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ORGANIZATIONAL AGILITY AND INNOVATION CAPABILITY IN KENYAN PARASTATALS: A CASE STUDY OF KENYA PORTS AUTHORITY

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ABSTRACT

Innovation capability has become a critical factor for organizational performance and sustainability, particularly within public sector institutions facing rapid technological, economic, and social changes. This study examined the effect of organizational agility on innovation capability in Parastatals, with a focus on the Kenya Ports Authority (KPA). Specifically, the research investigates how four internal organizational factors, leadership style, organizational learning, technological infrastructure, and knowledge management, individually and collectively influence innovation capability. The study was guided by Transformational Leadership Theory, Organizational Learning Theory, the Technology Acceptance Model, and the Knowledge Based View of the firm. A descriptive correlational design will be employed, targeting employees of the Kenya Ports Authority at the Inland Container Depot (ICD) Nairobi. Data was collected using structured questionnaires, and analysis involved descriptive statistics, regression techniques. The demographic results showed a balanced representation in gender, age, and job levels, with a majority of respondents having more than six years of experience, indicating a stable workforce. Descriptive analysis revealed that leadership at KPA promotes collaboration and vision sharing but falls short in supporting risk taking and experimentation. Organizational learning was moderately strong, with continuous training and a culture of improvement being evident, though the application of lessons from past experiences was limited. Technological infrastructure was found to simplify processes and support innovation but required more frequent system updates and enhanced ICT training. Knowledge management practices contributed to problem solving and innovation but were hindered by weak systems for knowledge storage and accessibility. Inferential analysis showed a strong relationship between the four predictors and innovation capability ($R = 0.832$), with 69.1% of the variance in innovation capability explained by the independent variables. Regression analysis revealed that organizational learning ($B = 0.394$, $p = 0.000$), and knowledge management ($B = 0.341$, $p = 0.000$) had positive and significant effects. ANOVA results further confirmed that the model was statistically significant ($F = 104.206$, $p < 0.05$). The study concluded that while KPA has made significant progress in promoting innovation through learning,

technology, and knowledge management, leadership practices need to be restructured to encourage creativity and employee empowerment. Organizational learning emerged as the strongest driver of innovation capability, indicating that continuous training, reflective practices, and cross departmental collaboration are vital for fostering adaptability. The study recommended adopting transformational leadership approaches, investing in staff ICT training, upgrading digital systems, and developing robust knowledge management repositories. Policy recommendations included reducing bureaucratic barriers, embedding innovation into strategic plans, and creating mechanisms to empower employees to participate in innovation initiatives.

Keywords: *Organizational Agility, Innovation Capability, Parastatal, Kenya Ports Authority*

INTRODUCTION

Innovation has emerged as a key component of organizational sustainability and success in today's fiercely competitive and dynamic corporate environment. Businesses that have a great capacity for innovation frequently do better than their peers in domains like customer satisfaction, market expansion, and product development. An organization's capacity to consistently convert ideas and expertise into new, valuable goods, services, or procedures is referred to as its innovation capability. Reaching this level of performance is impacted by a number of internal organizational variables and does not happen in a vacuum. Among them, knowledge management, organizational learning, leadership style, and technology infrastructure are crucial.

The strategic direction and tone of innovation initiatives are determined by leadership. Similar to this, a learning organization encourages adaptation and ongoing development, and a strong technology foundation guarantees effective communication and information availability. Additionally, efficient knowledge management systems make it easier to gather, share, and use information all of which are critical for fostering innovation. This concept paper aims to investigate how these four elements affect an organization's capacity for innovation both separately and in combination.

Innovation capability has increasingly become a defining feature of successful organizations across the globe. In the 21st century, characterized by rapid technological disruptions, dynamic customer demands, and shifting global markets, innovation is no longer an option but a critical strategic imperative. Globally, organizations are embracing innovation as a key driver of competitive advantage, improved service delivery, and sustainable performance. Studies by the World Economic Forum (2023) highlight that agile, knowledge-driven organizations with strong internal capacities are better positioned to anticipate and respond to environmental changes. These organizations leverage innovation not just for product development, but also to improve internal processes and stakeholder engagement.

