DIGITAL TECHNOLOGY AND PERFORMANCE OF WILDLIFE SECTOR IN KENYA

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION (MBA) IN STRATEGIC MANAGEMENT

DEPARTMENT OF GRADUATE BUSINESS STUDIES

SCHOOL OF BUSINESS & ECONOMICS

THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

SEPTEMBER, 2025

DECLARATION

I, the undersigned, declare that this Thesis is a product of my work and is not the result of anything done in collaboration. It has not been previously presented to any other institution. All sources have been appropriately cited and duly acknowledged in full. I agree that this thesis may be available for reference and photocopying at the discretion of the University.

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DEDICATION

This work is devoted to my parents who in one way or another brought me and ensured that I meet my right to education.

ACKNOWLEDGEMENTS

I wish to acknowledge the immense dedication and contribution of my supervisors Sr. Dr. Kori Blandina and Dr. Kyule Alexander for their guidance and assistance during the research project. Without their guidance, this work would not have been possible. I further acknowledge my family member; my dear wife and children. I also wish to thank all the staff and administration the Catholic University of Eastern Africa valuable support. A lot of gratitude goes to my friends and fellow CUEA students for their support in one way or another in making sure I succeed in my education. God bless you abundantly.

ABSTRACT

Digital technology is reshaping how the public perceives, thinks about, and interacts with nature. The aim of this research was to establish the effect of Digital Technology on the performance of wildlife sector in Kenya. This study was guided by the objectives: digital platforms, administrative management, digitalization process wildlife policies on Performance of Wildlife Sector in Kenya. The research was anchored on the Knowledge-Based Theory, Systems theory of Richard Swanson, knowledge management theory, Customer Relationship Management Theory and Constraints Theory (TOC). Descriptive survey design was considered in the study. A target population of 323 management staff of KWS were studied. Census was used to engage (323) participants. Primary data was collected through structured questionnaires. To enhance content and face validity of the instruments, the researcher ensured that the items in the questionnaire covers all aspects of the variable and the expert opinion were sought. Internal consistency of the instruments was ascertained through Cronbach Alpha coefficient. Quantitative data was analyzed using measures of central tendency and dispersion, such as frequency distributions, mean, and standard deviation, computed using SPSS (version 25). Figures, tabulations, and graphs, were used to display the information. The Chi-Square and multiple regression were used to test the influence of independent variable on the dependent variable. From the findings, digital platforms including social media, service portals, and content-sharing tools were instrumental in streamlining communication, wildlife tracking, information dissemination, and professional development. further, social media tools particularly improved real-time updates and community engagement, while service platforms simplified processes such as permit access and wildlife recovery. wildlife policies were found to exert a strong moderating effect on the relationship between technology adoption and sectoral performance. The process of digitalization, especially when aligned with national ICT policies, emerged as a cornerstone of performance improvement in the wildlife sector. In recommendation, Wildlife organizations should prioritize content localization and relevance by ensuring that the digital materials used for training, research, and public communication are tailored to the local context. This includes aligning content with regional conservation needs, using local languages, and reflecting the cultural and ecological realities of the communities involved.

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ABREVIATIONS/ACRONYMS

CCTV:	Closed-Circuit Television
CRM:	customer relationship theory
CUEA:	Catholic University of Eastern Africa
DNA:	Deoxyribonucleic Acid
GIS:	Geographic Information Systems
GPS:	Global Positioning System
ICT:	Information and Communication Technologies
IOT:	Internet of Things
KWS:	Kenya Wildlife Service
NACOSTI:	National Commission for Science, Technology, and Innovation
RAN:	Reserve Area Network
SMART:	Spatial Monitoring and Reporting Tool
SPSS:	Statistical Package for Social Sciences
TOC:	Theory of Constraints
WWF:	The World Wide Fund
WWW:	World Wide Web

DEFINITION OF TERMS

Biodiversity: Refers to range of living things on Earth, such as bacteria, fungi, plants, and animals.in this study, biodiversity monitoring uses technologies such as IoT sensors, AI-powered image identification, and remote sensing to track species numbers, identify ecosystem changes, and anticipate threats.

Digital Platforms. Online systems that facilitate communication, service delivery, and information sharing in the wildlife sector, including social media, service platforms, and content-sharing platforms.

Digital Technology. This refers to the application of modern digital tools, systems, and innovations that enhance efficiency, monitoring, and management in the wildlife sector.

Digitalization Process. The transformation of wildlife management practices through digital infrastructure, social networking, and image management tools to enhance conservation and tourism.

Human activities: Refers to things like agriculture, urbanization, deforestation, and tourism that have an effect on ecosystems and wildlife. To reduce harm to animals, conservationists can evaluate the effects of human activity, enforce laws, and encourage sustainable behaviours.

Performance of the Wildlife Sector. A measure of the effectiveness of conservation, tourism, and security efforts in the wildlife industry, influenced by digital technology and policy implementation.

Technology in Administrative Management. The application of digital solutions in training, knowledge sharing, and motivating employees within the wildlife sector.

Technology in Project Management. The integration of digital tools to improve conservation projects through data tracking, research, and knowledge utilization.

Wildlife Protection Policies. Regulations and strategies aimed at ensuring sustainable conservation, including public education, land use regulations, biodiversity promotion, and the use of data-driven monitoring technologies.

Wildlife Security: Protecting wildlife species from dangers including poaching, illegal trafficking, and habitat damage. These remedies protect endangered species and increase the efficacy and efficiency of anti-poaching initiatives.

CHAPTER ONE

INTRODUCTION

This section provided the research's background, problem description, goal, objectives, and research questions. The chapter further presented the significance of the study, justification of the study, the scope and delimitation of the study, theoretical framework, conceptual framework and definition of key terms.

