OBJECTIVES

Universities are progressively facing shifting dynamics around internationalisation, technology, funding models as well as stakeholder expectations. The survival and relevance of academic disciplines hinges on the unerring anticipation of emerging market trends and needs. Systems to meet these changes must continually evolve (Prahalad & Hamel, 2006). To thrive in this environment, universities have been concerned with how to do things better by doing more with less (Kipesha & Msigwa, 2013). The pressure to enhance operational efficiency has led to the implementation of performance management. Changing contextual factors, including greater focus on efficiency in the deployment and mobilisation of subsidies and capitation, have also led to adoption of performance management (Greiling & Halachmi, 2013).

Performance management implementation does not always lead to targeted outcomes (Brudan, 2010). An appropriate corporate culture is a crucial condition or factor necessary for performance management to realise the desired objectives (Hirota et al. 2010; Mwiria et al. (2007). Cultural aspects may not always be immediately discernible. Awareness and management of prevailing culture determines the success of an organisation, and the various strategies implemented including performance management. Unsupportive corporate culture is a challenge facing universities and performance management implementation in Kenya (Mathooko & Ogutu, 2015). There is increased focus on performance management in universities as stakeholders, especially funding entities, now require more efficiency, leaner processes and procedures, and ultimately greater financial prudence (Thornhill, 2016).

Empirical studies show that the expected outcomes of performance management are not always achieved despite heavy investment. In the UK, universities have implemented substantial performance management reforms (Talbot, 2016). This research shows that one of the unanticipated outcomes of performance management systems is resentment over perceived disruption of academic life. Van Dooren et al. (2015) established that in Finland the same results hold with academia viewing performance management as more a purview for the administrators. Yet inspire of these findings, performance management systems are still being introduced due to accountability and efficiency concerns. Karbasian et al. (2016) sought to comprehend the justification behind this resistance of performance management initiatives from academia whose focus is mainly on refinement of subject and specialisation areas towards excellence.

There have also been inconsistent results regarding the performance management process effectiveness. 80% of workplaces in the USA registered dissatisfaction with the process and outcomes of performance management (Coens & Jenkins, 2002). This misalignment could be due to other variables affecting performance management (Murphy, 2020). The recommendation has been that further examination is required because of high levels of dissatisfaction with performance management processes

and outcomes (Van Dooren et al. 2015). Therefore, the need for further hypothesis development on performance management, corporate culture and operational efficiency and how they relate. Kenyan universities must urgently address operational efficiency to remain relevant, market-driven, and perform as per set standards and guidelines (Kongere, 2011).

Two theories anchor the investigation. Institutional theory is the major one underpinning performance management and operational efficiency helping understand how new ideas and guidelines for behaviour become entrenched. Schein's Theory of Culture holds that underlying assumptions as well as values are the least visible aspects of culture. Culture has other aspects that are not immediately discernible evident hidden in symbols, rituals, language and relations (Jeong & Phillips, 2001). Operational efficiency in universities has significant implications for all stakeholders (Thornhill, 2016). The study investigated universities which are critical to the future of Kenya as significant providers of employment, skilled human resource, research and a consumer of public resources. Kenyan universities must urgently address operational efficiency to remain relevant and competitive (Mange et al., 2013). The study examines the interaction of performance management and operational efficiency and whether corporate culture moderates this relationship.

LITERATURE REVIEW

Performance management takes different forms in organisations over time, either formalised or informal, through daily interactions (Brown et al. 2019). Literature review and empirical studies on Performance management yield significant differences (Aguinis, 2019). The university environment, locally and globally, demands the development and retention of cutting-edge technologies and staff (Arbo & Benneworth, 2007). It is done through establishing, monitoring and building staff and team performance and synchronising this performance with the overall goals. Performance management is aimed at improving the efficiency of organisations. It leads to the achievement of a shared understanding of the target objective, why it is critical, and how it will be attained (Nielsen, 2014).