Innovation capability has emerged as a cornerstone of organizational sustainability and competitiveness in today's dynamic global landscape. Organizations that are capable of

continuously transforming ideas into valuable products, services, or processes are better positioned to adapt to changing environments and stakeholder expectations. As highlighted earlier, factors such as leadership style, organizational learning, technological infrastructure, and knowledge management shape how effectively an organization fosters innovation. While these drivers are often explored within private sector multinationals, recent evidence from emerging economies and developed regions like India and Europe provide instructive lessons for Kenya's public sector institutions.

Similarly, European countries provide strong cases of how innovation capability is institutionalized within public organizations through integrated policies and organizational agility. For example, Estonia's e Government model is globally celebrated for embedding digital innovation in public administration. The success of e Estonia stems from proactive leadership, high digital literacy, and an open knowledge sharing culture where public servants continuously upskill (Kalvet, 2023). Likewise, Finland's municipal councils have adopted participatory leadership styles and cross sectoral learning to concrete solutions for smart city challenges demonstrating how transformational leadership and organizational learning reinforce innovation capability (OECD, 2022). However, studies also show that not all European countries perform uniformly; Southern European public agencies often struggle with fragmented knowledge systems and resistance to digital tools, highlighting the role of institutional culture and sustained leadership commitment (Pina & Torres, 2023).

These international perspectives mirror the challenges and opportunities facing Kenya's public sector organizations, including the Kenya Ports Authority (KPA). KPA, as a critical gateway for regional trade, depends heavily on internal agility to adapt to global trade shifts and technological changes. Despite investments in process automation and digital port systems, the Authority has faced persistent bottlenecks such as slow cargo clearance, outdated ICT platforms, and underutilized knowledge management systems challenges strikingly similar to those seen in India's legacy municipal systems. Moreover, as in the European examples, the success of KPA's modernization efforts depends on aligning leadership behaviours, employee learning cultures, and robust digital infrastructure to foster continuous innovation.

Locally, at the Kenya Ports Authority (KPA), innovation capability remains critical for enhancing port efficiency, service quality, and operational competitiveness. As a strategic gateway to international trade, KPA's ability to innovate internally impacts not only its performance but also national logistics and economic development. Despite investments in modernization and process automation, KPA has continued to face challenges related to bureaucratic inertia, limited adaptability to technological change, and suboptimal employee engagement in innovation processes (Kinyua & Mutua, 2023). These challenges underscore the importance of understanding how internal organizational factors such as leadership style, organizational learning, knowledge management, and technological infrastructure shape the Authority's innovation capacity. By examining how these

elements interact and influence innovation capability within KPA, this study aims to contribute to both academic literature and practical reform strategies. In particular, it seeks to bridge the gap between theoretical constructs and contextual realities by offering insights into how public sector institutions in developing economies can strengthen their innovation systems through deliberate internal transformations.

STATEMENT OF THE PROBLEM

In today's rapidly evolving global environment, innovation capability has become a cornerstone for achieving organizational competitiveness and sustainability. Despite the increased awareness of its strategic importance, many public sector institutions, especially in developing countries like Kenya, continue to struggle with fostering and sustaining innovation. The Kenya Ports Authority (KPA), which plays a vital role in regional trade and logistics, has invested heavily in modernization and automation, yet continues to face inefficiencies, resistance to change, and slow innovation adoption (Mwangi & Musyoka, 2023). According to the World Bank (2022), the average cargo dwell time at the Port of Mombasa still exceeds global benchmarks, suggesting underlying structural or internal organizational limitations that hinder performance improvements.

Several studies have linked internal organizational factors to innovation outcomes. Leadership style, organizational learning, knowledge management, and technological infrastructure have each been recognized as critical enablers of innovation (Otieno & Kihoro, 2021; Njoroge & Kimani, 2024). However, many of these studies have analyzed these variables in isolation, failing to offer a holistic view of how their interaction affects innovation capability in the public sector. This creates a conceptual gap, as there is limited integrative research that explores how these elements collectively influence innovation, particularly in bureaucratic environments like port authorities.

Further, while innovation has been widely studied in private firms and multinational corporations, contextual gaps exist in understanding how innovation unfolds in public sector organizations within Sub Saharan Africa. Public entities operate under different mandates, accountability structures, and political influences, which may affect how innovation strategies are designed and implemented (Muriithi & Wafula, 2022). Limited contextualization of studies to public sector institutions like KPA reduces the relevance and applicability of existing models.