1.1 Background of the Study

Traditionally, wildlife management was dependent on traditional systems that were inefficient and manual. These comprised the use of ranger patrols without technology, data collection on paper, and reactive management for poaching or habitat loss. Although these systems defined the basis for conservation, they had major shortcomings including inefficiency, limited preciseness, and limited ability for prediction. In the period between 1977 and 2016, for instance, the animal populations in the country reduced by 68% despite long-established protection approaches. In the same manner, WWF (2020) indicated that animal numbers across the world reduced by more than two-thirds over the past 50 years, bringing to light the weakness in the traditional management. Such shortcomings in the traditional management established the reason for data-intensive as well as technology-enabled approaches for managing the conservation for wildlife.

Through improved efficiency, accuracy, and efficacy of conservation activities, the use of digital technology in wildlife management and conservation has completely transformed the performance of the wildlife industry. Human-wildlife conflict, habitat destruction, poaching, and climate change are just some of the many problems facing the wildlife sector that pose a risk to ecosystem stability and biodiversity. Emerging digital technologies like drones, artificial intelligence (AI), satellite remote sensing, Internet of Things (IoT) sensors, and big data

analytics are novel solutions to these problems by facilitating data-driven decision-making, predictive analysis, and real-time monitoring (Beddington et al., 2022).

Some indicators that demonstrate the wildlife sector's potential for effective population management and conservation can be applied to measure the effectiveness of the sector. Reduce cases of poaching, which tracks rate and magnitude of illegal wildlife activity; quality and extent of habitat, which measures extent and condition of wildlife habitats; human-wildlife conflict cases, which measures conflicts and efficacy of mitigation efforts; biodiversity index, which measures diversity of species in a particular habitat and the health of ecosystems; and population trends, which track change in population numbers over durations, indicating success in conservation. Achievement for the wildlife sector relies on the comparison between actual outputs or outcomes and its expected outputs, goals, and targets (Kaurav, Baber & Rajput, 2020).

Research has indicated that these performance metrics can be considerably improved by the strategic application of digital technology. For example, real-time hazard detection and wildlife population monitoring have been made possible by the application of AI and remote sensing technologies, which have allowed for quick reactions (Gonçalves & Henriques, 2023). Drones and IoT sensors also make it easier to gather enormous volumes of environmental data, which improves forecasting and decision-making.

For the ecological system to be stable and the equilibrium of the environment to be maintained, wildlife must exist. On the other hand, the habitat of humans would degrade significantly and numerous natural disasters will occur when the equilibrium of species is destroyed (Tian et al., 2022). It is crucial to strengthen wildlife resource preservation, uphold ecology and biosecurity, encourage sustainable social and economic growth, and support the establishment of an ecological civilization. Due to increased demand for biodiversity brought on by population growth and economic development, excessive forest loss, reclamation of

grasslands, overgrazing of grasslands, as well as lake development, many species are in danger of going extinct.

According to the most recent WWF research, the world's animal population has decreased by more than two-thirds over the previous 50 years (Yu, 2020). The world's "Red Book" states that throughout the 20th century, 139 bird species and subspecies and 110 mammal species and subspecies had vanished from the planet. There are at present 20,000 species of higher plants, 400 species of beasts, 209 amphibian and reptilian species, and 593 species of birds that are endangered worldwide (Nature Editorial Board, 2021).

1.1.1 Global Perspective of Performance of Wildlife Sector

The Wildlife Society of London offers a real-time technology that attempts to remotely follow animal behaviour and assist in identifying poaching concerns (Vimal, Navarro, Jones et al., 2021). Its Instant Detect system detects people and wildlife using low-power sensors, video traps, and acoustic sensors. Real-time data is sent via satellite technology to rangers investigating crimes involving wildlife or environmentalists researching species. Trials of the technology have already been conducted in Antarctica, Australia, Canada, Kenya, and Tanzania. Drones have been useful for tracking bison in Colorado, in the western United States, particularly in challenging terrain (Button & Borzée, 2021). Drones equipped with infrared cameras also contributed to the development of data layers for mapping and analysis in order to track the situation of trees.

In China, Zhang et al. (2022) outlined the use of deep learning for wildlife identification and monitoring, debated the issues with deep learning for wildlife protection, and projected the direction of its future growth. Researchers can build upon as well as investigate deep learning, which is a valuable tool for animal conservation. Starting with the fundamental idea of wildlife resources, Tang and Fan (2021) carried out research to analyze on how to preserve and use wildlife in the modern era and provided insights on attaining socioeconomic advancement and

the long-term growth of human society. Their study integrates historical background in addition to emphasizing the significance of animal resources in the modern day.

1.1.2 Regional Perspective of Performance of Wildlife Sector

Over the past decade, wildlife conservation in South Africa has experienced tremendous change, moving from a centralized, protectionist strategy enforced by colonial governments to a more inclusive and sustainable model. The nation realized that a more flexible strategy was required after about a century of ineffective centralized protectionist control over wildlife resources. Private landowners and local groups were given varying degrees of ownership and usage rights for wildlife in the final decades of the 20th century (Chambers, 2017).

Wildlife populations were forcibly destroyed in spite of protection in order to make way for lucrative land uses, mostly agriculture. Governments anticipated that by transferring wildlife rights to private landowners and communities, they would be able to stop the decline (Leung, Xue & Bai, 2015). The policy change resulted in a 70% increase in animal populations throughout the region, a 44% increase in species variety, and a twofold rise in the net value of land that was converted from traditional ranching practices (Mellor, 2016). The new law would allow landowners to use their land's wildlife resources through a number of different routes, whether they were individual landowners or part of larger private reserves.

