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Conditional Indirect Effects of Strategic Leadership on Sustainable Organizational Performance: A Moderated-Mediation Model

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Abstract
The a priori assumption is that strategic leadership influences organizational performance based on their strategic decisions and choices. However, empirical studies at times yields inconsistent set of results regarding these strategic leadership effects. This is indicative that strategic leadership effects on organisational performance may not be absolute but are also predicated upon the influence of other endogenous and exogenous factors. The external operating environment and the digitalization phenomenon represent two such contingent factors. Although leadership has been extensively studied, there is limited empirical evidence regarding the moderated-mediation effects arising from the interplay of the external environment and digitalization on the primary relationship between strategic leadership and sustainable performance especially in the context of public sector organisations. The objective of this study was to not only address these empirical and contextual gaps but also contribute to the ongoing academic discourse among scholars by conducting an analytical cross sectional census survey of 250 State owned Corporations in Kenya. The results show that the moderated-mediation effects arising from the pairwise interplay of the external environment and digitalization on the indirect influence of strategic leadership on organizational performance is statistically significant. These findings make important contributions at three levels. First, to theory by testing the predictions of the theories undergirding the study. Second, to policy by making recommendations geared towards enhancing the efficiency and effectiveness of public sector organizations. Finally, to management practice by outlining the most ideal configurations of strategic leadership, external environmental conditions and digitalization processes required to enhance sustainable organizational performance.
Keywords: Strategic leadership, digitalization, external environment, sustainable organizational performance.
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1. Introduction

The field of leadership is expansive and has been extensively studied since the early 19th century (Barnard,1938; Fielder, 1967; House & Aditya, 1997). Despite the deluge in literature arising from theoretical contributions and empirical evidence by various scholars over the years, the study of strategic leadership still continues to garner significant empirical attention among researchers up to the present time (Singh et al., 2023; Xiao & Chen, 2025). It is often assumed that strategic leadership effects on organisational performance are positive and dominant. However, empirical evidence at times yields inconsistent set of study findings regarding the significance of these effects (Boal & Hooijberg, 2000; Cristina et al., 2022). For instance, while some results indicated positive and statistically significant effects, in contrast others concluded the contrary. A number of scholars have argued that these incongruent sets of findings could be a pointer that strategic leadership effects on organisational performance may be predicated upon the influences of other factors that are either endogenous or exogenous to the organisation. The external operating environment and the digitalization phenomena represent two such contingent factors.

Organizations increasingly operate in external environments that are dynamic, hostile, disruptive, highly competitive and prone to frequent shifts in consumer tastes and preferences (Srikanth & Ungureanu, 2025). Scholars have argued that external operating environment presents both constraints and opportunities to organisations and has the potential to either positively or negatively influence organizational performance (Ansoff & Sullivan, 1993; Bourgeois, 1980; Donaldson, 2001). In this vein, the sustainable performance of firms may be largely predicated upon the strategic leadership's ability to anticipate and effectively respond to various environmental contingencies facing their organisations (Teece, Pisano, Shuen, 1997). Consequently, there has been increased focus among scholars on the role played by strategic leadership in facilitating the dynamic alignment between organisations and their dynamic external environment, and how this influences organizational performance.

Additionally, the digitalisation phenomenon is fundamentally redefining the business ecosystem of organizations (Gradillas & Thomas, 2025; Wang & Zhang, 2025). Digitalization is the increasing automation and