Performance management takes cognizance of the employee's abilities through performance planning, implementation, feedback, evaluation, and rewards (Kaplan & Norton, 2001). It is helpful for capacity building, regeneration, sustainability, improving organisational effectiveness, efficiency and performance. In the past, focus was more on defining and measuring individual and group performance. Marr and Schiuma (2003) holds that it has now evolved to an aligned, integrated process that sets expectations, measures, reviews results, and rewards for organisational success. The operationalisation of performance management was adapted from Kinicki et al. (2013) validated Performance Management Behaviour Questionnaire, which has five elements: goal setting, communication, performance expectations, monitoring and providing consequences. Performance management involves bringing together all parties to set challenging yet attainable goals which are clearly communicated, communicating

these expectations adequately, managing performance, monitoring and tying rewards to performance.

Corporate culture has been defined by as the common values, altitudes as well as standards which determine relations within and without the organisation (Graham et al. 2022). It is a micro culture within a macro or national culture and is shaped by leadership. It determines working hours, workspace, facilities, tools and equipment, communication channels, procedures, dress code, language use, reward systems, recognitions and other personnel provisions within the legal frameworks (Schein, 2009). When observing others culture, we are quickly aware of the visible and unusual aspects, yet we are rarely conscious of our own. It is only when implementing new, altered strategies or programs that may be fully or partially incompatible with prevailing culture do, we experience the power and influence of culture (Kotter, 2008). These unique foundational characteristics create a differentiating character (Schein, 2009). Corporate culture is therefore the distinct mix of enduring values that persevere over time despite membership changes (Molenaar et al. 2002).

Organisations tend to develop a distinctive psychological and physical niche within the broader environment. Denison and Mishra (1995) model of corporate culture investigate the link between corporate culture and efficiency, profitability, growth, quality, innovation, customer and employee satisfaction. Culture has also been classified along six parameters; process-result, employee focused, job focused, open-closed system, loose-tight control, parochial-professional and normative-pragmatic (Hofstede, 2011). Another operationalisation of corporate culture is along employee and job-oriented dimensions (Gelfand et al. 2007). The Competing Values Framework by Cameron and Quinn (2006) addressed culture effectiveness dimension orientations of internal-external and control-flexibility. The study employed the Organisational Culture Assessment Instrument developed under the Competing Values Framework to assess whether culture was clan, adhocracy, entrepreneurial and mission. Clan culture has high levels of involvement, ownership, mutual help, shared values and participation. In entrepreneurial culture, the more adaptive an organisation is, the easier it responds to both external and internal changes. For adhocracy culture, teams are structured around tasks while for the mission culture, meaning, purpose, goals and direction are the drivers of organisation.

Operational efficiency is defined as continuous improvement over time by performing the same activities in an enhanced manner. It allows an organisation to improve input output ratio by downscaling defects or producing better products in a shorter cycle (Camanho et al. 2024). It is shown as the ratio between output and input that is used to run a business operation. It is the production of better-quality output as effectively as possible (Halkos et al. 2016). Operational efficiency maximises resource capabilities and minimises wastage with the objective being to satisfy the client with better products and services. It entails mapping inefficient processes and procedures that impact on the organisation negatively. New processes are then designed to overcome the mapped inefficient process. The use of

data envelopment analysis, a nonparametric alternative method to Stochastic frontier analysis based on regression analysis for measuring efficiency and modelling cost structures was employed. This was possible as there were multiple inputs and outputs and prices of inputs were not readily available (Mergoni & De Witte, 2022). It enables identification of organisations operating economies of scale (Leitner et al. 2007). In this study, the input orientation is employed. This assumes that the inputs are exogenously fixed and estimates the minimum cost at which a decision-making unit would have produced the output.

RESEARCH METHODS

This study adopted cross-sectional descriptive survey research design. 72 Universities and University Colleges constituted the population of the study. A census was proposed for this study. The primary data instrument was administered using a semi-structured questionnaire. Performance management applied the Performance Management Behaviour Questionnaire while corporate culture employed the Organisational Culture Assessment Instrument. The key respondents of the study were the registrar, administration, or equivalent. The respondents in the study were widely exposed to the variables under investigation, having worked many years in universities. This is more so because the respondents were in senior management, therefore highly involved, and were thus considerably knowledgeable in the areas under investigation.