In East Africa, technologies help to protect highly endangered rhinoceros' populations. Ol Pejeta Conservancy is East Africa's largest black rhino sanctuary and home to the last northern white rhinos on the planet (Nature Editorial Board, 2021). The conservancy also uses motion-triggered camera traps and drones to monitor movements, while rangers carry digital radios with GPS tracking capability.

1.1.3 Local Perspective of Performance of Wildlife Sector

Kenya has made substantial progress in the use of digital technology to improve wildlife management and conservation in recent years. Among them was undertaken in Maasai Mara National Reserve by Omondi et al. (2023) who examined the importance of drone monitoring and IoT-based surveillance systems to minimize anti-poaching activities. The aim of the research was to evaluate whether the application of real-time data from ground IoT sensors and drones could assist in identifying illicit activity and enhancing wildlife security. Application of drones with thermal imagery and GPS location critically minimized poaching by 42% over the course of two years, while IoT-based monitoring systems enabled rangers to address threats more promptly and effectively.

Usage of artificial intelligence (AI) and big data analysis in tracking wildlife population dynamics and the health of their habitats was the focus of another research undertaking in Tsavo National Park by Kariuki and Wambui (2024). The overall aim was to explore how data analysis via AI can help wildlife managers make timely and precise decisions. As per the study, the processing time for data was reduced by 60% by using machine learning algorithms for analyzing camera trap and satellite imagery data, thereby providing a more accurate estimation of animal populations and habitat variation. In addition, proactive action was facilitated through the ability of conservationists to predict routes of migration and threats with the use of AI-based prediction models. The scientists recommended that collaborations between technology and conservation companies be supported and that the growth of AI expertise in wildlife conservation personnel be supported.

1.1.4 Concept of Digital Technology

Digitalization as per Mondejar et al. (2021) refers to the translation of knowledge and information that has been gained physically into computer language.Digital technology is

reshaping how the public perceives, thinks about, and interacts with nature (Verma et al., 2015). Many conservationists view the technologies of the Information Age with optimism, as they offer enhanced data collection, processing speed, improved connectedness, information availability, and new avenues to converse, engaging visual representations, and supportive decision-making systems. Ceipek et al. (2021) provided evidence that digitalization is the process of incorporating digital technology into daily life. In this way, modern technologies can revolutionize applications related to socioeconomics, the environment, sustainability, and climate research. This facilitates the creation of digital technologies that are compatible with the Internet of Things (IoT).

Through integrated sensors, software, and other technologies that facilitate data collection and exchange, the Internet of Things architecture creates a strong network of physically connected things over the internet (Mondejar et al., 2021). The authors also pointed out that massive amounts of data, or "big data," are managed by the convergence of concurrently developing digital technologies for real-time analysis, artificial intelligence, and machine learning. Big data collection is underappreciated and underutilized, but it does present new opportunities that can hasten the shift to more sustainable and effective practices in many wildlife-related sectors (Mondejar et al., 2021). Although big data collection is underutilized and underestimated, it does offer new options that can speed the transition to more efficient and sustainable methods across many industries associated to wildlife.

Ever since long ago, ranger-based technologies have been employed to collect data on trends in animal populations, patrol activity, poaching and other illegal activities and Pierdicca, Paolanti and Frontoni (2019). Digital capture of such data has made new means available to maximize the value of standardized spatial data. For instance, rangers can currently record information in digital form during patrol through the use of computer programs like the Spatial Monitoring and Reporting Tool (SMART) and GPS technology for geotagged photo capture

(Lemieux, Reference Lemieux, 2015). The information may curtail illegal activity and increase ranger productivity. More sophisticated wildlife conservation technology and services have become available, user-friendly, and information-conserving. Illustrations include environmental DNA technology, used to identify dolphins using genetic signatures in seawater, and AI-based drones, deployed to monitor gorilla health in remote areas (Bhaduri & Pandey, 2019).

The internet and related information and communication technologies (ICTs), such as broadband, computers, and wireless communication, have established digital networks that facilitate the flow of vast amounts of information (Humle et al., 2014). Unlike earlier technological revolutions, information has become the focal point around which various technologies are centered (Newey et al., 2015). This shift has led to new methods of conducting business, communication, and governance across many areas of society, including environmental issues. The digital revolution, characterized by the use of computers and binary forms of information, is particularly relevant to social practices and organizations focused on nature conservation.

1.1.5 Performance of Wildlife Sector

Organizational performance refers to an organization's capacity to effectively implement strategies that achieve its goals and objectives (Meraku, 2017). Key factors influencing organizational performance include the efficiency of managers and employees, the effectiveness of the business model, and organizational outcomes. When employees perceive alignment between their individual goals and the organization's objectives, overall effectiveness tends to improve. The performance of an organization heavily relies on a leader's social, cognitive, and emotional competencies (Ryan et al., 2012), as leaders play a vital role in guiding the organization and its workforce.

The effectiveness of an organization is significantly shaped by the performance of its human resources (Babelova, 2020). It is crucial for organizations to focus on enhancing managerial processes; neglecting this can lead to failure. Ghazzawi (2018) emphasized that both self-awareness and functional competencies are essential for leaders to steer growth-oriented organizations. Furthermore, involving employees in decision-making and other critical activities serves as a managerial strategy to enhance organizational performance (Tamunomiebi et al., 2020). Khajeh (2018) discovered that employees are more likely to increase organizational productivity if they are engaged in the decision-making process, with businesses that have greater employee engagement tending to perform better.

The reward system is also critical in determining organizational performance. Awasthi and Sharma (2016) found that an effective reward system attracts and retains employees while continually motivating them towards action and achievement. An effective reward system can motivate employees' desire to deliver quality, improving job satisfaction and perception of competency and autonomy (Danish & Osman, 2010).