integration of emerging information, communication and computing technologies in organizations processes aimed at improving operational efficiency, enhancing customer experiences and positively influencing organisational output (Gradillas & Thomas, 2025; Palmie, Ruegger & Parida, 2023; Bank et al., 2022). The modern business landscape is technology driven, and digitalisation has become the new competitive advantage (Li et al., 2025; Kemp, 2024). Both private and public sector organizations are increasingly leveraging on emerging digitalization technologies (Fitzgerald et al., 2014; Krakowski, Luger & Raisch, 2022). For instance, firms in the manufacturing sector are continually adopting smart digitalisation technologies, referred to as Industry 4.0, in order to enhance their efficiency and effectiveness (Bjorkdahl, 2020; Han, 2020). In this vein, there has been increased attention among scholars to explore the nexus between strategic leadership, digitalization and sustainable organisational performance. Examples of digitalization technologies currently being used in the organizational context include artificial intelligence, augmented reality, virtual reality, robotics, IoT (Wang et al., 2025; Smith, 2024). The level of deployment and configurations of digitalization usually varies across firms based on an organization's long-term digital transformation strategy.

Kenya is a developing country with a vibrant Public sector which plays a critical role in the socio-economic development of the country through employment creation and the provision of goods and services to members of the public. The Public sector is responsible for implementing various policies and programmes by the Government of Kenya (GoK). State Corporations (SCs) are entities owned by the GoK which form an integral part of the Public sector in Kenya (GoK, 2013). The GoK has since the early 1980s undertaken several reforms targeting the Public sector (GoK, 2015;2016; On'gera & Musili, 2019). A majority of these reforms involve the introduction of New Public Management (NPM) policies aimed at enhancing efficiency, effectiveness, excellence, and entrepreneurial approach in service delivery (Dunleavy et al., 2006; Gunn, 2009). In spite of these reforms some SCs continue to post mixed organisational performance results.

Empirical evidence suggests that contingent factors may play a critical role in moderating or mediating strategic leadership effects on organizational performance. However, a number of studies at times fail to incorporate some of these factors in their conceptualization (Samimi et al., 2020; Vera et al., 2022). Interestingly, very few leadership studies investigate the moderated-mediation effects of contingent factors, such as the external environment and digitalisation phenomenon on strategic leadership effects on organizational performance especially in the context of public sector organizations in developing countries. This constitutes empirical and contextual gaps respectively. Consequently, this study had two main objectives. First, was to address the above research gaps by investigating how strategic leadership, external environment, digitalization and organizational performance manifest and their linkages in the context of SCs in Kenya. Second, and more importantly, this paper sought to establish whether the pairwise interactions between the external environment and the digitalization does indeed influence strategic leadership effects on the organizational performance of SCs in Kenya.

The conceptualisation of this study was undergirded by the predictions three theories namely: the upper echelons theory – UET (Hambrick & Mason, 1984), the environment dependency theory - EDT (Ansoff & Sullivan, 1993), and the unified theory of acceptance and use of technology - UTAUT (Venkatesh et al., 2003). The upper echelons theory was the anchoring theory while the two other theories provided auxiliary support in the study. The core postulations of the upper echelons theory were used to probe the relationship between strategic leadership and sustainable organizational performance. Further, the logic of the EDT was used to explain the link between the external environment and the other three study variables. The predictions of UTAUT were used to investigate the influence of digitalisation on the primary relationship in this study.

2. Empirical Review

Literature on the moderated-mediation influences of contingent factors on the relationship between strategic leadership and organizational performance is rather limited. Further, the few leadership empirical studies that actually do conceptualise and test for moderated-mediation effects often yield inconsistent set of findings. While some of the results indicated significant moderated-mediation effects (Gong et al., 2021; Omondi et al., 2022; Sandeep & Bedi, 2016), other studies showed non-significant effects (Jansen, Vera & Crosaan, 2009; Mkamala, 2014). Even among the studies which observed significant moderated-mediation effects the findings varied regarding the level of significance. For instance, whereas some studies concluded that the leadership effects on digitalization is more significant under dynamic environmental conditions (Chen et al., 2019; Prasad & Junni, 2016) in contrast, other studies indicated that opposite (Tang, Li & Yang, 2015).

