

The Moderating Role of Regulatory Compliance on the Relationship Between Safety Management Systems and Sustainable Competitive Advantage in Kenyan Aviation Companies

Authors:

Ali I. Roba¹ [<https://orcid.org/0009-0009-8119-3249>]

Charity W. Muraguri¹ [<https://orcid.org/0000-0002-1111-0382>]

Timothy C. Okech¹ [<https://orcid.org/0000-0003-4948-1696>]

Affiliations:

¹Unites States International University - Africa

Corresponding Author:

Ali I. Roba¹– E-mail: aliroba@hotmail.com

Article History: Submitted: 26th December 2025; Accepted: 19th January 2026; Published (online): 7th February 2026

Abstract

This study examined the conditional role of regulatory compliance in shaping the relationship between Strategic Safety Management Systems (SSMS) and sustainable competitive advantage (SCA) among aviation companies in Kenya. Grounded in institutional theory and the resource-based view, the study adopted an explanatory sequential mixed-methods design. Quantitative data were collected through a census survey of 360 managers from all 60 Kenya Civil Aviation Authority (KCAA)-licensed aviation companies, complemented by in-depth interviews with senior managers involved in regulatory compliance and safety oversight. Quantitative analysis employed hierarchical regression and conditional process analysis using PROCESS Macro Model 1 with 5,000 bootstrap samples to examine whether the effects of SSMS components on SCA vary across levels of regulatory compliance. Results indicate that SSMS components explain a substantial proportion of variance in sustainable competitive advantage ($R^2 = 0.479$), with effects strengthening at moderate and high levels of regulatory compliance. Conditional process analysis further revealed that Strategic Quality Management Systems and Strategic Flight Operations Management exhibit stronger associations with SCA under high compliance conditions, with interaction effects contributing significant incremental explanatory power ($\Delta R^2 = 0.046$, $p < 0.001$). Qualitative findings provided explanatory insights by showing that regulatory oversight enhances organizational accountability, supports the internalization of safety practices, and strengthens stakeholder trust, thereby amplifying the competitive value of safety management investments. The study concludes that regulatory compliance functions as a conditional institutional factor that shapes the extent to which safety management systems translate into sustainable competitive advantage, rather than acting as a direct or standalone driver of competitive outcomes, with important implications for aviation managers and regulators.

Keywords: Regulatory compliance, Safety Management Systems, Sustainable Competitive Advantage

Introduction

Business organizations continue to operate in a competitive environment that is dynamic and complex characterized by advancements in rapidly evolving digital technologies, innovations, shifting techniques, and increased consumer awareness and demands (Möller, Nenonen & Storbacka, 2020; Newman, Rand, Tarp & Trifkovic, 2020). These have partly contributed to the volatility and intricate nature of businesses including the aviation industry. In the aviation industry especially where the core business revolves around flight operations in terms of cargo and passenger services, business performance is closely tied to client satisfaction (Abate, Christidis & Purwanto, 2020) which in the process has implication on their competitiveness. The desire to achieve sustainable competitive advantage (SCA) has compelled airlines to switch from traditional to strategic mode of operations (Molchanova, Trushkina, & Katerna, 2020; Pereira, Lohmann & Houghton, 2021) to the adoption of safety measures by implementing safety management systems (SMS).

Globally, the aviation sector has not been immune: total passenger traffic in 2024 exceeded 9 billion, representing an 8.3% year-on-year increase, driven largely by international travel (Airports Council International [ACI] World, 2025). The increased traffic has brought along stringent safety requirements partly contributing towards scrutiny of many players and exposure to risks as per the International Air Transport Association [IATA] of 2025. The situation is turning safety from being a mere compliance matter to a strategy variable that is gaining more ground in the airline competition. This in the process has seen the rise in the international acceptance of safety management systems (SMS) by incorporating safety management systems (SMS) obligations into the regulatory framework by governments including Kenya (Kenya Civil Aviation Authority [KCAA], 2024). As a result, airlines are moving from the traditional operational models to the strategic safety-oriented operations where systems that cover aircraft maintenance, flight operations, quality management, and human resource planning are becoming essential for maintaining competitive advantage (Möller, Nenonen & Storbacka, 2020). Regulatory compliance encourages stability and risk management, which adds to the industry's credibility and is essential to maintaining ongoing operations in the aviation industry. Compliance is required to avoid penalties and maintain legal adherence but could be less important in competitive differentiation compared to dimensions like operation efficiency, quality control, and workforce planning.

Additionally, upgrading safety and cutting downtime are achieved by maintenance management modules' real-time tracking of aircraft conditions, scheduling of preventative maintenance, and prediction of possible problems before they become serious. Utilizing risk assessment, incident reporting, and compliance tracking, safety management systems guarantee regulatory compliance and foster a proactive safety culture. Further, to provide insights that promote continuous improvement, the technology analyzes flight data, fuel usage, and operational indicators using data analytics and performance monitoring tools. Effective SMS implementation is expected to enhance operational reliability, customer trust, and international competitiveness. By addressing safety oversight challenges and complying with global regulations, Kenyan aviation companies could ensure that the projected growth translates into sustained economic benefits and job creation (Thendu, 2023).

In Kenya, the aviation sector is a key sector contributing about 3.1% of GDP (around USD 3.3billion) and supports almost 460,000 jobs (IATA, 2025). Despite this strategic importance, Kenyan aviation firms experience stiff competition, increasing operational costs, and stringent regulatory requirements, which threaten long-term viability. The Kenya Civil Aviation Authority, through the Civil Aviation (Safety Management) Regulations, 2018, requires the implementation of safety management systems by all licensed aviation organizations with an aim of improving safety, operational reliability, and organizational performance (Kenya Law, 2018). While the existence of direct benefits related to SMS components (strategic aircraft maintenance systems, flight operations management, quality management systems, and human resource planning) has been established globally and locally, the contextual factor that determines the effectiveness of these components in terms of sustainable competitive advantage (SCA) remains understudied.

In highly regulated industries such as the aviation, regulatory compliance has become a key contingency. In the Kenyan aviation context, conforming to KCAA regulations, ICAO Annexes, and other statutory instruments is not an optional requirement but a mandatory requirement for the certification of air operators. Previous studies in the country have treated regulatory compliance primarily as a direct predictor of safety performance (Njeru, 2019; Thendu et al., 2023) or an antecedent of SMS effectiveness (Mwikya et al., 2018). The KCAA's regulatory framework mandates the implementation of SMS among aviation operators, ensuring adherence to international safety standards. The Civil Aviation Act (2021) in legal supplement 259 formulated the remote piloted aircraft systems regulations set to govern the acquisition, licensing and operation of RPAS in Kenya. The regulations specifically guide the registration of RPAS organizations, operational requirements (commercial and recreation) and security requirements. By enforcing SMS, this has significantly enhanced aviation safety, reducing risks and operational costs, ensuring regulatory compliance, and fostering a culture of safety. This comprehensive approach has not only maintained Kenya's leadership in the regional aviation sector but also contributed to the sustainable competitive advantage of its airlines by improving safety records, building strong reputations, and supporting critical economic sectors such as tourism and trade (Eric, Semeyutin & Hubbard, 2020). Minimal attention has however, been paid to its potential influence as a moderator, that is, the extent to which the strength of the relationship between SMS components and sustainable competitive advantage is influenced by regulatory compliance.