The data collection instrument was administered through emailing and drop-and-pick later methods. Out of the census population of 72 universities, a response rate of 58 was achieved. This represented an 80% response rate. This is favourable to other studies done in the sector. There was a respondent distribution of 31 public universities, 18 private chartered universities, two public university colleges, two private constituent colleges, and 5 private universities operating under interim authority. Confirmatory factor extraction was done to confirm the structures of the study variables: performance management, corporate culture and operational efficiency. Performance management employed the Performance Management Behaviour Instrument which was reduced into five factors based on eigenvalue>1. factors account for 50.980 percent cumulative variance. The factors were goal setting, communication, performance expectations, monitoring and providing consequences. For corporate culture, the factors were reduced into four, accounting for 56.415 percent cumulative variance. The factors were clan, adhocracy, entrepreneurial, and mission. Confirmatory factor analysis shows respondents were able to align the study statements into the variables as conceptualised. Thus, the purpose of factor analysis of data reducing was achieved. The factors obtained were used in the regression analysis and hypothesis testing as independent, moderating, and dependent variables.

The Cronbach's (alpha) coefficient was employed to establish the internal consistency of the items under examination. The Cronbach alpha was 0.786 and 0.882 for performance management and corporate culture respectively. Face validity was

Table 1
Diagnostic Test Results

	Normality (Shapiro Wilks Test)	Linearity (ANOVA)	Homogeneity (Leven Test)	Multicollinearity (VIF Test)
The threshold assumption is met if	p > 0.05	p > 0.05	p > 0.05	VIF 10 max
Performance Management	0.756	0.065	0.059	1.882
Corporate culture	0.745	0.071	0.059	1.679
Operational Efficiency	0.598	0.089	0.159	1.767

Note. Field data (2023)

boosted through developing and improving the research instrument using expert opinion obtained during various thesis examination stages. A preliminary probe was administered by exposing the tool to a minor random sample of ten respondents to build content validity. The instrument utilised previous research questions for criterion and construct validity. Linearity, normality, multicollinearity, and homogeneity tests were carried out. The threshold level for the different statistics is listed below for each assumption. For multicollinearity, the variance inflation factor (VIF) is indicated in table 1.

Normality was verified using the Shapiro Wilks test, which helps spot deviations from normality due to skewness, kurtosis, or both. All the variables, Performance management, corporate culture and operational efficiency had a P-value above 0.05, confirming normality. In addition, ANOVA tested linearity, which computes both the linear and nonlinear components of a pair of values. Linearity is confirmed if the P value is above 0.05. All the computed tests for linearity were above the P value of 0.05, confirming linear relationships between each predictor variable and the response variable. The Variance Inflation Factor (VIF) tested for multicollinearity. The multicollinearity assumption has a threshold of the VIF value of 10 maximum. In this study, VIF ranged between 1.787 and 1.882 for all tests, and therefore, VIF was below the threshold.

The respondent universities and university colleges were assessed for technical efficiency over the four years from 2016/2017 to 2019/2020 as they are all operating the same technology within the same environment (Bradley et al. 2006). The analysis assumed that the technology within the decision-making units had not changed over the four-year period and focused on teaching and research efficiency. Published audited accounts for the respective years, University Funding Board, Ministry of Education and State Corporation Advisory Committee filled returns and graduation booklets were the sources for secondary information. The study adopted Flegg et al. (2004) input and outputs. Inputs were number of academic and academic equivalent staff, number of full time and full-time equivalent students and aggregate expenditure excluding staff costs. Outputs were number and quality of undergraduates, post graduate degrees awarded, capitation,

Table 2
Results for the Moderating effect of Corporate Culture on the relationship between Performance Management and Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Sig. F Change
1	0.571a	0.326	0.324	0.945	0.326	200.935	0.000
2	0.572b	0.328	0.324	0.948	0.002	1.144	0.005
3	0.573c	0.329	0.324	0.948	0.001	0.696	0.005