In Augustine et al. (2019) research on competency mapping, it was discovered that competency mapping and employee development were positively significantly correlated, with employee development positively impacting overall organizational growth. Human resource career and competency development-based interventions have a significant impact on employee performance, job satisfaction, productivity, output, organizational surplus, and employee retention.

1.1.6 Kenya Wildlife Sector

In accordance with the duty to manage and protect Kenya's wildlife, as well as preserve pertinent rules and legislation, the Kenya Wildlife Service is a State organization created by the Act of Parliament for Wildlife (Conservation and Management) (CAP 376).

In addition to overseeing and organizing international protocols, agreements, and treaties pertaining to wildlife in all its components, KWS makes sure that capacity building for wildlife conservation and management is achieved. With 23 national parks, 31 national reserves, 6 national sanctuaries, 4 marine national parks, and 6 marine national reserves, KWS oversees around 8% of Kenya's total land area. KWS (2017) reports that there are 154 field stations for managing wildlife outside of places that are protected.

However, KWS is working to manage a number of significant dangers and problems. These include the expansion of human population and poverty into wildlife parks and reserves, the erratic flow of foreign tourists, human-wildlife conflict as well as inter-personal conflicts, climate change, which is making some parts of our country more vulnerable to drought and floods, inadequate infrastructure, political and regional instability, insecurity brought on by the entry of illegal weapons into the nation, and unfavorable decisions made on global conservation, a drop in the population of the animal species through illegal poaching (Baker, 2013). According to the research conducted by the University of Nairobi, the International Livestock Research Institute, and the Directorate of Resource Surveys and Remote Sensing, the mean decline in animal populations between 1977 and 2016 was 68%.

By offering more possibilities for connecting to the many sorts of products accessible in the organization, digitalization in Kenya's wildlife sector can draw visitors (Fraser & David, 2010). People who read about animals and their activities and are interested in wildlife should have a high level of societal acceptance thanks to the media's association with the sector. Due to its ability to generate jobs and money flow, the wildlife business is vital to the economy. The goal of the wildlife industry is to enhance visitor experiences by providing efficient services.

For the sake of environmental and economic sustainability, information and communication technology (ICT) also contributes to the development of maritime conservation (Bhaduri & Korak, 2019). Collaboration between public and commercial sector organizations is crucial for the expansion and advancement of wildlife services. Enhancing comprehension of wildlife services can be achieved through the incorporation of novel services. (Luisa Errichiello, 2017). Moreover, digitization can facilitate data storage for analysis. The information gathered on the can assist businesses in developing wildlife-related initiatives linked to the overall performance of the enterprise. The wildlife industry can generate jobs for building roads, infrastructure, and transportation networks. Social media networks are now more involved in event planning. Social media as well as platforms can be used to improve workforce skills and creatively promote industry ethics (Kellett & Pamm, 2013).

Despite the crucial role in managing and conserving wildlife, the Kenya Wildlife Service (KWS) still faces several obstacles, such as unlawful poaching, climate change, human-animal conflict, and poor infrastructure. There is still a critical knowledge gap regarding the degree to which the adoption of digital technology affects the performance of the wildlife sector in Kenya. The effort to escalate these challenges through technological utilization has not shown any evidence of effectiveness. Therefore, it is on this background that the present study seeks to evaluate in Kenya Wildlife sector.

1.2 Statement of the Problem

Since KWS is a non-profit company, its success is primarily determined by its level of efficiency, employee happiness, and customer satisfaction (Mwangi & Muturi, 2018). In order to guarantee a notable expansion in the wildlife industry, KWS, a government-owned entity, ought to be permitted to carry out its responsibilities in the same manner as other establishments. Nevertheless, it is unclear from the available data whether the industry's adoption of digitalization helped it meet its performance targets for wildlife (KWS, 2017).

KWS, has had trouble reaching the required level of performance. According to Baker (2013), these difficulties include human population growth and poverty-related encroachment on 50 wildlife parks and reserves fluctuations in foreign tourist arrivals, inter-personal conflict as well as conflict between humans and wildlife, climate change, which is exacerbating drought in many parts of our nation and flooding, inadequate infrastructure, political and regional instability, insecurity stemming from the entry of illicit weapons into the nation, and unfavorable decisions made in international conservation. The sector has furthered experienced a tremendous drop in the population of some animal species, where According to Bosire (2024), the number of rhinos in Kenya decreased from approximately 20,000 to just over 600, while the number of elephants decreased from about 170,000 in the 1970s to 35,000 in 2024. Due to the government's lack of commitment to supporting changes in the industry, KWS has also had trouble implementing new technologies in the provision of services.

Yu (2020) cites a World Wildlife Fund (WWF) research that shows a substantial loss of biodiversity, stating that the world's animal population has decreased by 67% in the last 50 years. The Nature Editorial Board (2021) also points out that the "Red Book" records the extinction of 110 mammal species and subspecies and 139 bird species and subspecies throughout the 20th century. Globally, there are currently 593 bird species, 400 mammalian species, 20,000 higher plant species, and 209 amphibian and reptilian species that are listed as endangered. These results confirm the significance of incorporating digital technology into wildlife management to solve the problems of biodiversity loss and species extinction, and also highlight the urgent need for increased conservation efforts.

Chambers (2017) revealed that Several technologies can be employed to monitor illegal activity by humans. In regions of Africa, the Connected Conservation Foundation has utilized the Internet of Things (IoT) to preserve areas surrounding wildlife reserves. In order to identify suspicious activity and notify rangers, a point-to-point reserve area network (RAN) is

established, including sensors, CCTV cameras, and biometric scanners gathering and evaluating data. The study however generalized African Countries and it is not clear of the position of Kenyan Wildlife Sector in regards to technological use and the management of the sector. It was on these gaps that the study sought to mitigate by evaluating digital technology and performance of the Wildlife Sector in Kenya.