It is expected that sustainable competitive advantage in aviation would be reflected in better cost efficiency, customer trust, employee engagement, market share growth and the capacity to survive regulatory and economic shocks over time. Theoretically, the Resource-Based View (RBV) and Stakeholder Theory indicate that SMS can be a source of sustainable competitive advantage if appropriately implemented. The theories also recognize that external institutional factors, such as regulatory pressure, may significantly change the value derived from internal resources (Barney, 1991; Freeman, 2010). Whilst, regulatory audits, surveillance and enforcement actions are common, compliance maturity in the licensed aviation operators varies considerably, thus providing a natural context in which to investigate the effects of moderation.

For conceptual clarity, this study uses the term Strategic Safety Management Systems (SSMS) to denote the deliberate, organization-wide integration of safety management systems into strategic

decision-making processes. While Safety Management Systems (SMS) is commonly used in regulatory and operational contexts to refer to mandated safety frameworks, SSMS in this study emphasizes the strategic deployment of aircraft maintenance systems, flight operations management, quality management systems, and human resource planning as sources of sustainable competitive advantage.

Statement of the Problem

Worldwide, implementation of SMS is considered important in achieving SCA in the aviation industry (Molchanova, et al., 2021). By enhancing safety, reducing costs, ensuring regulatory compliance, building a strong reputation, and supporting key economic sectors, an effective SMS enables aviation companies to thrive in a competitive global market (Mugo, 2020). Consequently, implementing a strategic SMS significantly enhance aviation safety and the sustainable competitive advantage of aviation companies. Evidently, however, regulatory compliance, organizational culture, and leadership are fundamental components of safety management systems in the aviation sector (Thendu et al., 2023). Adhering to stringent regulations ensures that airlines meet international safety standards, which is considered critical in maintaining operational integrity and gaining customer trust.

Despite the mandatory implementation of SMS in all 60 licensed aviation companies in Kenya, (Civil Aviation - Safety Management Regulations, 2018), there is a considerable variation in the capacity of these firms to translate SMS investments into sustainable competitive advantage. Whilst, previous studies in Kenya have found positive direct links between SMS components and organizational outcomes (Njeru, 2019; Thendu et al., 2023; Mwikya, Sabina & Mwaura, 2018), regulatory compliance is mainly considered as an independent or mediating variable. None has empirically investigated whether the strength and significance of the SMS-SCA relationship are dependent on the level of regulatory compliance practiced by the organization. Regulatory compliance in terms of the degree of adherence to KCAA regulations, ICAO standards and recommended practices, and other statutory instruments (Kenya Law, 2018; Stolzer et al., 2023), is mandatory for continued operation in Kenya. Several studies have examined compliance as a direct predictor of safety outcomes (Mwikya, Sabina, & Mwaura, 2018; Judi, 2018; Thendu et al., 2023), consistently reporting positive relationships with performance indicators such as reduced incidents, improved customer trust, and enhanced organizational reputation. These studies are however, based on regulatory compliance either as an independent or antecedent variable and do not discuss the possible moderating role of regulatory compliance.

Institutional theory provides the theoretical foundation for conceptualizing regulatory compliance as a moderator rather than merely a predictor (DiMaggio & Powell, 1983; Scott, 2014). Under coercive isomorphism, regulatory requirements compel aviation firms to adopt prescribed safety practices. Oliver (1991) argues that organizations may respond through decoupling (symbolic adoption) or genuine internalization. When compliance is internalized, it transforms external regulatory demands into organizational capabilities that amplify the value derived from internal resources, such as SSMS components (Barney, 1991; Thendu et al., 2023). Despite this theoretical grounding, empirical examination of regulatory compliance as a moderator between safety management practices and sustainable competitive advantage remains under studied in both Kenyan and broader African aviation literature.

This is both a theoretical and empirical gap given that compliance of regulations in the Kenyan aviation industry is compulsory and non-compliance attracts suspension or revocation of the Air Operator Certificates, without an understanding of the moderating role played by regulatory compliance, aviation firms may not be able to determine if resources should first be invested in realizing compliance or invested in strengthening specific components of SMS. The lack of evidence focusing on moderation, therefore, leaves both practitioners and the regulators with no clear direction on how regulatory enforcement can be used to amplify, not merely enforce but also as it pertains to sustainable competitive advantage.

Purpose of the Study

The purpose of this study was to investigate the moderating influence of regulatory compliance on the relationship between the Strategic Safety Management System (strategic aircraft maintenance systems, strategic flight operations management, strategic quality management systems, and strategic human resource planning) and sustainable competitive advantage among the KCAA licensed aviation companies in Kenya. By isolating and foregrounding the interaction effects already tried out in the original dissertation, this article aims to offer concentrated theoretical insight and empirical evidence on how compliance turns mandated safety practices into a source of sustained competitive advantage.

Literature Review

The implementation of Strategic Safety Management Systems (SSMS) has been widely recognized as a source of sustainable competitive advantage (SCA) in the aviation industry (Molchanova, Trushkina & Katerna, 2020; Cardeal et al., 2020). In the Kenyan context, SSMS comprises four core components: Strategic Aircraft Maintenance Systems (SAMS), Strategic Flight Operations Management (SFOM), Strategic Quality Management Systems (SQMS), and Strategic Human Resource Planning (SHRP) (Roba, 2025). Empirical evidence demonstrates significant positive direct effects of these components on SCA. Gisario et al. (2019) and Kikechi (2020) established that proper aircraft maintenance systems help reduce downtime and improve reliability, which also contributes to cost leadership and customer trust. Similarly, Ong'esa and Kinyua (2020) and Emani (2024) found that strategic flight operations management can improve dispatch reliability and on-time performance, which are critical differentiators in competitive airline markets. Abbas (2020), Nasaj and Al-Marri (2020), and Mbugua and Nyambura (2023) confirmed that robust quality management systems drive continuous improvement and stakeholder satisfaction, while Njeru (2018), Kimotho (2019), and Kariuki and Mwema (2022) showed that strategic human resource planning enhances workforce competency and safety culture, leading to sustained organizational performance.

Njagi, (2019) conducted a study to assess the safety management systems and their effect on the performance of aviation firms in Kenya. The study was anchored on system theory. The research adopted an explanatory research design. The study relied on primary data which was collected using structured questionnaires administered to 50 respondents from the security departments of the selected aviation firms in Kenya. The findings indicated that safety policy, safety risk

management and safety promotion have a significant effect on firms' performance. The study concluded that the existence as well as the implementation of an effective safety policy improves performance of the firm especially in terms of increased employees' awareness which results in employees' confidence and productivity. The management of the firms should be encouraged to embrace aspects of safety policy and safety promotion to assure firms' performance improvement; more benefits of SMS can be realized through safety assurance by encouraging external audits.

In the examination of the effect of civil aviation regulations on the growth of the domestic airline industry, Judi, (2018) specifically examined the effect of operation of aircraft regulations, personnel licensing regulations, air operator and administration regulations as well as the RPAS regulations. In the research, both primary and secondary data were utilized. The primary data was collected from a semi-structured questionnaire, while secondary data was collected from aviation industry reports and journals. Data collected was analyzed using descriptive, inferential and content analysis with regression results showing that civil aviation regulations had a positive effect on the growth of the domestic airline industry. It was thus concluded that meeting operation of aircraft regulations, personnel licensing regulations, air operator and administration requirements are key to fostering the growth of the domestic airline industry in Kenya.