These incongruent results may be attributed to the fact the leadership studies vary in terms of theoretical anchorage, conceptualization, research design, data analytical technique and contextual settings. Although empirical evidence suggests that contingent factors may play a critical role in determining strategic leadership effects, a number of empirical studies at times fail to incorporate these variables in their conceptualizations (Cristina et al., 2022; Vera et al., 2022). Therefore, this study was inspired by the need to investigate the role played by the external environment and digitalisation on strategic leadership effects on sustainable organizational

performance. Despite the effort made by scholars to address this issue several literature and knowledge gaps still prevail in the field.

First, it was observed that a number of empirical studies are decontextualized since they fail to pay attention to the external environmental contexts in which leadership is embedded (Johns, 2024). Some of the inconsistent study findings usually arise when these contextual idiosyncrasies are not properly nuanced. Further, extant review of literature indicated that most empirical studies based on the strategic leadership -external environment-digitalization-organizational performance stream are usually operationalized in the context of developing economies targeting large publicly listed companies. Only a limited number of similar studies are operationalised in developing countries targeting Public sector organizations. This constitutes a contextual gap.

Second, digitalization is a nascent phenomenon that is still going through a phase of theory building and refinement of definitions, operationalisations and conceptual frameworks across empirical studies (Kumar et al., 2025; Kemp, 2024). Consequently, scholars usually use a bricolage of theories from diverse disciplines to operationalize the digitalization construct (Parker, Van Alstyne & Jiang, 2017; Trist & Emery, 2015). The use of varied theories to anchor digitalization in strategic leadership studies has resulted in fragmented definitions and operationalization. This constitutes a theoretical gap.

Third and more importantly, a number of scholars usually treat the external environment and digitalization as standalone variables and proceed to investigate their individual impact on the strategic leadership effects on organizational performance (Cortes & Hermann, 2020; Singh, Sharma & Dhir, 2021; Waldman et al, 2017). Interestingly, only a limited number of leadership studies investigate the effects of moderated-mediation on sustainable organizational performance. This constitutes a conceptual gap. Testing for moderated mediation effects is considered important as it can shade new insights on strategic leadership effects thus deepening the body of knowledge.

Finally, strategic leadership studies usually suffer from a number of methodological shortcomings that contribute to some of the inconsistent set of study findings (Wulff et al., 2023). Two key methodological gaps were identified which have a negative impact during hypotheses testing. First, a number of leadership studies fail to test for potential endogeneity (Ketokivi & Guide, 2017). One of the key assumptions in linear regression analysis based on ordinary least squares (OLS) estimation is that endogeneity does not exist. Endogenous independents variables often lead to inconsistencies and asymptotic biases when estimating the population parameters using OLS regression (Antonakis et al., 2010). The presence of endogeneity in the dataset is a serious problem which leads to invalid causal claim regarding strategic leadership effects. Second, most leadership studies do not address the problem of serial correlation (i.e., autocorrelation) and nested effects of strategic leadership during model specification (Osborne & Waters, 2002). Autocorrelation interferes with the standard errors of the regression coefficients and can result in type I error during hypothesis testing (Ronkko, Maheshwaree, & Schmidt, 2018).

3. Operationalization of variables

All the four constructs considered in this study are multifaceted and multidimensional in nature and therefore have fragmented operationalization's across empirical studies. For instance, a majority of studies operationalize the strategic leadership construct based of the top management team (TMT) demographic characteristics (Mkalama & Machuki, 2019; Nuwagaba, 2023; Oketch et al., 2021) The strategic leadership construct in this study was operationalised based on four multi-level psychographic attributes (Hambrick & Wowak, 2021). These included the strategic leadership's personality traits (Nadkarni & Herman, 2010), cognitions capacity (Nadkarin & Barr, 2008; Kaplan, 2011; Bromiley & Rau, 2016), social skills (Balkundi & Kilduf, 2006; Carter et al., 2015) and emotional maturity (Goleman, Boyatzis & McKee, 2013; Supramaniam & Singaravelloo, 2021).