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	180.537	1	180.537	200.935	.000b
	Residual	373.769	416	0.898		
	Total	554.306	417			
2	Regression	181.565	2	90.782	101.074	.000c
	Residual	372.742	415	0.898		
	Total	554.306	417			
3	Regression	182.19	3	60.73	67.566	.000d
	Residual	372.116	414	0.899		
	Total	554.306	417			

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	3.206	0.046		69.146	0.000
	Performance Management	-1.126	0.079	-0.571	-14.175	0.000
2	(Constant)	3.206	0.046		69.158	0.000
	Performance Management	-1.091	0.086	-0.553	-12.742	0.000
	Corporate Culture	-0.083	0.038	-0.046	-2.194	0.005
3	(Constant)	3.192	0.049		64.784	0.000
	Performance Management	-1.088	0.086	-0.552	-12.681	0.000
	Corporate Culture	-0.081	0.028	-0.045	-2.884	0.003
	Interaction between Performance Management and Operation Efficiency	-0.099	0.032	-0.034	-3.107	0.005

Dependent Variable: Operation Efficiency
a. Predictors: (Constant), Performance Management
b. Predictors: (Constant), Performance Management, Corporate Culture
c. Predictors: (Constant), Performance Management, Corporate Culture, Interaction Term

Note. Field Data (2023)

research grants received, and consultancy fee generated**.**

DATA ANALYSIS AND DISCUSSION

The objective was to establish the moderating effect of corporate culture on the relationship between performance management and operational efficiency. This led to the formulation of the following hypothesis:

H_1: Corporate Culture has a moderating effect on the relationship between performance Management and Operational Efficiency

To test this hypothesis, an overall index was created for the performance management and corporate culture variables by computing a composite index for the dimensions. Operational efficiency index was computed using data envelopment analysis. This hypothesis was then tested using stepwise regression analysis. In step one, operational efficiency was regressed on performance management. In step two, moderation was introduced in the regression model. In step three, the interaction between performance management and corporate culture was introduced into the regression model. The results from the three steps are presented in Table 2.

The three steps results in table 2 show that the regression models were robust and thus fit for data analysis. F ratio values for the three regression models were all significant at $p<0.05$. This is further supported by the values of R and R^2, which are significant. Model one, which shows the influence of performance management on operational efficiency, had a coefficient of determination (R^2) of 0.326 and a p-value <0.05, implying that 32.6% of the variation in operational efficiency is explained by the changes in performance management, leaving 67.4% explained by other factors not in this study. Beta coefficient (β = -0.571, t = -14.175, p-value=0.000<0.05) shows that for every one-unit increase in performance management, operational efficiency decreases by 0.571 units, holding other factors constant. The results show that performance management significantly influences operational efficiency. The condition in step one for moderation is met. Thus, the process proceeds to step two.

In step two, which included both performance management and corporate culture in the regression equation, R^2 increased from 0.326 to 0.328, a change of 0.002. Both 0.326 and 0.328 were significant at $p<0.05$. Specifically, 32.8% of the variation in operational efficiency was accounted for by the changes in both performance management and corporate culture. Beta coefficient for performance management (β = -0.553, t = -12.742, p-value=0.000<0.05), shows that for every one unit increase in performance management, operational efficiency decreases by 0.553 units holding other factors constant. Beta coefficient for corporate culture (β = -0.046, t = -2.194, p-value=0.005<0.05), shows that for every one unit increase in corporate culture, operational efficiency decreases by 0.046 units holding other factors constant.

In step three when the interaction between performance management and corporate culture was introduced in the regression equation between performance management and operational efficiency, R^2 improved from

0.328 to 0.329 with a p value <0.05. This is evidence that corporate culture moderates the relationship between performance management and operational efficiency. The findings from the test of hypothesis shows that corporate culture has a moderating effect on the relationship between performance management and operational efficiency implying that corporate culture improves the effect of performance management on operating efficiency. Thus, the hypothesis that corporate culture has a moderating effect on the relationship between performance management and operational efficiency is confirmed.