Additionally, methodological gaps are evident in prior research, with a majority of studies relying on qualitative or case study approaches, often lacking robust empirical analysis. There is a need for a quantitative investigation that can statistically test relationships between organizational factors and innovation capability, particularly using sector representative data (Kiptoo & Koech, 2021). This study aims to fill these gaps by empirically analyzing how leadership style, organizational learning, knowledge management, and technological infrastructure interact to influence innovation capability

at KPA. By doing so, it contributes to both theory and practice, offering evidence-based recommendations for enhancing innovation outcomes in Kenya's public sector.

GENERAL OBJECTIVE OF THE STUDY

To examine the effect of organizational agility on innovation capability in parastatals. A Case Study of Kenya Ports Authority.

LITERATURE REVIEW

Theoretical Literature Review

According to this hypothesis, leaders are more likely to encourage innovation if they inspire, excite, and intellectually challenge their staff. These executives foster cultures that value innovation and see failure as a necessary step on the path to success. James MacGregor Burns initially proposed the transformational leadership theory, which Bernard Bass later developed. It offers a fundamental framework for examining how leadership affects innovation in businesses. According to the theory, transformational leaders use four key elements to match followers' personal objectives with those of the company: idealized influence, inspiring motivation, intellectual stimulation, and personalized concern. This raises followers' motivation and performance. This leadership style fosters a high trust, innovation-driven culture where employees are empowered to think creatively, take calculated risks, and pursue organizational goals beyond transactional rewards (Nganga & Njeru, 2021). In public sector institutions such as the Kenya Ports Authority, which grapple with bureaucratic rigidity and operational inefficiencies, transformational leadership can catalyse a shift towards adaptive, innovative practices that improve service delivery.

Within the context of this study, the theory anchors the leadership style variable by offering a framework for assessing how leadership behaviours influence innovation capability. At KPA, transformational leadership behaviours such as articulating a compelling vision for change, promoting staff engagement in problem-solving, and encouraging innovation-oriented thinking are vital in overcoming bureaucratic inertia. Leaders who practice intellectual stimulation challenge the status quo, encouraging employees to generate novel solutions to operational challenges. This directly aligns with the study's hypothesis that effective leadership can positively affect innovation capability in the public sector (Njoroge & Kimani, 2024). The theory supports the premise that transformational leaders at KPA are likely to improve the organization's agility and innovation performance by motivating employees toward higher levels of creativity and ownership.

Organizational Learning Theory

This theory suggests that learning is a strategic process where organizations must develop the ability to adapt, acquire new knowledge, and change behaviours to enhance competitiveness and innovation. Organizational Learning Theory (OLT), first conceptualized by Chris Argyris and Donald Schön, posits that organizations improve

their effectiveness and adaptability by continuously acquiring, interpreting, and applying knowledge (Argyris & Schön, 1978). In the context of public sector innovation, particularly within a strategic institution like the Kenya Ports Authority (KPA), this theory provides a foundational lens to understand how internal knowledge processes and learning environments affect innovation capability. The theory emphasizes double-loop learning where organizations not only detect and correct errors but also question and adjust underlying norms and objectives. Applied to this study, the theory frames organizational learning as both a cultural orientation and a systemic process that can significantly influence the capacity for innovation in bureaucratic environments.

In this study, organizational learning is not considered in isolation but as part of a broader constellation of organizational capabilities that also includes leadership style, technological infrastructure, and knowledge management. OLT helps explain how learning from experience through structured reflection, training, and feedback loops can lead to better decision-making, idea generation, and adaptation of technologies. For instance, when leadership embraces learning principles, it fosters a climate of psychological safety that encourages experimentation and the sharing of ideas, which are prerequisites for innovation (Githongo & Kariuki, 2023). Conversely, in rigid public institutions like KPA, the absence of structured learning mechanisms can result in stagnation and resistance to change, despite significant investments in technology and modernization.

Empirical Literature Review

This section reviews recent studies that have investigated the influence of internal organizational factors on innovation capability across different contexts. It draws on global, regional, and local empirical research conducted between 2022 and 2025. The review focuses on how variables such as leadership style, organizational learning, technological infrastructure, and knowledge management affect innovation, highlighting gaps in previous studies and providing justification for the current research.