1.3 Main Objective

The main objective of this research was to establish the effect of digital technology on the performance of wildlife sector in Kenya.

1.4 Objectives of the Study

i. To determine the effect of digital platforms on the performance of the wildlife sector in Kenya
ii. To evaluate the influence of technology in project management on performance of wildlife sector
iii. To examine the effect of technological use in administrative management on the performance of wildlife sector in Kenya
iv. To assess the effect of digitalization process on the performance of wildlife sector of Kenya
v. To evaluate the controlling effect of wildlife policies on relationship between technology use and the performance of wildlife sector in Kenya.

1.5 Research Questions

(i) What is the effect of digital platforms on performance of Kenya wildlife?

(ii) What is the influence of technology in project management on performance of wildlife sector?

(iii) How does technological use in administrative management affect the performance of Kenya wildlife sector?

(iv) What is the effect of digitalization process on the performance of wildlife sector of Kenya?

(v) What is the controlling effect of wildlife policies on relationship between technology use and the performance of wildlife sector in Kenya?

1.6. Significance of the Study

The research findings would be significant to the various ways; the government and the policy makers, the employees, the community and the researchers and learners. The research's presentations and conclusions might be useful to national policy makers aimed at addressing the problems related to wildlife sector including illegal poaching of animal and destruction of tree species. The research may also address legislative gaps and the necessity to prioritize conservation of the environment. The study finding may also be important to the government in monitoring the performance of the wildlife sector in order to maximize revenue collection.

Furthermore, the study findings would be of significance to the communities where the adoption of the technology in the management of the sector helps monitor and access information on the threats against the community and further set measures for the communal safety. The Study findings may further give important information to the employees in the wildlife sector, particularly on how to develop better systems to stabilize their performance at KWS.

Lastly, while conducting further research, academics and researchers may be able to use the present study's results as reference to the performance outcomes in the wildlife sector, with regard to the technological adoption. This can provide accurate information that can be utilized to highlight the necessity of developing more advance means of managing the wildlife.

1.7 Justification of The Study

This study may be important because, over the years, traditional management system of the Wildlife sector has been employed in Kenya. The idea of implementing digital technology in the management of the sector will significantly contribute to the performance of the Wildlife sector in Kenya. The study can also be significant in encouraging research in the Wildlife industry of Kenya to strategize on ways of reducing negative effects of traditional activities used in the industry. Digitalization of the Wildlife sector would help the government generate more revenues through improving the marketing channels using computers, social media, internet to reach the intended clients.

1.8 Scope and Delimitation of the Study

The study's delimitation shows the range of coverage to which the investigator is not constrained while creating the field of research. The subject of the research was the digital technology and performance of wildlife sector of Kenya. The KWS is targeted due to the fact that it is among the government industries where technology plays critical roles in task delivery. The study is conducted for a period of one year.

The report also discussed how digital technology affects tourist experience, staff performance, policy implementation, service delivery, and wildlife protection. It also looks at the difficulties in implementing new technologies, the efficiency of digital tools like IoT, AI, and big data analytics, and the cooperation of the public and commercial sectors in improving wildlife management. The study also looked at how technological developments affect environmental sustainability, poaching prevention, and human-wildlife conflict mitigation.

1.9 Theoretical Framework

This research is grounded in several theoretical frameworks, including the Knowledge-Based Theory by Barney (1991), Systems Theory by Swanson (1994), Customer Relationship Management (CRM) Theory (Payne & Frow, 2005), and the Theory of Constraints (TOC) by Goldratt (1984).

1.9.1 Knowledge-Based Theory

The study was supported by the Knowledge-Based Theory of Barney (1991). Barney first presented the knowledge-based idea in the late nineties. The theory, which is an extension of the resource-based model, suggests that businesses should value knowledge as a resource (Grant, 1996). The theory's proponents argued that because knowledge is complicated and distinct, it must be unique. Because of their knowledge systems, many businesses have varying capacities (Qiu & Wang, 2018). Employee skills, knowledge, and experiences enable a company to operate at a higher level and maintain a competitive edge in the marketplace (Curado, 2006). One of the main tenets of theory is that firm knowledge is ingrained and pervasive across multiple entities and models (Grant, 1996). To name a few, there is the business policy, technology, organizational culture, routines, firm identities, and personnel (Curado, 2006).

1.9.2 Systems Theory

The systems Theory was developed by Swanson (1994). According to this theory, an organization is primarily made up of groups of people who need to collaborate well. It is an integrated system of interdependent structures and functions (Malecic, 2017). The theory's proponents contended that for a system to function, all members must be aware of what the others are doing and work together to advance their respective objectives. This can assist organizations in understanding living systems as systems of elements interacting dynamically

and in determining the rules governing the structure and operation of organizational concepts, such as high degrees of self-regulation (Caner et al., 2017).

1.9.3 Customer Relationship Management Theory

The Theory of customer relationship (CRM) was founded by (Payne & Frow, 2005). The tenet of the theory is to evaluate how well a company manages customer relationships in order to enhance customer relationships. CRM also evaluates how well the information about customer requirements is structured in order to understand future customer expectations in order to sustain them. Prahalad (2019) postulates the importance of this theory to enhance customer quality-oriented processes. He correctly states that customers do not only want to buy from brands but also want to be treated as partners. Therefore, the concept is to identify what customers need and then match their needs with products or services. The products then offered by the organization must have some degree of innovation capability so that they can evolve over time in response to customer needs, lifestyles and use cases. Organizations work on continuous improvement in line with their national continuous improvement initiatives, with the customer at the heart (Mann & Kehoe, 2021).