Data Analysis

The objective was to establish the moderating effect of corporate culture on the relationship between performance management and operational efficiency. This objective had a corresponding hypothesis, H_1 which stated that corporate culture has a moderating effect on the relationship between performance management and operational efficiency. The inferential statistics indicated that the culture type, either clan, bureaucratic, entrepreneurial or mission, is a moderator of the relationship between performance management and operational efficiency. This supports the findings by Kotter (2008) that culture either supports or impedes performance management initiatives. The results of this study also support studies done by Marr and Schiuma (2003); Schein (2009) who found that the effects of the experience of other variables such as culture moderates the relationship between performance management and operational efficiency. From a theoretical perspective, the findings are in line with Dacin et al. (2002) on how institutional theory guides entrenchment of guidelines for action and behaviour in universities. Performance management institutionalisation follows the theory as prescribed. Unfortunately, the findings show that deinstitutionalisation of the entrenched initiatives is also very rapid rendering them unsustainable in the long term and thus unable to contribute effectively to operational efficiency.The Schein's theory of culture is consistent to an extent with the findings of this study. Respondents were more aware of the visible signs of culture as a predictor of performance management, operational efficiency relationship as held by Edgar (2004). The findings show that culture in universities is multi layered and viewed largely as natural and organic. Cultural shifts and disruptions are also viewed as a threat which contradicts the premises of this theory. There is a general preference of strong cultures within universities in Kenya which may at times hinder growth and change management contradicting Schein (2009). The results show that universities in Kenya are largely clan in culture. Another contradiction in the findings of this study is on the definition of culture as norms that have proven valuable for solving problems of internal and external adaptation. The findings show that a few norms that had been proven valuable were disposed due to leadership changes. Changes and cultural change prompts were in some cases not based on perceived good but on leadership preferences. Within management, mission culture takes precedence. Entrepreneurial culture is a desired result but not a concrete reality.

Data Envelopment Analysis allows for the determination of the technical efficiency of each university for each financial year in the sample period. Technical efficiency is

Table 3
Technical Efficiency

Financial year	Unweighted arithmetic mean	Weighted arithmetic mean	Standard Deviation	Minimum	crs	drs	irs
2016-17	0.700	0.766	0.144	0.3887	41	11	20
2017-18	0.661	0.684	0.132	0.4119	30	18	24
2018-19	0.675	0.694	0.123	0.4002	36	14	22
2019-20	0.730	0.786	0.131	0.4006	33	20	19

**Crs Constant Returns to Scale*
**Drs Decreasing Returns to Scale*
**Irs Increasing Returns to Scale*

Note. Field Data (2023)

defined as the ratio of the weighted sum of outputs to the weighted sum of the inputs.

Table 3 shows relative technical efficiency of the 58 responding universities. The unweighted arithmetic-mean technical efficiency scores are characterised by a slight upward trend. The least performing university had 38.87% technical efficiency score compared to the best relative in 2016/2017. This minimum score increased to 40.02% in 2018/2019. This conversion ratio of input to output is alarming as far as teaching, research and consultancy is concerned. There is urgent need to reevaluate approaches to improving this ratio be considering the optimum mix of inputs for this low performing universities by addressing prevailing culture. Several universities were not operating at most optimum scale size. The Kenyan Constitution 2010 created a dispensation of 47 counties in Kenya with universities located in various counties. The Commission for Revenue Allocation (CRA) developed a County Development Index (CDI) along poverty, infrastructure, health, and education indices. The CRA created three bands of county classification with the most marginalised having an index of 0.27 to 0.518, moderately marginalised with 0.519 to 0.584, and well-off counties having an index of above 0.6. Six respondent universities are in the most marginalised counties, 32 in moderate counties, and 20 in well-off counties. The university's county of location therefore affected the interaction of the variables under study.

CONCLUSION AND IMPLICATIONS

The study shows that the geographical county location of the university influences operational efficiency. Out of the 10 best operationally efficient universities, 70% were from well off counties. Management and policy makers must take deliberate steps to mitigate this trend. Alupe University was the only frontier university from a marginalised county. The research income in Alupe University is quite robust which explains the high technical index. Universities must therefore entrench their unique niche for competitive advantage. 30% of the universities were operating at below 50% technical efficiency over the four-year period. This remains a concern for the sector, especially given the

high costs associated with performance management strategies implemented over time. Universities must also address institutionalisation and deinstitutionalisation of performance management initiatives for sustainability. Leadership must become more conscious of their role in culture change as culture is not just organic. It is a tool for keen management to strategically manipulate for sustained reforms.