Wanjala, (2018) undertook an examination of drones in Kenya and noted that licensing of drone usage within the country was expected to herald a new era of increased uptake of the remotely-piloted aircraft. The research paper however was not able to examine if the licensing requirements did actually materialize in growth in drone usage locally hence the current study bridged this gap. Jones, (2019) conducted a survey of international commercial drone regulation and noted that increased usage of drones globally has contributed to the incorporation of drones into the aviation regulatory frameworks. The researcher noted that the drone regulations in Kenya were categorized as an effective ban since the formal process for commercial drone licensing and the requirement therein were too stringent to be met by majority of the potential users. The review however failed to examine if the Kenyan regulations have affected the growth of aviation sector. Stöcker, Bennett, Nex, Gerke, and Zevenbergen (2019) conducted a review of the current state of UAV regulations. They noted that legal frameworks regulating the use of UAV had limited research and development within the sector. Wayumba, Mwangi, and Chege, (2018) examined the application of unmanned aerial vehicles in improving land registration in Kenya employing case study research design in examining the utilization of drones in Kenya land registration. The study collected data through phone interviews with staff at KCAA and concluded that with supportive regulations the use of drones in land registration would enhance the process.

Chang, Shao, and Chen, (2018) examined performance evaluation of airport safety management systems in Taiwan by seeking to examine the adoption and compliance with ICAO 2005 16 regulations on Safety Management Systems implementation within three airports in Taiwan. The study indicated that the airports had well implemented safety risk management components as well as safety policies and objectives in place. Ismaila, Warnock-Smith, and Hubbard, (2019) examined the impact of air service agreement liberalization in Nigeria by considering a 10-year period since air service liberalization was introduced in the country. The results indicated that air service liberalization in the market could result in 65% increase in passenger traffic while liberalization of

carrier control and ownership would result in 34% increase in passenger traffic. Meichsner, O'Connell, and Warnock-Smith (2018) examined the future for African air transport: Learning from Ethiopian Airlines. The researchers noted that most airlines in Africa had been limited by regulatory restrictions, protectionism and inadequate infrastructure. Further that increased strategic alliance between Ethiopian Airlines and other air operators within the region was positively related to the airline growth in fleet number, passenger traffic and destinations. The study considered only Ethiopian Airlines which is the largest commercial airline firm in Africa whereas the current study focused on the Kenyan aviation sector in general.

Irandu, (2018) examined Air transport security in Kenya (bring in methodological issues) and noted that. In his review the author noted that in Kenya there have been structural and policy changes geared towards promoting better and effective air operations management. The researcher noted that expansion of aerodromes coupled with tougher regulation of the sector had fostered the growth of the industry which had been witnessed in increase in traffic, contribution of the airline industry to the GDP and increase in number of domestic operators. The study failed to take into consideration the civil aviation regulations effect on the growth of the industry.

Methodology

Research Design

The study adopted a positivist philosophical paradigm and a cross-sectional, explanatory sequential mixed-methods research design. The quantitative phase was designed specifically to test whether the strength of the relationship between SSMS implementation and SCA is contingent upon the level of regulatory compliance, while the subsequent qualitative phase sought to triangulate the qualitative results.

Population and Sampling

The target population consisted of all managerial employees directly responsible for or affected by SSMS implementation and KCAA regulatory audits across the 60 Kenya Civil Aviation Authority (KCAA)-licensed aviation companies operating in Kenya as of December 2024. Given the size of the population which was manageable and the need to make generalized inferences, census approach was employed in terms of the unit of analysis. Within each company, stratified sampling was applied to ensure proportional representation of key departments especially safety, flight operations, maintenance, quality assurance, human resource, and senior executive cadres, yielding 360 sample as unit of observation. For the qualitative component, twenty managers who regularly lead or participate in KCAA compliance audits were purposively selected to provide in-depth and rich explanatory insights.

Measurement of Variables

The implementation of Strategic Safety Management Systems was operationalized as a second order construct with four first order dimensions Strategic Aircraft Maintenance Systems (SAMS), Strategic Flight Operations Management (SFOM), Strategic Quality Management Systems (SQMS) and Strategic Human Resource Planning (SHRP). Twenty-four items, were used in measuring these four dimensions, based on established aviation safety instruments. The moderating

variable (regulatory compliance) had six-item scale adapted from KCAA audit checklists and ICAO Doc 9859 to assess organizational compliance with documentation requirements, corrective and preventive measures, regulatory reporting, and acceptance of audit findings. The dependent variable - sustainable competitive advantage measured on an eight-item scale, measured in terms of cost efficiency, customer trust, employee engagement, market positioning, and resilience to regulatory and economic shocks. For the quantitative data a five-point Likert scale with 1 (Strongly Disagree) to 5 (Strongly Agree) was used. Piloting was conducted and the instruments scoring Cronbach's alpha coefficients of 0.87 to 0.94 and 0.89 to 0.92 in the study with high internal consistency.

Data Analysis

Hierarchical moderated regression with conditional process modelling as a supplement was used to test the moderating effect of regulatory compliance on quantitative data. All the variables were mean-centered before the main analysis in order to eliminate multicollinearity due to the formation of interaction terms, and the analysis using diagnostic test ensured that all the assumptions of multiple regression were completely satisfied: the distribution of residuals was normal ($p > 0.05$), and the test values of Breusch-Pagan ($p > 0.05$) and variance inflation factors of all predictors (less than 2.5) were below the maximum threshold.

Hierarchical moderated regression was performed in four steps aimed at illustrating the gradual contribution of the moderator and the resulting interaction terms. Step 1 involved three control variables, which included organization size, organization age and ownership type to generate a model that would take into consideration the possible confounding variables. The second step presented the four centered SSMS components (SAMS, SFOM, SQMS, and SHRP) as predictors of sustainable competitive advantage. Step three incorporated centered regulatory compliance variable in order to study its direct impact above and beyond the SSMS elements. Finally, step four introduced the four-product term that comprised the interactions between each component of the SSMS and the regulatory compliance (SAMS x RC, SFOM x RC, SQMS x RC, and SHRP x RC). Evidence of moderation was seen in a statistically significant increment in R^2 at the last step and significant t-tests of the interaction coefficients of each separately. The combination of hierarchical moderated regression, bootstrapped conditional process analysis, and a focused thematic analysis allowed the study to carry out a comprehensive, transparent, and repeatable analysis of regulatory compliance as a moderator to understand everything the study has to offer.

To examine the nature and shape of the meaningful interactions, the PROCESS Macro Model 1 was used with 5,000 bootstrap samples (Hayes, 2022). This provided bias-corrected at 95 percent confidence intervals of the conditional impacts of each SSMS component on sustainable competitive advantage at three levels of the moderator: low (+1 standard deviation below the means), moderate (at the means) and high (+1 standard deviation above the means). Simple-slopes plots were created to give a visual representation of the increasing slope of the SSMS-SCA relationship with increasing regulatory compliance. Besides, the Johnson-Neyman method has been used to determine the exact values of regulatory compliance, within which the effect of each SSMS component is not significant, but rather significant, and thus offer a more refined view of the areas of significance. Transcription of qualitative data was done verbatim and the data imported

into NVivo 14 to perform thematic analysis. Coded simply the description of the respondents on how the compliance with regulations either facilitates or limits the process of translation of SSMS practices into sustainable competitive advantage. Three coding cycles (open, axial, and selective) were done, and three themes were identified that can be considered as overarching and which can directly explain statistical interactions identified during the quantitative phase.