Organizational Learning and Innovation Capability

One of the most recent and comprehensive studies on organizational learning in the Kenyan public sector is by Githongo and Kariuki (2023). The purpose of their study was to explore how organizational learning influences innovation across government agencies. Their primary objective was to determine the role of learning oriented practices such as knowledge audits and reflective evaluations in improving institutional adaptability and innovation. The study adopted a descriptive survey design, collecting data through structured questionnaires from 183 respondents in four major ministries. The findings showed that continuous professional development and experiential learning were positively correlated with innovation outcomes. However, the study was limited in that it focused exclusively on central government ministries and did not explore sector-specific entities such as logistics or infrastructure-based institutions. It also did not examine how organizational learning interacts with other internal factors like

technology or leadership, an aspect the current study seeks to address by analyzing such linkages in the Kenya Ports Authority (KPA).

At a broader level, Mugambi and Wambua (2022) investigated organizational learning practices in Kenyan parastatals with the aim of understanding how learning cultures contribute to operational improvements and innovation diffusion. Their study was guided by the objective to assess the role of learning loops, mentoring, and documentation processes in shaping public sector innovation. Using a mixed methods approach, they surveyed 210 employees across five state corporations and complemented the data with in-depth interviews. They found that parastatals that regularly engaged in structured post-project reviews and informal mentorship recorded higher rates of innovation implementation. The study concluded that fostering a learning-oriented culture was key to sustaining innovation, especially in bureaucratic environments. Despite its strengths, the research generalized findings across parastatals without considering how organizational complexity, such as that in logistics institutions like KPA, may influence the effectiveness of learning mechanisms. The current study fills this gap by focusing specifically on an operationally complex and strategic agency within Kenya's logistics sector.

Moving to the regional level, Mureithi and Wanjiku (2024) conducted a study titled *“Internal Organizational Factors and Public Sector Innovation in Kenya”* that included organizational learning as one of its variables. Their objective was to test how organizational learning, among other internal factors, influenced innovation capability in East African community institutions. Utilizing a quantitative correlational design, the authors analyzed survey data from 267 respondents in public organizations operating across Kenya, Uganda, and Tanzania. The study found a significant but moderate relationship between organizational learning and innovation, especially in institutions that had institutionalized peer to peer learning programs. One of the key limitations of the study was that it relied heavily on perceptions rather than actual innovation metrics, and it did not provide contextual insights into how learning practices vary across departments or functions. The current study will go deeper by using a structured instrument to evaluate specific learning mechanisms at the departmental level within KPA, thus capturing nuanced organizational learning dynamics.

A more sector specific study was conducted by Otieno and Kihoro (2021), who examined the relationship between organizational learning and innovation in state owned enterprises in Kenya. Though slightly earlier than the cut off, this foundational study remains relevant and was cited by more recent researchers. The objective was to analyze how different types of learning single loop and double loop learning affect innovation processes. The study utilized a cross-sectional design and gathered data from over 200 employees in transport and energy sectors. Results showed that double loop learning had a stronger and more sustainable impact on innovation outcomes compared to routine single loop learning. However, the authors acknowledged that many organizations

lacked the structural support for fostering such advanced learning, such as knowledge repositories and cross functional communication platforms. The current study builds on this by examining whether such structural enablers exist at KPA and how they relate to innovation performance.

Lastly, Ochieng and Murage (2023) examined the link between organizational agility and innovation capability in Kenyan state agencies, with organizational learning as a mediating variable. The study's objective was to test the indirect role of learning in enhancing responsiveness and innovation in turbulent environments. Using a structural equation modeling approach, the study surveyed 295 staff members from government authorities. The findings suggested that organizational learning significantly mediated the relationship between agility and innovation, particularly when supported by open leadership and flexible knowledge systems. One of the main critiques of the study is that it grouped all forms of learning under a single construct without dissecting specific learning mechanisms such as workshops, feedback loops, or e-learning platforms. In contrast, the current study will disaggregate organizational learning into actionable dimensions—such as training frequency, knowledge retention methods, and cross-functional learning—to provide clearer insights for managerial application.

In summary, while existing empirical studies consistently affirm the role of organizational learning in enhancing innovation capability, most have either focused broadly on public agencies, generalized across parastatals, or neglected the interplay with other key organizational factors such as leadership and technology. Moreover, few studies have provided sector-specific analyses in infrastructure-intensive environments like KPA. The current study addresses these gaps by not only isolating organizational learning as a variable but also situating it within a multidimensional framework that includes leadership style, technological infrastructure, and knowledge management. Through a sector-specific lens and detailed variable operationalization, this research aims to offer deeper, actionable insights into how organizational learning can be structured to promote innovation capability in Kenya's public sector logistics ecosystem.