Prahalad (2019) asserted that CRM involves identifying and categorizing stakeholders based on their level of engagement and influence. In the wildlife sector, stakeholders include donors, volunteers, visitors, local communities, conservation organizations, and governments. Digital CRM tools can help manage these relationships by tracking interactions and preferences. Therefore, Customer Relationship Management theory, traditionally used in business to manage interactions with current and potential customers, can be adapted to the wildlife sector to enhance its performance through digitalization.

1.9.4 Constraint Theory

Goldratt (1984) developed the Theory of Constraints (TOC), which he introduced to managers in his book “The Goal”. This theory identifies various obstacles that hinder

management and manufacturing systems from achieving their objectives. Goldratt (1990) sought to highlight these constraints and address them to reduce vulnerability. TOC assists managers in pinpointing the weakest links by examining processes, organizations, individual team members, and any other factors that impede project success. Once these limiting factors are identified, managers can implement strategies to mitigate their negative impact, thereby enhancing overall project performance.

1.10 Conceptual Framework

The primary concepts to be explored, along with key variables and their assumed relationships, were illustrated either diagrammatically or descriptively through a conceptual framework. This approach aids in clarifying the research focus and the connections between variables (Bryman & Bell, 2015). It serves as The investigator's plan for conducting the inquiry and defines the variables; Digital technological (Independent Variable) and Performance of Wildlife sector (Dependent Variable).

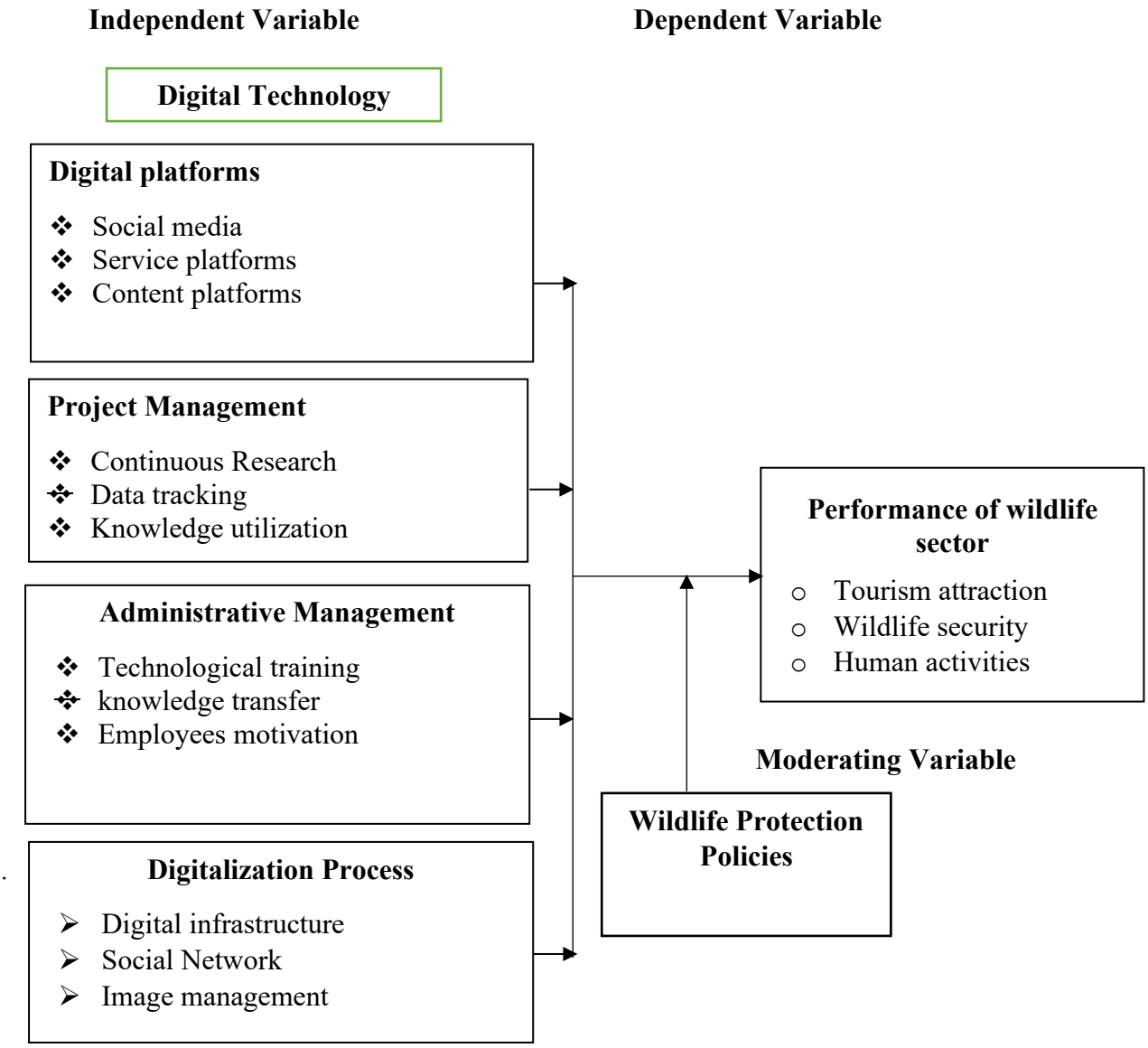


Figure 1.1

Conceptual Framework

The outcome variable is directly impacted by the determinant variable whereas the intervening variable either directly or indirectly influences the dependent variable. The digital platforms including social media, internet access and Website result into networks access for the general performance of the wildlife sector. Further, the adoption of continuous research, data tracking and knowledge utilization in the line of wildlife management aid in the environmental management.