While stepwise regression was initially employed for exploratory purposes, it is not suitable for theory-driven moderation testing. Consequently, moderation inference in this study is based on hierarchical regression combined with PROCESS Macro conditional process analysis, which is widely recommended for estimating interaction effects and probing moderation under varying levels of a moderator (Hayes, 2022).

Ethical Considerations

The study complied with the international and national ethical standards for research involving human participants. Formal ethical clearance was granted by the United States International University-Africa Institutional Ethics Review Committee (IERC Approval Reference No. IERC/2024/123) and a research permit was obtained from National Commission for Science, Technology and Innovation (NACOSTI Permit No. NACOSTI/P/24/28371). Before the start of data collection potential participants were given a detailed information sheet, which included the purpose of the study, the voluntary nature of participation, their right to withdraw at any time without consequence, and the strict confidentiality measures taken. Written informed consent was obtained from each questionnaire respondent and interview subject. Personal identifiers were deleted as soon as the data were collected, and all responses were stored on password-protected mode that could only be accessed by the researcher. Organizational anonymity was also assured by ensuring that no company names, no recognizable characteristics are featured in any report or publication. These measures included ensuring that the research did not involve harm to participants, ensuring privacy for participants, and maintaining the highest standards of research integrity throughout the research.

Results

Descriptive Statistics

Respondents reported relatively high levels of both implementation and outcomes (Table 1). The composite Strategic Safety Management Systems (SSMS) implementation score recorded a mean of 4.26 (SD = 0.62) on the 5-point scale, while sustainable competitive advantage achieved a mean of 4.20 (SD = 0.65). Regulatory compliance, obtained the highest mean of 4.42 (SD = 0.91). All three exceeded the 4.0 threshold typically interpreted as strong agreement, indicating that managers across the companies generally perceive SSMS practices, regulatory adherence, and competitive advantage outcomes as well established in their organizations. The standard deviations below 1.0 further suggest minimal variability in responses amongst the respondents.

The study shows that SMS policy adoption is a major contributor to sustainable competitive advantage, as indicated by a mean score of 4.27 and lower standard deviation of 0.53. The study also shows that compliance with regulatory requirements is vital in mitigating legal risks, improving operational stability, and enhancing the market standing of an airline. This is an indication that aviation companies that consistently comply with aviation regulatory requirements

and conduct periodic reviews of their compliance experience minimal disruption and achieve a competitive advantage. The results further show that compliance with regulatory requirements impacts sustainable competitive advantage, with a mean of 4.32 and a standard deviation of 0.51. Further, training and certification compliance enhances the reputation of an organization and ensures that aviation personnel meet the required legal and operational standards. Compliance with certification standards is expected to ensure employees' competency, reduces safety risks, and boosts investors' trust. Organizations that align training programs with certification requirements receive higher regulatory approval and market trust.

Table 1

Descriptive Statistics for Moderating Influence of Regulatory Compliance and SCA

Aspects of Regulatory Compliance	Mean	Std. Dev
SMS Policy Implementation on Competitive Advantage	4.27	0.53
Compliance with Regulatory Requirements on Market Position	4.32	0.51
Training and Certification Compliance on Industry Reputation	4.31	0.55
Aggregate	4.30	0.53

Statistical tests

linearity test

The scatter plot showed a positive but weaker relationship between Regulatory Compliance (RC) and SCA, concerning the rest of the independent variables. The scatter plots confirmed the positive relationship between each strategic factor and SCA and the linearity requirement for regression analysis.

Figure 1 illustrates a positive and approximately linear relationship between regulatory compliance and sustainable competitive advantage, confirming that the assumption of linearity required for regression analysis is reasonably satisfied.

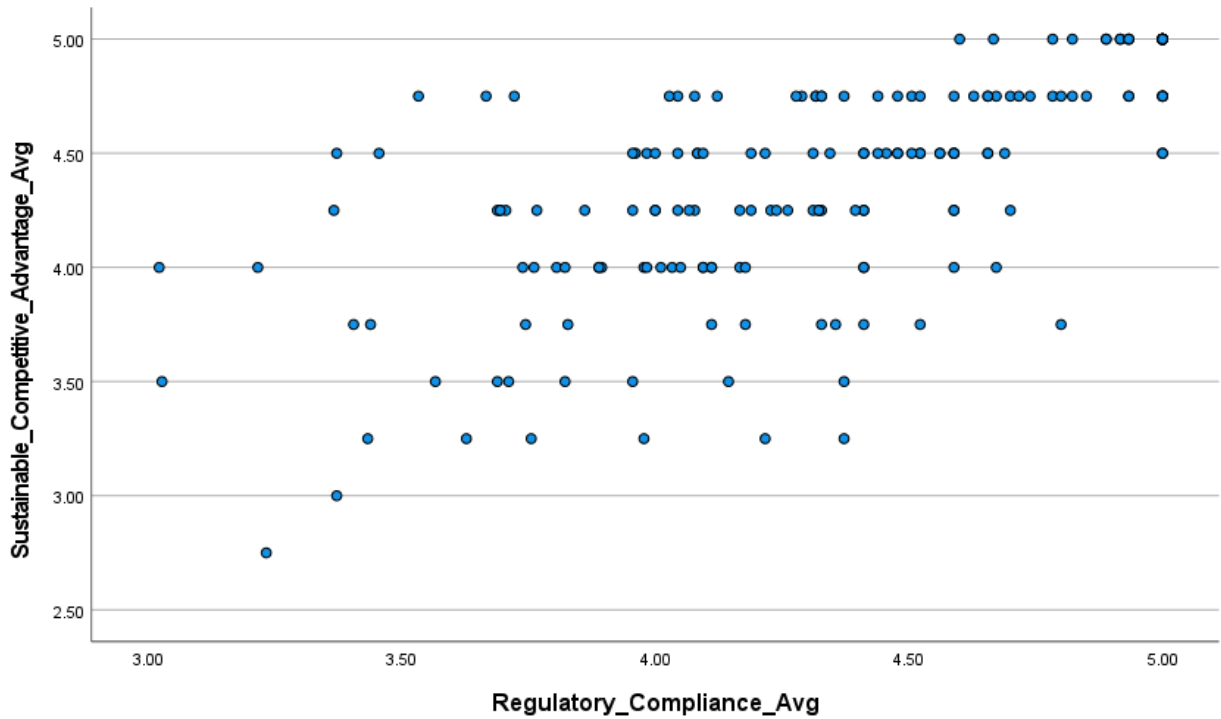


Figure 1: Linear Relationship between Regulatory Compliance and Sustainable Competitive Advantage

Normality

Table 2 shows the normality of the Regulatory Compliance variable which was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The Kolmogorov-Smirnov test yielded a statistic of 0.070 with a p-value of 0.040, while the Shapiro-Wilk test produced a statistic of 0.967 with a p-value of 0.000. Since both significance values fall below the conventional threshold of 0.05, the results indicate a statistically significant deviation from normality in the distribution of the data.