Similarly, there is a lack of consensus among scholars regarding the operationalization and measurement of the external environment construct (Keats & Hitt; Sharfman & Dean 1991). Scholars often use diverse and divergent definitions of the external environment across literature. There are those who define the external environment objectively as comprising exogenous factors which contribute to uncertainty in organisations and requires strategic responses (Pearce, Robinson, & Mital, 2018; Ansoff & Sullivan, 1993). In contrast, other scholars have defined the external environment perceptually based on its multiple dimensions which presents either opportunities or constraints to organisations (Chen et al., 2019; Tung, 1979; Duncan, 1972). Consequently, the external environment was operationalized using reflective indicators based on its three perceptual dimensions namely: dynamism, complexity, and munificence.

Scholars usually use varied indicators to specify the digitalization phenomenon in empirical research. This study adopted four reflective indicators to operationalize the digitalisation construct based on its adoption and deployment in organisational settings (Venkatesh et al., 2003). First, is the performance expectancy (i.e., functionalities) from the adoption and deployment of digitalisation. Second, is the effort expectancy (i.e., ease of use) attributed to digitalization. Third, is the mitigation of risks associated with implementing digitalisation (i.e., management of financial, acceptance and operational risks). Finally, are the institutional support framework put

in place by the organization to ensure successful implementation of digitalization initiatives (i.e., financial resources, human capital, culture, business model innovations).

Finally, the definition and operationalization of organizational performance varies across empirical studies. Scholars usually use three broad perspectives to define organisational performance (Solanki & Baroda, 2024; Combs, Russell & Shook, 2005; Ritcher et al., 2017). First, is the systems/resources perspective which considers performance based on an organisations capacity to secure critical resources for its long-term survival. Second, is the goal attainment perspective which defines performance based on an organization's ability to attain certain predetermined goals. Finally, the stakeholders' perspective defines performance based on an organizations effectiveness in meeting the needs and expectations of different segments of stakeholder in a sustainable manner (Bose, 2020; Pollit, 2007). This study adopted a definition based on a mix of the last two perspectives. The eclectic approach was informed by the fact that all SCs in Kenya sign annual performance contracts (PCs) with set performance targets aimed at addressing needs of different categories of stakeholders. In this vein organizational performance was operationalized based on five sustainability indicators in line with the ESG guideline (Darnall et al., 2022; Searcy, 2012). These included Financial economic indicators (i.e., ROI, ROA, PBT for profit oriented entities), Operational indicators (i.e., net margin ratios, project completion rate, budget absorption rate, market share for service oriented organisations), Socio-ecological indicators (i.e., CSR investment, citizen satisfaction, and environmental compliance or consciousness) and finally corporate governance (i.e., strategy formulation and implementation, enterprise risk management, ESG reporting).

4. Research hypothesis

The following hypothesis was thus stated,

H_1: The pairwise interplay of the external environment and digitalization has a significant moderated-mediation effect on the indirect influence of strategic leadership on sustainable organizational performance of State Corporations in Kenya.

5. Methodology

This study involved an analytical cross-sectional census survey of 250 State owned Corporations in Kenya. SCs operate across different sectors of the economy and mandated to perform varied functions including the provision of goods and services. These include, service delivery, commercial and manufacturing, financial, regulatory services, public universities, research institutions, tertiary education and training, and regional development authorities. This heterogeneous composition provided a wide spectrum within which to investigate the manifestations and underlying relationships among the four study variables thus enhancing the inferential power of the empirical investigation.

5.1 Data collection

A self-administered structured questionnaire based on close ended questions was used to collect primary data. The respondents comprised members of the TMT within SCs in Kenya. Each respondent was asked to rate, on a 5 point Likert scale their perceptions in respect to the various statements in the research questionnaire. The tool was developed by the researcher following review of available empirical literature on strategic leadership. The questionnaire borrowed some aspects from the multifactor leadership questionnaire- MLQ (Bass & Avolio, 2000).