In referring to the administrative management where the employees' motivation, technological training and knowledge transfers are considered in a working sector, work efficiency is realized in the organization. In addition, the digitalization process; technological skills, employees' commitment, and infrastructural management are also significant in the growth of the Wildlife sector. Finally, the policies issued such as the public education, sustainable land use and biodiversity land use on the healthier procedures of conserving the environment and wildlife protection in general can impact the performance in the sector depending on the nature of the policies.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

In the chapter, textbooks, journals, and e-learning materials were reviewed in order to provide clarification on the digital implementation and Kenyan wildlife performance. The literature was empirically reviewed according to study objectives; digital platforms and the performance of the Wildlife Sector, technological effect of wildlife policies on the performance of Wildlife Sector, Technology in administrative management and performance of Wildlife Sector and digitalization process and the performance of Wildlife sector of Kenya. The chapter will also present the study gap.

2.2 Theoretical Review

The research was supported by the Systems theory of Richard Swanson and the Knowledge-Based Theory of Barney, knowledge management theory, Customer Relationship Management Theory and Constraints Theory (TOC).

2.2.1 Systems Theory

The systems Theory was developed by Swanson (1994). According to this theory, an organization is primarily made up of groups of people who need to collaborate well. It is an integrated system of interdependent structures and functions (Malecic, 2017). The theory's proponents contended that for a system to function, all members must be aware of what the others are doing and work together to advance their respective objectives. This can assist organizations in understanding living systems as systems of elements interacting dynamically and in determining the rules governing the structure and operation of organizational concepts, such as high degrees of self-regulation (Caner et al., 2017).

A system is a whole consisting of many pieces, and each portion can significantly affect how other parts function. The system's overall performance may be determined by how well all of the parts function together (Golinelli et al., 2002). Modern management may face difficulties as a result of these developments and new technologies. To solve issues and make wise decisions, managers need to be open to changing their systems (Caner et al., 2017). This theory's main premise is that it stressed the necessity of creating strong connections between and among the different parts of an organization.

The systems perspective emphasizes the interconnectedness of all things and the significance of modelling processes and businesses in terms of flows and feedback loops. Along with interactions and fluxes, the theory also supports links (Malecic, 2017). It emphasizes how each individual employee, part, or activity is a part of a bigger whole and how, in the end, those units-working together, are justified by the outcomes they produce. In order to effectively adjust to the demands of a constantly evolving setting, excellent management of all unit components, inputs, processes, outputs, and feedback is essential. Qiu and Wang (2018).

Strength of the theory is that it takes into account the necessity for organizations to design and develop efficient systems that are precisely tailored to produce the desired results. This is especially important because, if management can successfully place effective employees in an ineffective system, the system may always come out on top. This is one of the reasons why, in order to get meaningful results, organizations must inspect and assess their systems (Caner et al., 2017). The capacity to comprehend the way pieces bear relevance to and influence one another in an ensemble is known as systems thinking (Caner et al., 2017).

One of the major criticisms of the Systems Theory is that it overlooks the enormous operational and financial outlays for establishing and maintaining systems interdependence within an organization. While the theory is in focus for integration, coordination, and

interdependence among the subsystems, it does not pay sufficient attention to the enormous expenditures on acquiring new technologies, training personnel, and keeping system updates. In low-resource organizations such as those in the wildlife sector, these costs can be significant barriers to successful deployment. In addition, Systems Theory is predicated on the idea that all subsystems will function together harmoniously once linked, but in practice, variations in infrastructure, capacity, and competence among personnel could result in inefficiencies and resistance. The theory also serves to reduce the intricacy of real environments as well, through a focus on systemic equilibrium and without adequate concern for outside forces such as political intrusion, budget problems, or cultural forces. Theory provides a useful framework for understanding organizational interdependence, it requires critical adaptation to address cost implications, contextual challenges, and the dynamic nature of technological change.

The choice of the System theory for the research is to facilitate the networking system by the organizations to execute the work performance. Systems theory is also significant in promoting cooperation within the environment and ensures conservation of the environment for sustainable performance in the Wildlife sector (Bertalanffy, (1968). Therefore, the KWS should benefit by adopting this system in their wildlife management. The Systems theory further shows how human beings interacts with the digital system like the modern platforms in managing the Wildlife species. In attachment to the study objectives, the theory looks into the wildlife policies set to safeguard the ecology. This theory also related to the project management, whose execution is pined on system operation in an organization. It gave explanation on the possible measures to manage the environment. This understanding ascertains the performance of the sector.

2.2.2 Customer Relationship Management Theory

The Theory of customer relationship (CRM) was founded by (Payne & Frow, 2005). The tenet of the theory is to evaluate how well a company manages customer relationships in

order to enhance customer relationships. CRM also evaluates how well the information about customer requirements is structured in order to understand future customer expectations in order to sustain them. Prahalad (2019) postulates the importance of this theory to enhance customer quality-oriented processes. He correctly states that customers do not only want to buy from brands but also want to be treated as partners. Therefore, the concept is to identify what customers need and then match their needs with products or services. The products then offered by the organization must have some degree of innovation capability so that they can evolve over time in response to customer needs, lifestyles and use cases. Organizations work on continuous improvement in line with their national continuous improvement initiatives, with the customer at the heart (Mann & Kehoe, 2021).

Prahalad (2019) asserted that CRM involves identifying and categorizing stakeholders based on their level of engagement and influence. In the wildlife sector, stakeholders include donors, volunteers, visitors, local communities, conservation organizations, and governments. Digital CRM tools can help manage these relationships by tracking interactions and preferences. Therefore, Customer Relationship Management theory, traditionally used in business to manage interactions with current and potential customers, can be adapted to the wildlife sector to enhance its performance through digitalization.