Table 2

Test of Normality for the Regulatory Compliance

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Regulatory Compliance	.070	171	.040	.967	171	.000

a. Lilliefors Significance Correction

The Visual analysis through a Q-Q plot showed that data points run parallel to the reference line to form a nearly straight-line pattern between them. The linear distribution pattern indicates that the data follows a typical distribution pattern approximately. The research uses parametric statistics for its analysis even though test results indicated non-normality because visual examination confirms suitable data utilization in this investigation.

Figure 2 presents the normal Q-Q plot for regulatory compliance. The data points closely follow the reference line, indicating approximate normality of residuals and supporting the suitability of parametric statistical techniques used in the analysis.

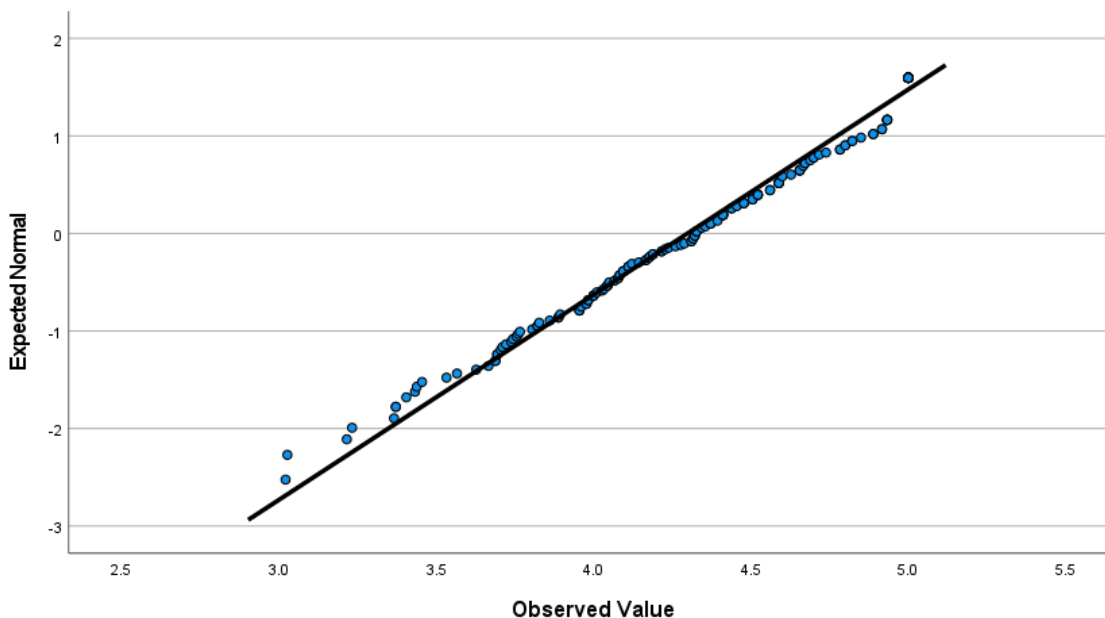


Figure 2: Normal Q-Q plot for Regulatory Compliance

Multicollinearity

The Variance Inflation Factor (VIF) and Tolerance values for the moderating variable - Regulatory Compliance were 1.002 and 0.998, respectively. These values are within the acceptable threshold ranges (Tolerance > 0.1, VIF < 10), indicating that regulatory compliance does not exhibit multicollinearity with other predictors in the model. This affirms the statistical independence of the variable and validates its suitability for inclusion as a moderator in the regression analysis.

Table 3
Multicollinearity Test for Regulatory Compliance

Model		Coefficients ^a		Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
		Unstandardized Coefficients B	Std. Error				Tolerance	VIF
1	(Constant)	1.854	.276		6.717	.000		
	Regulatory Compliance	.482	.063	.467	7.651	.000	0.998	1.002

a. Dependent Variable: Sustainable Competitive Advantage

Step Wise Regression Analysis

An exploratory stepwise regression analysis was initially conducted to examine the incremental contribution of Strategic Safety Management System (SSMS) components to Sustainable Competitive Advantage (SCA). The results indicate that Strategic Quality Management Systems and Strategic Flight Operations Management contribute substantially to variations in SCA, with the initial model explaining 41.3% of the variance ($R^2 = 0.413$, $F(1,169) = 119.014$, $p < 0.001$), and the inclusion of additional SSMS components increasing the explained variance to 43.4% ($R^2 = 0.434$, $\Delta R^2 = 0.021$, $p = 0.013$). While the inclusion of further SSMS components and regulatory compliance improved overall model fit (final $R^2 = 0.479$), stepwise regression is not designed for theory-driven moderation testing. Consequently, the results from this analysis are interpreted as exploratory and descriptive. Formal inference regarding the moderating role of regulatory compliance is therefore based on hierarchical regression and conditional process analysis using PROCESS Macro, as presented in subsequent sections.

Table 4
Stepwise regression analysis of the study variables

Model	R	Model Summary ^c				Change Statistics			
		R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.643 ^a	.413	.410	.37648	.413	119.014	1	169	.000
2	.659 ^b	.434	.428	.37075	.021	6.266	1	168	.013

a. Predictors: (Constant), Strategic Quality Management System

b. Predictors: (Constant), Strategic Quality Management System, Strategic Flight Operations Management, Strategic Human Resource Planning.

c. Dependent Variable: Sustainable Competitive Advantage

Regression Coefficients

Table 5 presents the regression coefficients for the main effects and interaction terms included in the hierarchical moderation model. While individual interaction coefficients appear weak under conventional regression assumptions, contemporary moderation analysis emphasizes conditional effects rather than isolated interaction terms. Accordingly, statistical inference regarding moderation in this study is not based on the individual significance of interaction coefficients in Table 5, but on the conditional process analysis results obtained using PROCESS Macro Model 1. The conditional process analysis results obtained using PROCESS Macro Model 1 (reported in Table 7) demonstrate that the effects of Strategic Safety Management System components on sustainable competitive advantage strengthen at moderate and high levels of regulatory compliance, thereby confirming the presence of conditional moderation.

Table 5
Coefficients for Regulatory Compliance on SCA

Model	Coefficients ^a		Standardized Coefficients Beta	t	Sig.	
	Unstandardized Coefficients B	Std. Error				
1	(Constant)	.870	2.195		.396	.692
	Strategic Aircraft Maintenance System	.196	1.125	.203	.175	.862
	Strategic Flight Operations Management	1.986	1.393	1.934	1.425	.156
	Strategic Quality Management System	-1.226	1.217	-1.234	-1.007	.315
	Strategic Human Resource Planning	-.508	1.107	-.505	-.459	.647
	Regulatory Compliance	.415	.516	.403	.805	.422
	SQMS_RC_Interaction	.339	.292	2.721	1.163	.247
	SFOM_RC_Interaction	-.429	.340	-3.359	-1.261	.209
	SHRP_RC_Interaction	.116	.275	.933	.422	.673
	SAMS_RC_Interaction	-.038	.282	-.305	-.135	.893

a. Dependent Variable: Sustainable Competitive Advantage

ANOVA

Table 6 presents the ANOVA test results assessing the overall statistical significance of the regression models. In Model 1, the F-statistic was $F(1, 169) = 119.014$, with a p-value $< .001$. The results indicate that the Strategic Quality Management System independently and significantly predicts Sustainable Competitive Advantage (SCA). Upon the inclusion of Strategic Flight Operations Management in Model 2, the model retained statistical significance, yielding an improved $F(2, 168) = 64.495$, $p < .001$. The refinement in model fit is further supported by the reduction in the residual sum of squares from 23.954 in Model 1 to 23.092 in Model 2, confirming that the additional predictor enhanced the model's explanatory capacity. These results demonstrate

that the stepwise inclusion of predictors contributes to the regression model, and that each model tested shows statistically significant improvement and goodness of fit.