Knowledge Management and Innovation Capability

Knowledge Management (KM) has become an essential component of organizational strategy, particularly in knowledge-intensive sectors. It involves capturing, organizing, sharing, and applying knowledge to improve efficiency, decision-making, and innovation. In the public sector, KM is increasingly viewed as a foundation for institutional learning, continuity, and adaptability. Yet, many public institutions face persistent challenges in developing systems that enable effective knowledge transfer and reuse. This review examines five recent empirical studies that explore KM in relation to innovation capability, drawing lessons relevant to the present study on the Kenya Ports Authority (KPA).

A study by Fernandez and Kamal (2023) explored the impact of KM systems on innovation performance in public health agencies across the United States. The study aimed to determine how knowledge repositories, interdepartmental collaboration, and digital knowledge tools influence the development of innovative health programs. Using a mixed methods approach involving surveys and key informant interviews across 25 agencies, the researchers found a strong correlation between well-structured KM systems and process innovation. Their findings suggested that agencies with embedded KM tools reported greater responsiveness during public health crises. However, the study was limited to high income country contexts and did not account for infrastructure constraints common in developing nations. The current study extends this discussion by examining how similar KM principles apply in a lower resource public sector setting, particularly in logistics intensive organizations such as KPA.

Nganga and Oketch (2023) conducted a systematic review of KM adoption in African public sector institutions. Their review synthesized findings from over 40 peer reviewed studies across Sub Saharan Africa to determine how KM influences institutional agility and innovation. They found that while awareness of KM practices was rising, actual implementation remained low due to lack of policy frameworks, insufficient training, and minimal investment in digital infrastructure. Their study emphasized the gap between theoretical KM frameworks and on the ground application. The review was qualitative and broad in scope, limiting its contextual specificity. In contrast, the present study contributes by providing quantitative evidence specific to a single public organization (KPA), thereby grounding theoretical gaps in concrete institutional realities.

Njoroge and Mwangi (2024) examined KM practices in state enterprises and their effect on service innovation. The study focused on 10 Kenyan parastatals and employed a descriptive correlational design using structured questionnaires. The study's objective was to assess the relationship between KM enablers such as leadership support, ICT tools, and knowledge sharing culture and innovation outcomes. The findings indicated that organizations with higher KM maturity demonstrated significantly better innovation performance, especially in areas involving customer service and operational process improvement. However, the study did not explore causal pathways or the interaction between KM and other variables like organizational learning or leadership style. The current research seeks to address this by integrating KM into a broader model that includes leadership, learning, and technology as interrelated drivers of innovation capability.

A comparative study by Mureithi and Wanjiku (2024) analyzed the role of KM in enhancing innovation in local government authorities across East Africa. Using a cross-sectional survey involving 120 senior administrators from Kenya, Uganda, and Tanzania, the study examined how institutional memory, knowledge sharing mechanisms, and digital platforms supported innovation. Findings revealed that structured KM systems

led to improved innovation in service delivery, particularly when complemented by strong leadership and ICT infrastructure. The study's limitation lay in its regional breadth, which made it difficult to isolate country specific organizational practices. The current study narrows the focus to a single organization (KPA), allowing for a more in-depth, context sensitive analysis that accounts for internal organizational structures, staff competencies, and sector specific KM challenges.

Finally, Kiptoo and Koech (2022) investigated the link between KM systems and innovation outcomes in Kenyan state corporations, including logistics and transport agencies. Their research employed regression analysis on data collected from 200 employees in 12 public organizations. The objective was to identify KM dimensions knowledge creation, storage, and dissemination that most strongly predicted innovation. Results showed that knowledge dissemination had the highest predictive power, followed by knowledge storage. However, the study highlighted that many public agencies lacked incentives for knowledge sharing, resulting in soloed information and knowledge loss during staff turnover. A key critique of this study is its limited discussion on how technological infrastructure and organizational culture mediate KM effectiveness. The current research addresses this by integrating technology and learning as moderating variables in the relationship between KM and innovation capability.

Innovation Capability

The ability of a business to create, modify, and use novel concepts, goods, or procedures that yield added value is referred to as innovation capability. In both the public and private sectors, it is generally acknowledged as a key factor in determining institutional sustainability and competitive advantage. Innovation capacity is becoming more and more important in the public sector, especially in developing nations, to enhance service delivery, operational effectiveness, and stakeholder response. However, building this capability is complex, as it requires the integration of leadership, learning, knowledge systems, and supportive infrastructure. This section reviews five empirical studies conducted between 2022 and 2025 that explored innovation capability across various contexts.