5.2 Measurement Instrument

The research instrument was subjected to reliability tests both on AMOS based on PLS (Hair, Page & Brunsveld, 2019) the composite reliability (CR) based on the Omega coefficient show that all the four latent constructs had values of $\omega > 0.7$ (Hair et al., 2014). Further, the construct validity of the measurement instrument was assessed using CFA (Byrne, 2010; Bell et al., 2019). The results show that convergent validity was established since the computed construct standardised factor loadings values were all ≥ 0.5, AVE values were all ≥ 0.5, CR coefficients values were all ≥ 0.7 (Hair et al., 2014). Additionally, the research instrument was tested for discriminant validity to confirm that there was no cross loading among the reflective indicators. The results show that discriminant validity was met given that the pairwise average variance extracted (AVE) from any two constructs in the study was greater than the square of their pairwise correlation coefficients (r^2).

5.3 Analytical model

The research hypothesis was tested using Mode 7 of Hayes Process Macros version 3.5 running on SPSS version 25. The first part of the path analysis involved regressing organisational performance on strategic leadership while controlling for digitalisation to establish path c'. Second, digitalization was regressed on strategic leadership to establish path a_1. Third, organizational performance was regressed on digitalization while controlling for the strategic leadership in order to establish path b_1. Fourth, digitalisation was regressed simultaneously on the external

environment (W) and the interaction term between strategic leadership and the external environment (X.W) to establish paths a_2 and a_3 respectively. The statistical model is represented in Figure 2 below.

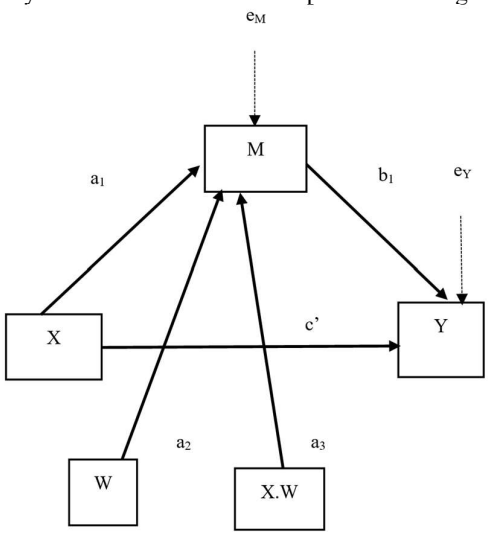

Figure 1. Statistical model for moderated-mediation analysis using Hayes process macros model 7

Where, X= strategic leadership, M= digitalization, W= external environment, Y= organizational performance, X.W = interaction term between strategic leadership and external environment, a_1, a_2, a_3, and b_1 are c· are regression coefficients. Additionally, c' represents the directs effects of strategic leadership on organizational performance. The above statistical model suggests that the effects of strategic leadership on organizational performance through digitalization is conditional on the mean centered values of the external environment. The conditional indirect effects (CIE) is thus represented by the equation below,

$$CIE= (a_{1i} + a_{2i} + a_{3i}.W).b_i \quad (1)$$

5.4 Addressing potential endogeneity

This study circumspectly addressed the issue of potential endogeneity by conducting augmented regression analysis based on a two stage least squares (TSLS) method. The first stage of the test involved regressing strategic leadership (X) on the external environment which (W), which was modelled as an important instrumental/exogenous variable. The second step involved regressing the organizational performance variable (Y) on the predicted values of X obtained from the first stage regression, in order to establish the corresponding beta coefficient of the regression and in so doing addressed the omitted variable bias. Two control variables (i.e., age and size of the organisations) were also included in the augmented regression as covariates. The augmented regression results indicated that endogeneity was not an issue thus reducing the potential of making invalid causal claims.

6. Results

The results of the moderated-mediation analysis using Hayes process macros model 7 running on SPSS is presented below in Tables 1, 2 and 3 respectively.