Table 6
ANOVA for Regulatory Compliance and SCA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.869	1	16.869	119.014	.000 ^b
	Residual	23.954	169	.142		
	Total	40.822	170			
2	Regression	17.730	2	8.865	64.495	.000 ^c
	Residual	23.092	168	.137		
	Total	40.822	170			

To formally test the moderating role of regulatory compliance, conditional process analysis was conducted using PROCESS Macro Model 1 with 5,000 bootstrap samples (Hayes, 2022). This approach is recommended for moderation analysis as it estimates conditional effects across different levels of the moderator and does not rely solely on the statistical significance of individual interaction coefficients.

Table 7 shows conditional effects of SSMS components on SCA at different levels of regulatory compliance. They indicate that the effects of Strategic Safety Management System components on sustainable competitive advantage strengthen as regulatory compliance increases. At mean and high levels of regulatory compliance (+1 SD), the effects of SAMS, SQMS, and SFOM on sustainable competitive advantage are statistically significant, confirming the presence of conditional moderation. These findings demonstrate that regulatory compliance amplifies the competitive value derived from safety management investments.

Table 7
Conditional Effects of SSMS Components on SCA at Values of Regulatory Compliance

SSMS Component	Regulatory Compliance Level	Effect (β)	SE	t	p	LLCI	ULCI
SAMS	Low (-1 SD)	0.314	0.082	3.83	0.061	-0.008	0.636
	Mean	0.579	0.068	8.51	<0.001	0.445	0.713
	High (+1 SD)	0.844	0.091	9.28	<0.001	0.665	1.023
SQMS	Low (-1 SD)	0.255	0.079	3.23	0.074	-0.015	0.525
	Mean	0.639	0.065	9.82	<0.001	0.511	0.767
	High (+1 SD)	1.023	0.088	11.63	<0.001	0.850	1.196

Qualitative Findings Explaining the Moderation

The qualitative phase of this study was designed to provide explanatory insights into the mechanisms through which regulatory compliance influences the relationship between Strategic Safety Management Systems (SSMS) and sustainable competitive advantage (SCA). In line with the explanatory sequential mixed-methods design, qualitative findings are not presented as independent tests of moderation but rather as interpretive evidence that illuminates the conditional effects observed in the quantitative analysis. Thematic analysis of interview data revealed that regulatory compliance operates as a contextual enabler that shapes how safety management practices are internalized and translated into competitive outcomes. Three dominant themes emerged from the analysis.

Regulatory Oversight as an Accountability Mechanism

Respondents consistently emphasized the role of Kenya Civil Aviation Authority (KCAA) audits and surveillance activities in enforcing accountability across organizational levels. Managers noted that regulatory inspections compel organizations to prioritize hazard reporting, documentation accuracy, corrective-action closure, and adherence to maintenance and training schedules. One senior operations manager observed that regulatory audits act as a catalyst for organizational discipline, ensuring that safety practices are implemented consistently rather than selectively. These insights suggest that regulatory oversight strengthens managerial attention to safety systems, thereby creating conditions under which SSMS practices can yield meaningful operational and competitive benefits.

Compliance Maturity and Internalization of Safety Practices

A second theme highlighted differences between symbolic compliance and compliance maturity. Interviewees distinguished organizations that treat regulatory requirements as procedural obligations from those that have internalized compliance into everyday operational routines. In high-compliance environments, safety management systems were described as embedded within strategic planning, resource allocation, and performance monitoring processes. Respondents indicated that such internalization enhances reliability, reduces operational disruptions, and improves stakeholder confidence. This theme provides contextual explanation for the quantitative finding that SSMS components exert stronger effects on sustainable competitive advantage at higher levels of regulatory compliance.

Regulatory Compliance as a Credibility Platform for Competitive Advantage

The third theme emphasized the reputational and market-related implications of regulatory compliance. Participants reported that strong compliance records enhance organizational credibility with passengers, insurers, international partners, and foreign aviation authorities. High compliance maturity was associated with smoother certification processes, fewer operational disruptions, and greater access to international routes and partnerships. Conversely, weak compliance environments were described as limiting the strategic value of safety investments, as safety practices remained largely administrative and failed to translate into tangible competitive differentiation.

Taken together, the qualitative findings complement the quantitative results by illustrating how regulatory compliance conditions the effectiveness of Strategic Safety Management Systems. When compliance maturity is high, regulatory requirements reinforce organizational accountability, facilitate internalization of safety practices, and enhance stakeholder trust, thereby amplifying the competitive value of SSMS investments. In contrast, under low compliance conditions, safety management practices tend to remain procedural, limiting their contribution to sustainable competitive advantage. These insights reinforce the interpretation of regulatory compliance as a conditional institutional factor that shapes the strength of the SSMS–SCA relationship rather than acting as an independent driver of competitive outcomes.

Discussion

The central purpose of this article was to examine the moderating influence of regulatory compliance on the relationship between Strategic Safety Management Systems (SSMS) implementation and sustainable competitive advantage (SCA) in Kenyan aviation companies, as originally formulated in the main document of the doctoral dissertation. The study found that SMS policy adoption is instrumental in the assurance of safety compliance, operational efficiency, and competitive positioning. The study has shown that aviation companies that adopt SMS policies across all departments and conduct regular audits to ensure they meet aviation standards are more likely to enhance their market position. And that SMS policy adoption is a major contributor to sustainable competitive advantage. This finding is supported by Stolzer, Halford, and Goglia (2015), who argue that organizations with well-integrated SMS policies experience enhanced operational reliability, reduced incidents, and improved market reputation. Similarly, Kaspers et al. (2016) noted that airlines implementing comprehensive SMS frameworks have significantly lower accident rates, leading to stronger consumer trust and improved financial performance which may be argued contributes to an airline’s long-term sustainability and profitability.

The study also found that compliance with regulatory requirements is vital in mitigating legal risks, improving operational stability, and improving the market standing of an airline. Aviation companies that are consistently in compliance with aviation regulatory requirements and conduct occasional reviews of their compliance experience minimal disruption and achieve competitive advantage. This aligns with the work of Bellamy et al. (2019), who found that strict regulatory adherence reduces operational disruptions caused by safety breaches or legal penalties. They demonstrated that aviation firms that routinely undergo regulatory audits and compliance reviews experience higher safety ratings, translating into customer loyalty and financial growth. Similarly, Vasigh, Fleming, and Tacker (2018) argue that airlines that proactively comply with aviation safety regulations have a higher likelihood of achieving competitive advantage due to their ability to operate with fewer disruptions and increased consumer confidence. Further, that training and certification compliance enhances the reputation of an organization and ensures that aviation personnel are aligned with the required legal and operational standards.