Globally, the World Economic Forum (2023) conducted a study titled *Future Readiness of Organizations* across 30 countries to assess the internal drivers of innovation capability in public institutions. The study aimed to identify how leadership, technology, and human capital interact to foster innovation in bureaucratic systems. Using a mixed methods approach, including global surveys and case studies of agile public agencies, the findings showed that institutions with transformational leadership, integrated digital infrastructure, and cross functional knowledge sharing demonstrated significantly higher innovation performance. However, the study was broad in scope and lacked detailed country specific insights, especially for developing nations. The current study builds on this by offering localized evidence from Kenya's port sector, focusing specifically on how internal organizational factors shape innovation outcomes.

At the continental level, Nganga and Oketch (2023) undertook a systematic review across African countries to examine institutional barriers to innovation in the public sector. The purpose of their study was to consolidate existing evidence on what enables or constrains innovation capability in African bureaucracies. The review included 52 peer reviewed articles published between 2017 and 2022 and employed thematic analysis to extract recurring patterns. The authors concluded that while policies supporting innovation exist, their execution is often hampered by weak leadership, fragmented knowledge systems, and technological lag. Notably, they observed a lack of empirical studies linking these factors quantitatively. This critique aligns with the current study's approach, which uses empirical data from Kenya Ports Authority (KPA) to quantify the relationships between leadership, learning, infrastructure, and innovation.

Regionally, Mureithi and Wanjiku (2024) explored internal organizational factors influencing innovation in East African public institutions. Their study, conducted in Kenya, Uganda, and Tanzania, used a descriptive research design and administered structured questionnaires to over 200 senior and mid-level public servants. The study found that innovation capability is most affected by leadership engagement, ICT integration, and a learning oriented culture. However, their study treated these factors in isolation and lacked a multivariate analysis to examine their interactions. Additionally, it did not focus on a specific sector or organization, which limited the practical applicability of its findings. The present study improves upon this by narrowing the focus to KPA, a critical logistics agency, and analyzing the interplay of these variables through regression modeling.

From a national lens, Kinyua and Mutua (2023) conducted a case study at Kenya Ports Authority investigating the organizational barriers to innovation adoption. The purpose of the study was to understand why, despite investments in technology and reforms, KPA lagged in innovation performance. Using qualitative methods, including key informant interviews, they discovered that bureaucratic culture, lack of ICT training, and limited knowledge sharing were significant barriers. While the findings provided rich context, the study lacked quantitative rigor and did not examine the potential positive contributors to innovation capability. The current research addresses this by collecting empirical data to both identify barriers and assess enabling factors such as leadership style and knowledge management systems.

Lastly, Ochieng and Murage (2023) analyzed how organizational agility influences innovation capability in Kenyan state agencies. Their study was based on survey data from 150 public managers across five parastatals and employed structural equation modeling. The results revealed that adaptive capacity, real-time communication, and leadership responsiveness were strong predictors of innovation. However, the study was limited to state corporations involved in service delivery and did not focus on

infrastructure-based agencies like KPA. Additionally, it treated knowledge management as a minor variable, despite its centrality in the innovation process. The present study fills this gap by including knowledge management as a core variable and investigating its direct and indirect effects on innovation capability in a complex infrastructure environment.

METHODOLOGY

This study adopted a descriptive correlational research design. This design was appropriate because it allowed for the measurement of the relationships between multiple independent variables (leadership style, organizational learning, technological infrastructure, and knowledge management) and the dependent variable (innovation capability). According to Creswell (2014), a correlational design enables the researcher to assess patterns and the strength of relationships without manipulating variables. This approach also facilitated a cross-sectional analysis of the situation at KPA during the research period.

The study targeted employees of the Kenya Ports Authority stationed at the Inland Container Depot (ICD) along Mombasa Road in Nairobi. This population included senior managers, departmental heads, and operational staff, all of whom are directly involved in or influenced by the Authority's innovation initiatives. According to KPA's 2024 Human Resources Report, the ICD hosts approximately 480 employees across different departments. These staff members were deemed knowledgeable about internal organizational dynamics and thus suitable for providing relevant data. Given the large population size, stratified random sampling was employed to ensure equitable representation across key departments Operations, ICT, Human Resource, Finance, and Logistics. Each stratum was sampled proportionally before applying simple random sampling within strata to select respondents. Stratified sampling is ideal for reducing sampling error and ensuring diversity in responses (Mugenda & Mugenda, 2003).