Table 1: Impact of Strategic Leadership, External Environment and their Interactions on Digitalisation

	Coefficients	se	t	p	LLCI	ULCI
Constant	3.275	.0259	126.468	.000	3.224	3.327
Strategic Leadership (X)	1.306	.1619	8.071	.000	.986	1.627
External Environment (W)	-.182	.0677	-2.689	.008	-.316	-.048
Int_1	-.690	.2828	-2.439	.016	-1.249	-.131

Table 1 shows the result of regressing digitalization on strategic leadership, the external environment and their interaction term (X_1*X_2). Analysis of the regression coefficients indicates that strategic leadership effects on digitalisation was significantly positive, β = 1.3063, *t* = 8.0716, *p* = .0000, 95% CI [.9864, 1.6265]. Further, the external environmental had a significantly negative influence on digitalization, β = -.1822, t = -2.6899, *p* = .0080, 95% CI [-.3161, -.0482]. Finally, the interaction effect of strategic leadership and the external environment on digitalization was significantly negative, β = -.6900, *t* = -2.4399, *p* = .0160, 95% CI [-.1.2493, -.1307].

Table 2: Conditional Effects of Strategic Leadership on Digitalization at Mean Centered Values of External Environment

External Environment	Effects	se	t	p	LLCI	ULCI
-0.408	1.588	.196	8.094	.000	1.199	1.976
0.000	1.307	.162	8.072	.000	0.986	1.627
0.408	1.025	.201	5.093	.000	0.627	1.423

Table 2 shows the conditional effects of strategic leadership on digitalization at different levels of external environmental conditions. The results indicate that effects of strategic leadership on digitalization across all the three mean centered levels of the external environment conditions (i.e., .4078, .000, and .4078) were all significant (p = .000).

Table 3: Index of Moderated-Mediation (IMM).

External Environment (W)	Index	BootSE	BootLLCI	BootULCI
	-.1513	.0700	-.3217	-.0452

Table 3 shows the results of conditional process analysis using Hayes process macros and bootstrapping model 7 running on SPSS. The null hypothesis held that the index of moderated-mediation (IMM) = 0. However, the results show the contrary (i.e., IMM≠ 0). As can be observed the integer 0 did not even fall within the 95% bootstrap confidence interval (BCI). The omnibus test indicated statistically significant results for the index of moderated-mediation, IMM = -.1513, 95% BCI [-.3217, -.0452]. Consequently, the null hypothesis was repudiated since there was considerable support for H_1.

7. Discussion

The results of the moderated-mediation analysis using Hayes process macros model 7 running on SPSS is presented below in Tables 1, 2 and 3 respectively. Empirical studies based on strategic leadership-external environment-digitalization-organizational performance stream at times yield heterogeneous set of study findings regarding the external environmental conditions necessary to allow for significant moderated-mediation effects. While some studies showed that the indirect influence of strategic leadership on organizational performance mediated by digitalization was stronger under stable external environmental conditions (Srikanth &Ungureanu, 2025; Ferreira, Fernandes & Veiga, 2024), in contrast, other studies concluded that these strategic leadership effects on organisational performance were more pronounced under conditions of environmental turbulence (Gong et al., 2021; Chen et al., 2019). The current study findings align well with the former results. The question often posed is, under what external environmental conditions should strategic leadership implement enterprise wise digitalization initiatives in order to realize sustainable organizational performance. The results from this study show that the moderated-mediation effects arising from the pairwise interplay of the external environment and digitalization significantly influences strategic leadership effects on organizational performance. Consequently, it was observed that State Corporations in Kenya recorded relatively higher performance when their strategic leadership implemented digitalization initiatives under favourable external environmental condition (i.e., low levels of dynamism, complexity and munificence) as opposed to the contrary.