Performance management and operational efficiency relationship is moderated by corporate culture. Universities are caught in a curious mix of cultures. Clan and mission culture is pretty evident, especially across functions and academic disciplines. Entrepreneurship as a culture seems to be at odds with the objective of quality education but has been adopted in several universities. Unfortunately, most universities strongly desire entrepreneurial culture yet view culture as natural and organic. The study recommends that the performance management adoption process or any other strategic initiative should not adopt predefined and standardised models. A mechanical transfer of models, logic and tools already tested in other contexts is not feasible. Successful adoption is conditional on the prevailing institutional context. Careful planning and execution is required for successful performance management adoption.

The shifting environmental demands prevailing have left some universities unable to maintain adequate flexibility to cope with the uncertainties. The capacity to anticipate trends and be the change agent for innovations within the sector is a game changer for universities. This is more so especially if there is value derived from other players perceiving these changes as critical for niche and competitive edge development. The study recommends continuous scanning of the operating environment to perceive emerging trends. Cultural changes and new initiatives are implemented without careful consideration of prevailing culture therefore developing resistance. The findings show that the Schens model of corporate culture applies to universities. They have multiple layers of culture just like an onion. Academic, administrative, faculty and student cultures exist within layers. universities are caught in a culture quandary. The study therefore recommends a keen awareness of the culture and subcultures for all stakeholders for effective change management. This is driven by the realisation that there is a significant gap between the stated, experienced and actual culture in universities. The study shows that the actual culture is so different from that which upper management states it to be. Performance management implementing decisions are based on erroneous perception of prevailing culture and therein lies the challenge as the real underlying culture is not the one considered when these decisions are made.

Based on the findings, there is a moderate positive relationship between performance management and operational efficiency. This is despite vast resources that have been committed to performance management by universities and university colleges over the years. Performance management facets such as goal setting, communication, performance expectation, monitoring and providing consequences need to be continuously studied to ensure alignment between performance management initiatives and operational efficiency. Managers should, therefore, be deliberate and aware of the

changing environment within and without the university, with an eye on doing more and better for less. This study further suggests an indirect relationship between performance management and operational efficiency. It supports findings by Bontis et al. (2002), Bapuji and Crossan (2004) who found a weak effect of performance management-related variables on operational efficiency, but rather indirect effects through the experience of organisational learning and other variables, therefore suggesting that there is an indirect relationship between performance management and operational efficiency. Managers, therefore, need to understand that different performance management constructs influence operational efficiency in varying degrees.

The study had various limitations. Over time, universities and university colleges in Kenya have invested in several performance management initiatives, including performance contracting, ISO, and management objectives. This study did not address the operational efficiency of each initiative. This gives rise to attribution problem. The study also had senior administrative managers as respondents. There may be different results if the respondents were faculty, students, or staff at lower cadres. The other major limitation is the input and output data used in data envelopment analysis operational efficiency analysis. The study relied mainly on data from published financial reports and graduation booklets. Several instances showed data that was significantly different from the data obtained from published financial statements depending on the source. The study also excluded diploma students and graduates from the analysis as this as per the Universities Act, 2012 (of Kenya) is under technical vocational education and training and regulated by TVETA (Kongere, 2011) yet most universities have diplomas as a major output. The other significant limitation was the exclusion of support and non-technical/ administrative staff in the computation of operational efficiency (Flegg et al. 2004).