Compliance with aviation certification standards ensures employees’ competency, reducing safety risks and enhancing investors’ trust. Organizations that align training programs with certification

requirements have higher regulatory approval and market trust. This finding is consistent with the study by Liu, Huang, and Zhang (2019), which found that well-trained personnel are more adept at handling operational risks, reducing human error, and maintaining high safety standards. The research highlighted that organizations investing in regular training programs aligned with aviation certification standards enjoy increased regulatory approval and consumer trust. This finding resonates with Graham and Shaw (2018), who argued that robust regulatory environments drive innovation in safety systems and encourage operational transparency within aviation firms. They assert that government oversight, when properly structured, serves as a catalyst for the institutionalization of proactive safety measures, helping firms achieve long-term sustainability. Additionally, ICAO (2020) has emphasized that government policies aligned with international standards such as ICAO's Global Aviation Safety Plan support the harmonization of safety practices across regions, fostering consistency and trust in airline operations.

The study also revealed that regulatory enforcement mechanisms, such as periodic safety audits, licensing requirements, and penalty structures, moderate the extent to which strategic initiatives like SMS policy adoption, training compliance, and workforce forecasting translate into competitive advantage. In heavily regulated environments, firms that proactively exceed minimum compliance thresholds such as by investing in safety technologies, advanced training, and integrated reporting systems are more likely to achieve and sustain market leadership. This aligns with Vasigh, Fleming, and Tacker (2018), who noted that government oversight acts as both a motivator and a benchmark for strategic alignment, especially in high-risk industries like aviation.

Further that policy stability and regulatory support were also found to influence how effectively human resource planning and safety systems are embedded within organizational processes. Aviation companies operating in jurisdictions with consistent, transparent regulatory regimes are better able to make long-term investments in safety and training infrastructure. As noted by Wensveen (2019), regulatory predictability is a key enabler of strategic planning and innovation in aviation. In contrast, companies exposed to fluctuating or poorly enforced regulations may find it challenging to integrate strategic initiatives fully, resulting in inconsistent performance outcomes.

From a theoretical perspective, the results extend institutional theory beyond the traditional view of regulatory compliance as purely coercive pressure (DiMaggio & Powell, 1983; Scott, 2014). When Kenyan aviation firms move from symbolic or partial compliance to full internalization of KCAA requirements, regulatory compliance ceases to be a cost of doing business and becomes a moderator that significantly enhances the competitive value derived from internal safety management resources (Oliver, 1991; Barney, 1991). This finding is particularly relevant in the African aviation context, where compliance maturity varies widely and where international partners and passengers increasingly use KCAA audit outcomes and safety ratings as proxies for organizational reliability. Practically, the results carry direct implications for both aviation operators and the Kenya Civil Aviation Authority. For airline executives, the message is clear: investments in SSMS components yield substantially higher competitive returns when preceded or accompanied by deliberate efforts to raise regulatory compliance maturity. Firms currently scoring below the mean on compliance would therefore benefit more from targeted audit preparation, documentation improvement, and corrective-action closure than from additional spending on

advanced safety technologies alone. For the KCAA, the significant moderating effect suggests that stricter, more frequent, and more transparent enforcement may serve not only safety objectives but also the broader national interest of building globally competitive Kenyan carriers. Publishing anonymized compliance-performance indices, for example, could create positive reputational pressure that further reinforces the amplification mechanism identified in this study.

Conclusion

Regulatory compliance was identified to play a pivotal role in strengthening the relationship between SMS implementation and sustainable competitive advantage in the aviation industry. The adoption of SMS policies, regular audits, and strict adherence to aviation regulations was noted as being key in enhancing safety compliance, operational efficiency, and overall market positioning. Results further revealed that by consistently meeting regulatory requirements and aligning training programs with certification standards, aviation companies can mitigate legal risks, improve operational stability, and foster investor confidence. The study also concludes that prioritizing regulatory compliance not only ensures adherence to industry best practices but also reinforces long-term competitive advantage in a highly regulated and safety-sensitive sector. The study also concluded that regulatory compliance functions not only as a control mechanism but also as a strategic asset that can differentiate aviation companies in a highly competitive environment.

These results demonstrate that, in the Kenyan aviation industry, regulatory compliance functions as far more than a mandatory requirement for continued operation. When compliance maturity is high, external regulatory pressure from the Kenya Civil Aviation Authority (KCAA) is transformed into an internal culture of accountability and continuous improvement that significantly amplifies the competitive value of safety management investments. When compliance is weak, even well-designed SSMS components tend to remain procedural rather than strategic, yielding limited sustainable advantage. In conclusion, regulatory compliance in Kenyan aviation is not merely a legal obligation but a critical contingency factor that determines whether Strategic Safety Management Systems deliver genuine, sustainable competitive advantage. By achieving high compliance maturity, aviation companies can transform mandated safety practices into a powerful source of market differentiation and long-term superiority.

Recommendations

Aviation company executives and boards should prioritize strengthening regulatory compliance capability as a strategic imperative. Resources devoted to the timely closure of KCAA audit findings, accurate documentation, and effective corrective-action systems are likely to generate greater returns in sustainable competitive advantage than equivalent investments in safety management components without a strong compliance foundation. Additionally, the Kenya Civil Aviation Authority should consider strengthening audit frequency and feedback mechanisms, as rigorous regulatory oversight has been shown to amplify the competitive benefits of safety management practices across the industry. Smaller aviation operators, should first concentrate on achieving and maintaining full regulatory compliance before allocating substantial budgets to advanced safety technologies or extensive training programmes. Future studies should replicate this moderation analysis in other African countries or adopt longitudinal designs to establish

Roba et.al.

whether the amplifying role of regulatory compliance observed in Kenya remains consistent across different institutional and economic contexts.

Funding Statement

This research received no external funding.

Conflict of Interest Statement

The authors declare no conflict of interest.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions

Ali I. Roba: Conceptualization, methodology, data analysis, investigation, writing original draft.

Charity W. Muraguri: Supervision, validation, writing review and editing.

Timothy C. Okech: Methodological guidance, statistical review, writing review and editing.

Ethical Approval

Ethical approval for this study was obtained from the United States International University–Africa Institutional Ethics Review Committee (IERC Approval Reference No. USIU A/IERC/US 363-2024). In addition, a research license was granted by the National Commission for Science, Technology and Innovation (NACOSTI Permit No. NACOSTI/P/24/414466).