The result arising from this study have important implications to theory, methodology, policy, and management practice. First and foremost, the results contribute towards theory by testing the postulations of the three theories that undergirded its conceptualization. For instance, the study attempted to address some of the black box problems associated with the upper echelons theory (Neely et al., 2020; Wang et al., 2016) by using a nuanced operationalization of the strategic leadership construct based on psychographic attributes instead of the frequently used TMT demographic characteristics, which have been criticised for having conceptual and measurement shortcomings (Priem, Lyon & Dess, 1999). Further, the study findings contribute towards the ongoing debate among scholars advancing postulations of different theories in organizational behaviour studies (i.e., leadership theories, industrial organization economics theories, and new institutional theories) regarding which among the three variables considered herein has a dominant influence on organizational performance. The results show that the three predictor variables in this study link up together in interesting configurations to significantly predict organizational performance. Therefore, the results contribute to the body of knowledge by validating the core assumptions of the three theories undergirding the conceptualization of this study.

Second, and equally important, this study attempted to address some of the common methodological limitation associated with leadership studies. For example, the problem of potential endogeneity which often leads to invalid causal claims was addressed be including the external environment as an exogenous variable and conducting augmented regression analysis. Further, this study adopted Hayes process macros and bootstrapping to test for moderated-mediation effects instead of commonly used analytical tools and tests in some leadership studies which, have been criticised for not being robust and/or powerful. Examples include variance decomposition analysis (Weiner & Mahoney, 1981; Liberson & O'Connor, 1972) and multi-level modelling (Quigley & Graffin, 2017; Fitza, 2014), Sobel tests (Baron & Kenny, 1986; Sobel 1982).

Third, the findings have important implications on policy. It provides Governments in developing countries with useful insights and information that can guide policy direction aimed at enhancing the efficiency and effectiveness of public sector organisations in line with NPM policies (Pollit, 2007; Elcock, 2000). The results indicated that strategic leadership, external environment and digitalisation are significant determinants of sustainable organizational performance. Therefore, the study findings provide useful information which can assists governments to craft appropriate policies relating to the four constructs targeting public sector entities.

Finally, in respect to management practice, the results confirm that public sector organizations need to continually manage both endogenous and exogenous contingent factors in order to realise sustainable organizational performance (Badari, Kotze & Nel, 2023; Bower, 2017). The results indicate that the external environment has the potential of either impinging or accentuating digitalization initiatives within public sector organizations which subsequently influences organisational performance. The study findings are a confirmation to management practitioners that when developing digital transformation strategies, it is critical for public sector organisations to take cognizance of the delicate interplay and linkages which exists among strategic leadership, external environment, digitalization and organizational performance. Failure to synchronize these factors may lead to a mismatch which can adversely affect the efficiency and effective of these public sector organisations.

8. Conclusion

This paper contributes to the body of knowledge in the field of strategic leadership and organizational behaviour by investigating the pairwise interplay of the external environment and digitalization and their influence on strategic leadership effects on sustainable organizational performance. It deepens understanding of the role played by the two contingent variables, external environmental conditions and technological innovations, in determining organizational output. In this vein the study contributes towards addressing the conflicting perspectives among scholars regarding the influences of strategic leadership on sustainable performance within public sector organizations.

This study was operationalized in the context of SCs in Kenya, which is a developing country. Therefore, these entities operate within a contextual frame characterized by certain idiosyncratic subtleties such as socio-economic dynamics, political considerations, and organizational cultures just to mention a few. Therefore, this may limit the extent to which generalizations can be made regarding the study findings in other different contexts. Additionally, implementing digitalization under dynamic internal and external environmental conditions is often considered a strategic challenge for both private and public orgnizations. The initiative is not only capital intensive but also requires skilled human capital and a supporting corporate governance framework to facilitate successful implementation.

Consequently, given the rapid developments of Industry 4.0 technologies and especially Generative AI (GenAI), a fruitful area for future research would involve investigating the effects size of the three predictor variables on the sustainable organizational performance of private sector firms in developing countries such as Kenya. For instance, a replicative study can be operationalized in Financial or Manufacturing firms listed at the Nairobi Securities Exchange and data analysed using structural equation modelling based on partial least squares (PLS-SEM).

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