The study also is cognizant that most universities have an addendum of additional graduates to the graduation booklet that does not become part of the kept records and therefore there could be slight differences in the graduation numbers. In addition, some of the research done in the universities is not reflected in the annual published accounts. These research or grants amounts go directly to the researcher or departments, and this may result in understatement of operational efficiency. There are also collaborations in research and consultancies that were not considered. This study established that 32.6% variation in operational efficiency is attributed to performance management. There is an opportunity for further research and exploration of the other antecedents of operational efficiency to contribute to understanding performance management, organisational learning, and corporate culture. This study also focused on operational efficiency but did not distinguish technical and scale efficiency as well as teaching and research efficiency in each university as opposed to the sector. It is suggested that further exploration of social efficiency, which looks at aspects of customer and societal satisfaction, be undertaken. Another recommended area of further study is the consideration of faculties and disciplines when computing operational efficiency. efficiency of universities and university colleges in Kenya.

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REFERENCES

Aguinis, H. (2019). *Performance management for dummies*. John Wiley & Sons.

Arbo, P., & Benneworth, P. (2007). Understanding the regional contribution of higher education institutions: A literature review. *OECD Education Working Papers*, No. 9, OECD Publishing, Paris, https://doi.org/10.1787/161208155312.

Bapuji, H., & Crossan, M. (2004). From questions to answers: reviewing organizational learning research. *Management Learning*, *35*(4), 397-417.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173.

Bontis, N., Crossan, M. M., & Hulland, J. (2002). Managing an organizational learning system by aligning stocks and flows. *Journal of Management Studies*, *39*(4), 437-469.

Bradley, S., Johnes, J., & Little, A. (2006). The measurement and determinants of efficiency and productivity in the FE sector in England. *Bulletin of Economic Research,62*(1), 1-30. https://doi.org/10.1111/j.1467-8586.2009.00309.x

Brown, T. C., O'Kane, P., Mazumdar, B., & McCracken, M. (2019). Performance management: A scoping review of the literature and an agenda for future research. *Human Resource Development Review*, *18*(1), 47–82.

Brudan, A. (2010). Rediscovering performance management: Systems, learning, and integration. *Measuring Business Excellence, 14*(1), 109–123.

Camanho, A. S., Silva, M. C., Piran, F. S., & Lacerda, D. P. (2024). A literature review of economic efficiency assessments using Data Envelopment Analysis. *European Journal of Operational Research*, *315*(1), 1-18.

Cameron, K. S., & Quinn, R. (2006). *Diagnosing and changing organizational culture: Based on the competing values framework.* The Jossey- Boss: Business and Management Series.

Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research, 2*(6), 429-444.

Coens, T., & Jenkins, M. (2002). *Abolishing performance appraisals: Why they backfire and what to do instead*. Berrett-Koehler Publishers.

Dacin, M. T., Goodstein, J., & Scott, W. R. (2002). Institutional theory and institutional change: Introduction to the special research forum. *Academy of Management Journal, 45*(1), 45-57.

Denison, D. R., & Mishra, A. K. (1995). Toward a theory of organizational culture and effectiveness. *Organization Science*, *6*(2), 204–223.

Edgar, H.S. (2004). *Organization culture and leadership.* 3rd ed. The Jossey-Bass Business & Management Series.

Flegg, A. T., Allen, D. O., Field, K., & Thurlow, T. W. (2004). Measuring the efficiency of British universities: A multi-period data envelopment analysis. *Education Economics*, *12*(3), 231-249.

Gelfand, M. J., Erez, M., & Aycan, Z. (2007). Cross-cultural organizational behavior. *Annual Review of Psychology*, *58*, 479-514.

Graham, J. R., Grennan, J.A., Harvey, C. R., & Rajgopal, S. (2022). Corporate culture: The interview evidence. *Journal of Applied Corporate Finance, 34*(4), 22-41. http://doi.org/ 10.1111/jacf.12528

Greiling, D., & Halachmi, A. (2013). Accountability and organizational learning in the public sector. *Public Performance & Management Review*, *36*(3), 380-406.

Halkos, G. E., Matousek, R., & Tzeremes, N. G. (2016). Pre-evaluating technical efficiency gains from possible mergers and acquisitions: Evidence from Japanese regional banks. *Review of Quantitative Finance and Accounting*, *46*(1), 47-77.