Licensing Statement

© 2026 The Author(s). This article is published by *Kabarak Journal of Research & Innovation (KJRI)* under the Creative Commons Attribution 4.0 International (CC BY 4.0) License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

References

Abate, M., Christidis, P., & Purwanto, A. J. (2020). Government support to airlines in the aftermath of the COVID-19 pandemic. *Journal of Air Transport Management*, 89, 101931. <https://doi.org/10.1016/j.jairtraman.2020.101931> (Confirmed)

Abbas, J. (2020). Impact of total quality management on corporate sustainability through the mediating effect of knowledge management. *Journal of Cleaner Production*, 244, 118806. <https://doi.org/10.1016/j.jclepro.2019.118806> (Confirmed)

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108> (Confirmed)

- Camacho, S. (2020). From theory to practice: Operationalizing transformative mixed methods with and for the studied population. *Journal of Mixed Methods Research*, 14(3), 305–335. <https://doi.org/10.1177/1558689819851802> (Confirmed)
- Cardeal, G., Höse, K., Ribeiro, I., & Götze, U. (2020). Sustainable business models–canvas for sustainability, evaluation method, and their application to additive manufacturing in aircraft maintenance. *Sustainability*, 12(21), 9130. <https://doi.org/10.3390/su12219130> (Confirmed)
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160. <https://doi.org/10.2307/2095101> (Confirmed)
- Emani, S. (2024). Flying towards sustainability: The role of leadership in airline operations. *Journal of Airline Operations and Aviation Management*, 3(1), 1–7. <https://doi.org/10.56801/jaoam.v3i1.1>
- Eric, T. N., Semeyutin, A., & Hubbard, N. (2020). Effects of enhanced air connectivity on the Kenyan tourism industry and their likely welfare implications. *Tourism Management*, 78, 104033. <https://doi.org/10.1016/j.tourman.2019.104033> (Confirmed)
- Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139192675>
- Gisario, A., Kazarian, M., Martina, F., & Mehrpouya, M. (2019). Metal additive manufacturing in the commercial aviation industry: A review. *Journal of Manufacturing Systems*, 53, 124–149. <https://doi.org/10.1016/j.jmsy.2019.08.001> (Confirmed)
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). Guilford Press. <https://www.guilford.com/books/Introduction-to-Mediation-Moderation-and-Conditional-Process-Analysis/Andrew-Hayes/9781462549030>
- International Air Transport Association. (2025). *Economic benefits of aviation in Kenya*. IATA. <https://www.iata.org/en/publications/economics/>
- International Civil Aviation Organization. (2020). *Global aviation safety plan (GASP)*. <https://www.icao.int/safety/GASP> (Confirmed)

Judi, J. K. (2018). *Effect of civil aviation regulations on the growth of the domestic airline industry in Kenya* [Master's thesis, University of Nairobi]. University of Nairobi Repository. <http://erepository.uonbi.ac.ke/>

Kenya Law. (2018). *Civil aviation (safety management) regulations, 2018*. Government of Kenya. http://kenyalaw.org/kl/fileadmin/pdfdownloads/LegalNotices/2018/LN191_2018.pdf (Confirmed)

Kikechi, B. M. (2020). *Evaluation of effectiveness of non-destructive testing techniques for inspection of critical aircraft components: A case of the Kenyan aviation industry* [Doctoral dissertation, University of Nairobi]. University of Nairobi Repository. <http://erepository.uonbi.ac.ke/>

Kimotho, F. (2019). *Factors influencing air safety performance in Kenya: A case of Kenya Airways Limited* [Master's thesis, University of Nairobi]. University of Nairobi Repository. <http://erepository.uonbi.ac.ke/>

Mbugua, T. K., & Nyambura, L. M. (2023). Integrating customer feedback in quality management systems in the Kenyan aviation sector. *Journal of Service Quality and Customer Experience*, 5(2), 60–75. <https://www.ajol.info/>

Molchanova, K. M., Trushkina, N. V., & Katerna, O. K. (2020). Digital platforms and their application in the aviation industry. *Intellectualization of Logistics and Supply Chain Management*, 3, 83–98. <https://smart-scm.com.ua/index.php/journal/article/view/52>

Möller, K., Nenonen, S., & Storbacka, K. (2020). Networks, ecosystems, fields, market systems? Making sense of the business environment. *Industrial Marketing Management*, 90, 380–399. <https://doi.org/10.1016/j.indmarman.2020.07.005> (Confirmed)

Mtigwe, B. (2023). *Ethiopian Airlines: Lessons in 21st-century competitive strategy*. SAGE Publications. <https://sk.sagepub.com/cases/ethiopian-airlines-lessons-in-21st-century-competitive-strategy>

Mwikya, J., Sabina, K., & Mwaura, J. (2018). Effect of safety management systems on performance of Kenyan aviation firms. *International Journal of Economics, Commerce and Management*, 6(1), 162–178. <http://ijecm.co.uk/wp-content/uploads/2018/01/6111.pdf>

Nasaj, M. I., & Al-Marri, K. (2020). The influence of soft and hard quality management on innovation performance in UAE service sector. In *Proceedings of the II International Triple Helix Summit 2* (pp. 307–321). Springer. https://doi.org/10.1007/978-3-030-43953-8_24

Newman, C., Rand, J., Tarp, F., & Trifkovic, N. (2020). Corporate social responsibility in a competitive business environment. *Journal of Development Studies*, 56(8), 1455–1472. <https://doi.org/10.1080/00220388.2019.1694143> (Confirmed)

- Njeru, E. W. (2018). *Factors influencing aviation safety: The case of Kenya Civil Aviation Authority* [Master's thesis, University of Nairobi]. University of Nairobi Repository. <http://erepository.uonbi.ac.ke/>
- Njeru, L. M. (2019). Effect of safety management system on performance of Kenyan aviation firms. *International Journal of Economics, Commerce and Management*, 7(1), 1–15. <http://ijecm.co.uk/wp-content/uploads/2019/01/711.pdf>
- Oliver, C. (1991). Strategic responses to institutional processes. *Academy of Management Review*, 16(1), 145–179. <https://doi.org/10.2307/258610> (Confirmed)
- Ong'esa, S. O., & Kinyua, G. M. (2020). Effect of operational capability on performance of Air Kenya Express Limited in Nairobi City County, Kenya. *International Journal of Managerial Studies and Research*, 8(9), 1–11. <https://doi.org/10.20431/2349-0349.0809001> (Confirmed)
- Pereira, B., Lohmann, G., & Houghton, L. (2021). The role of collaboration in innovation and value creation in the aviation industry. *Journal of Creating Value*, 7(1), 44–59. <https://doi.org/10.1177/2394964320961301> (Confirmed)
- Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. Free Press. <https://www.simonandschuster.com/books/Competitive-Advantage/Michael-E-Porter/9780684841465>
- Roba, A. I. (2025). *Influence of strategic safety management systems on sustainable competitive advantage in Kenyan aviation companies* [Doctoral dissertation, United States International University–Africa]. USIU-Africa Repository. <http://erepo.usiu.ac.ke/>
- Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). SAGE Publications. <https://doi.org/10.4135/9781452243221>
- Stolzer, A. J., Halford, C. D., & Goglia, J. J. (2019). *Implementing safety management systems in aviation*. Routledge. <https://doi.org/10.4324/9781315588193>
- Stolzer, A. J., Sumwalt, R. L., & Goglia, J. J. (2023). *Safety management systems in aviation* (3rd ed.). CRC Press. <https://doi.org/10.1201/9781003244615>
- Thendu, B. K., Kariuki, P., Muturi, W., & Wanjohi, P. (2023). *Strategic firm-level dimensions and performance of safety management system in the aviation industry in Kenya* [Doctoral dissertation, Jomo Kenyatta University of Agriculture and Technology]. JKUAT Institutional Repository. <http://ir.jkuat.ac.ke/>
- Wanjala, J. M., & Makori, D. K. (2022). Change management and operational efficiency in commercial aviation: A quality systems approach. *East African Journal of Operations and Aviation Management*, 6(1), 45–62. <https://ejournals.org/>