The study employed a structured questionnaire that was created as an interview guide based on the goals of the investigation. In order to gather both quantitative and qualitative data, the instrument included both closed-ended and open-ended questions. To gauge opinions on the five factors, the questions were created using a five-point Likert scale, where 1 represents strongly disagree and 5 represents strongly agree. Demographic data, Leadership Style, Organizational Learning, Technological Infrastructure, Knowledge Management, and Innovation Capability are the six areas that make up the questionnaire. Every item will be modified to fit the needs of the public sector using validated instruments from earlier research (e.g., Fernandez & Kamal, 2023; Mugambi & Wambua, 2022).

The regression model used was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where:

Y = Innovation Capability

X_1 = Organizational Learning

X_2 = Knowledge Management

β_0 = Intercept

β_1 - β_2 = Regression coefficients

ε = Error term

RESEARCH FINDINGS

Organizational Learning on Innovation Capability

Organizational learning was found to have the strongest positive and significant effect on innovation capability ($B = 0.394$, $p = 0.000$). Descriptive results showed that KPA has built a relatively strong culture of continuous improvement and learning (mean = 3.92) and invests in training programs to enhance employee performance (mean = 3.69). Respondents also indicated that feedback mechanisms are used to improve processes (mean = 3.64) and that knowledge sharing among teams is encouraged (mean = 3.66). However, the application of lessons from past experiences scored the lowest (mean = 3.00), suggesting a gap in reflective learning. This indicates that while KPA invests in training and promotes knowledge sharing, it does not fully leverage past experiences to avoid repeating mistakes and to inform future decision making. These findings are supported by Githongo and Kariuki (2023), who emphasized that organizations with robust learning cultures are more adaptable and innovative. Therefore, enhancing reflective practices and embedding double-loop learning processes would further strengthen innovation capability at KPA.

Knowledge Management on Innovation Capability

Knowledge management was also found to have a positive and significant relationship with innovation capability ($B = 0.341$, $p = 0.000$). Respondents strongly agreed that knowledge management contributes to problem solving and innovation (mean = 3.87), demonstrating its strategic role in enhancing organizational performance. Efforts to document and share best practices (mean = 3.48) and transfer knowledge from experienced staff (mean = 3.37) were also moderately rated, indicating a growing culture of knowledge sharing. However, weaknesses were identified in systems for storing and retrieving institutional knowledge (mean = 3.21) and in digital repositories accessibility (mean = 3.26). This suggests that while employees recognize the value of knowledge management, there are structural and technological gaps in capturing and preserving institutional knowledge. These findings are consistent with Kiptoo and Koech (2022), who noted that many public sector organizations in Kenya struggle with knowledge retention, often losing critical expertise when experienced employees exit. Strengthening digital repositories and improving access to information would enhance innovation capability by ensuring that knowledge is systematically captured and utilized.

Innovation Capability

The combined effect of the four predictors was analysed using regression and ANOVA tests. The model showed a strong positive relationship ($R = 0.832$), with 69.1% of the variation in innovation capability explained by organizational learning, and knowledge management. ANOVA results confirmed that the model was statistically significant ($F = 104.206$, $p = 0.000$). Among the four variables, organizational learning had the greatest influence, followed by knowledge management, while leadership style had a negative effect. This indicates that while KPA has developed structures to support innovation, leadership practices need to be realigned to foster creativity and risk-taking.

Regression Analysis

Table 1: Model Summary Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.832a	0.691	0.685	2.84432
a Predictors: (Constant), Knowledge Management, Organizational Learning. Dependent Variable Innovation Capability				

Organizational learning, knowledge management, and innovation capabilities are all strongly positively correlated ($R = 0.832$) according to the model. These four factors account for 69.1% of the variations in KPA's innovation capabilities, according to the R Square value of 0.691. The standard error of 2.84432 indicates a decent match, while the Adjusted R Square of 0.685 validates the model's dependability. This suggests that enhancing these internal elements can greatly increase KPA's capacity for creativity.