Hirota, S., Kubo, K., Miyajima, H., Hong, P., & Won Park, Y. (2010). Corporate mission, corporate policies, and business outcomes: Evidence from Japan. *Management Decision*, *48*(7), 1134-1153.

Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture, 2*(1). https://doi.org/10.9707/2307-0919.1014

Jeong, K. Y., & Phillips, D. T. (2001). Operational efficiency and effectiveness measurement. *International Journal of Operations & Production Management*, *21*(11), 1404–1416.

Kaplan, R. S., & Norton, D. P. (2001). Transforming the balanced scorecard from performance measurement to strategic management: Part 1. *Accounting Horizons, 15*(1), 87-104.

Karbasian, M., Khayambashi, B., & Tavakoli, M. M. (2016). Performance evaluation of education system with human capital approach by data envelopment analysis and TOPSIS-with a case study. *International Journal of Management in Education*, *10*(4), 414-432.

Kinicki, A. J., Jacobson, K. J., Peterson, S. J., & Prussia, G. E. (2013). Development and validation of the performance management behavior questionnaire. *Personnel Psychology, 66*(1), 1-45.

Kipesha, E. F., & Msigwa, R. (2013). Efficiency of higher learning institutions: Evidences from public universities in Tanzania. *Journal of Education and Practice, 4*(7), 63-73.

Kongere, H. A. (2011). Challenges managers face in applying performance appraisal results in human resource management: A case study of the University of Nairobi. *American Scientific Research Journal for Engineering, Technology, and Sciences,1*(1), 175-191.

Kotter, J. P. (2008). *Corporate culture and performance*. Simon and Schuster.

Leitner, K. H., Prikoszovits, J., Schaffhauser-Linzatti, M., Stowasser, R., & Wagner, K. (2007). The impact of size and specialization on universities' department performance: A DEA analysis applied to Austrian universities. *Higher Education*, *53*(4), 517-538.

Marr, B., & Schiuma, G. (2003). Business performance measurement–past, present and future. *Management Decision, 41*(8), 680-687.

Mathooko, F. M., & Ogutu, M. (2015). Porter's five competitive forces framework and other factors influence the choice of response strategies adopted by public universities in Kenya. *International Journal of Educational Management*, *29*(3), 334–354.

Mange, D. M., Onyango, G. A , & Waweru., S. N. (2013). Management challenges facing Kenya's public universities and implications for the quality of education. *International Conference on 'Re-Engineering Education for Sustainable Development,*18th – 20th May 2015, Kenya.

Mergoni, A., & De Witte, K. (2022). Policy evaluation and efficiency: A systematic literature review. *International Transactions in Operational Research, 29*(3), 1337-1359.

Molenaar, K., Brown, H., Caile, S., & Smith, R. (2002). Corporate culture. *Professional Safety, 47*(7), 18-27.

Murphy, K. R. (2020). Performance evaluation will not die, but it should. *Human Resource Management Journal*, *30*(1), 13-31.

Mwiria, K., Ng'ethe, N., & Ngome, C. (2007). *Public and private universities in Kenya: New challenges, issues and achievements (Higher Education in Africa)*. James Currey.

Nielsen, P. A. (2014). Learning from performance feedback: Performance information, aspiration levels, and managerial priorities. *Public Administration*, *92*(1), 142-160

Prahalad, C. K., & Hamel, G. (2006). The core competence of the corporation. In *Strategische unternehmungsplanung—strategische unternehmungsführung [Strategic corporate planning—strategic corporate management]* (pp. 275-292). Springer, Berlin, Heidelberg.

Schein, E. H. (2009). *The corporate culture survival guide* (Vol. 158). John Wiley & Sons.

Schein, E. H. (2010). *Organizational culture and leadership* (Vol. 2). John Wiley & Sons.

Talbot, C. (2016). *Studying at a distance: A guide for students*. McGraw-Hill Education (UK).

Thornhill, S. (2016). Knowledge, innovation and firm performance in high-and low- technology regimes. *Journal of Business Venturing*, *21*(5), 687-703.

Van Dooren, W., Bouckaert, G., & Halligan, J. (2015). *Performance management in the public sector*. Routledge.