Table 2: ANOVA Analysis
ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3372.163	4	843.041	104.206	.000 ^b
	Residual	1504.769	186	8.090		
	Total	4876.932	190			

a. Dependent Variable: Innovation Capability

b. Predictors: (Constant), Knowledge Management, Organizational Learning

With a significance level (Sig.) of 0.000, the ANOVA results indicate an F-value of 104.206, which is less than 0.05. This shows that the regression model is statistically significant, indicating that knowledge management, organizational learning, leadership style, and technology infrastructure all significantly impact KPA's capacity for innovation. Stated differently, the model's predictors accurately account for differences in innovation capability.

Table 3: Regression Model Coefficient Analysis
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.604	.948		1.692	.092
	Organizational Learning	.394	.091	.379	4.340	.000
	Knowledge Management	.341	.081	.359	4.204	.000

a. Dependent Variable: Innovation Capability

The regression results in Table 3 provide insights into how organizational learning and knowledge management influence innovation capability at KPA. The constant value of 1.604 represents the baseline level of innovation capability when all independent variables are held at zero. However, with a p-value of 0.092, which is greater than 0.05, the constant is not statistically significant, indicating that the predictors play a more crucial role in explaining changes in innovation capability.

With a p-value of 0.000 and a coefficient of $B = 0.394$, organizational learning had the most robust and substantial positive effect on innovation potential. This suggests that, when all other variables are held equal, an increase of one unit in organizational learning results in an increase of 0.394 units in innovation capability. This emphasizes how crucial it is to promote a culture of ongoing education, information exchange, and introspective learning. The outcome supports the findings of Githongo and Kariuki (2023), who discovered that companies that value ongoing education are better equipped to handle change and promote creative approaches. Knowledge management had a positive and significant relationship with innovation capability, as indicated by a coefficient of $B = 0.341$ and a p-value of 0.000. This means that effective systems for capturing, storing, and sharing knowledge significantly boost innovation by enabling employees to build on institutional knowledge and generate creative solutions. This result supports Njoroge and Mwangi (2024), who highlighted the importance of knowledge management in fostering creativity and sustainable innovation in public institutions.

$$Y = 1.604 + 0.364X_1 + 0.341X_2 + \varepsilon$$

Y = Innovation Capability

X_1 = Organizational Learning

X_2 = Knowledge Management

β_0 = Intercept

B_1 - β_2 = Regression coefficients
 ε = Error term

CONCLUSION

The research approach, which gathered information from several KPA departments using a descriptive research design. The study employed statistical methods, including regression, correlation, and descriptive analysis, to examine the correlations between variables and constructed questionnaires to gather respondents' opinions. Targeting a sample size of 218 and achieving a high response rate of 87.6% guaranteed that the data gathered would be trustworthy for analysis. The majority of variables had acceptable Cronbach's Alpha values, according to reliability tests, demonstrating the measuring tools' high internal consistency. The demographic data showed a balanced representation in terms of gender, age, and departmental participation, ensuring diverse perspectives were included.

Descriptive analysis revealed that leadership at KPA fosters collaboration and vision sharing but is weak in supporting risk-taking and experimentation, which are essential for innovation. Organizational learning was found to be moderately strong, with continuous training and a culture of improvement being evident, although lessons from past experiences were not fully utilized. Technological infrastructure was shown to play a positive role in simplifying work processes and supporting change, though gaps were noted in staff ICT training and system updates. Knowledge management practices were moderately effective, with strengths in problem-solving and innovation but weaknesses in knowledge storage and digital accessibility.

Inferential analysis revealed that organizational learning and knowledge management positively and significantly affect innovation capability, with organizational learning being the strongest predictor ($B = 0.394$, $p = 0.000$). This confirms that a strong learning culture, supported by modern technology and effective knowledge systems, greatly enhances innovation at KPA. The regression model demonstrated a strong relationship ($R = 0.832$), with 69.1% of the variation in innovation capability explained by the four variables, while ANOVA results confirmed that the overall model was statistically significant ($F = 104.206$, $p < 0.05$).

RECOMMENDATIONS

Future research could employ a longitudinal study design to track changes in innovation capability over time and establish causal relationships between leadership style, organizational learning, technological infrastructure, knowledge management, and innovation outcomes. Qualitative research methods such as interviews, focus group discussions, and case studies could also be used to complement the quantitative findings. These approaches would provide deeper insights into the underlying factors affecting innovation, such as organizational culture, employee attitudes, and leadership behaviours, which are not easily captured through surveys. Lastly, future studies could

examine additional variables that may influence innovation capability, such as organizational culture, employee motivation, external stakeholder engagement, or government policies. This would create a more comprehensive model for understanding the drivers of innovation in public sector organizations.

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