Strengths of Customer Relationship Management Theory was that the its systems allow for personalized and targeted communication with stakeholders, including donors, volunteers, visitors, and the general public. This leads to better engagement, more meaningful relationships, donor loyalty and increased donations. Therefore boosting wildlife sector performance. Also, CRM systems can also manage relations with other conservation organizations, research institutions, and government agencies to foster joint efforts and cooperation in conservation efforts.

One of the key shortcomings of Customer Relationship Management (CRM) Theory is the cost of system implementation, including software purchase, customization, infrastructure development, and staff training. These start-up costs can be particularly burdensome for conservation organizations such as those in the wildlife sector, where funding is often donor-driven and budgets are tight. Another critical weakness is that CRM systems, while great at managing stakeholder data, do not necessarily capture the complexity of conservation relationships, where ecological concerns, traditional knowledge, and community politics are the most important factors. Over-reliance on CRM tools can also lead to information overload, misinterpretation, or confidentiality problems, particularly when sensitive stakeholder data is documented without adequate protection. These limitations specify that while CRM Theory offers significant benefits, its application in wildlife conservation requires careful adaptation, adequate training, and feasible financing structures to be capable of obtaining successful study results.

Application of the Customer Relationship Management (CRM) Theory in the digitalization process significantly enhances the performance of the wildlife industry by matching stakeholder engagement to technological innovation. In the Kenyan context, CRM provides a structured way of managing multiple stakeholders, such as tourists, local communities, donors, conservation partners, and government agencies. Through digital CRM systems, wildlife organizations such as the Kenya Wildlife Service (KWS) can record and analyze stakeholder data in order to understand their interests, predict behavior, and design targeted engagement strategies. This not only improves donor retention and volunteer commitment but also allows for tailored visitor experiences that cultivate loyalty and return visits. Moreover, CRM software improves transparency and accountability in project reporting and fundraising, which is crucial in sustaining public trust. Through the use of CRM systems, conservation managers are also able to manage partnerships, facilitate conservation awareness

campaigns, and incorporate feedback loops that enhance collaboration. Finally, incorporating CRM into the digitalization of wildlife management guarantees more sustainable conservation results through building stronger relationships, improving resource mobilization, and facilitating evidence-based decision-making.

2.2.3 Knowledge-Based Theory

The study is supported by the Knowledge-Based Theory of Barney (1991). Barney first presented the knowledge-based idea in the late nineties. The theory, which is an extension of the resource-based model, suggests that businesses should value knowledge as a resource (Grant, 1996). The theory's proponents argued that because knowledge is complicated and distinct, it must be unique. Because of their knowledge systems, many businesses have varying capacities (Qiu & Wang, 2018). Employee skills, knowledge, and experiences enable a company to operate at a higher level and maintain a competitive edge in the marketplace (Curado, 2006). One of the main tenets of theory is that firm knowledge is ingrained and pervasive across multiple entities and models (Grant, 1996). To name a few, there is the business policy, technology, organizational culture, routines, firm identities, and personnel (Curado, 2006).

Strength of the theory according to Grant (1996) is that the theory acknowledged the various capacities and unique qualities of workers in community. According to Qiu and Wang (2018), the theory backs up organizational learning, which ultimately creates the human capital needed to carry out the regular tasks of the company. One of the theory's many strengths is its understanding of knowledge-based resources as primarily intangible and dynamic, enabling unique development through causal ambiguity and path dependency, a key mechanism for the generation of economic value (Grant, 1996). The idea that knowledge-based resources have the greatest strategic importance in business operations and production activities and that

knowledge application is carried out by employees of the company is also supported by the theory (Caner et al., 2017).

One of the primary limitations of the Knowledge-Based Theory is that it fails to account for the complexity involved in knowledge management in a population, particularly when knowledge is dispersed across different stakeholders (Qiu & Wang, 2018). Furthermore, knowledge cannot be measured because it is not readily observable, and therefore it becomes difficult for organizations to measure the efficiency of knowledge creation, dissemination, and use. This immeasurability has a tendency to limit the use of the theory in actual decision-making and measuring performance.

Additionally, KBT provides minimal information on processes and tools that can be used to integrate digital technologies with knowledge management processes. In fast-paced environments such as conservation technology, this can prove to be a limitation in the capability of organizations to utilize data-oriented tools effectively (Grant, 2019). The theory has also been criticized for not properly addressing knowledge loss, particularly in organizations with high turnover or institutions where institutional memory is poorly sustained (Spender, 2014). To reverse these constraints, this research integrates the Knowledge-Based Theory with Systems Theory, which emphasizes interconnectedness, cooperation, and feedback mechanisms critical in leveraging knowledge in the digitalized wildlife management environment. The constraint theory was used alongside existing theory to bridge the gap in theory.

To support the theory, Knowledge-Based Theory has a close connection with the digitalization process and the administrative management of Kenya's Wildlife Sector. It claims that organizational knowledge and technological capability are critically essential assets in ensuring wildlife security and conservation. The theory applies to the study because it highlights the potential of employees and managers to harness digital technologies, such as

drones, artificial intelligence, and big data analytics, in order to improve conservation outcomes. Highly qualified staff with good knowledge skills are better suited to interpret ecological data, respond to emerging threats such as poaching, and organize innovative conservation strategies.

Moreover, KBT demonstrates how knowledge is an ever-changing asset that enables organizations to adapt to incoming technological developments. For the case of Kenya, where digital technologies are increasingly being adopted in conservation, employees must constantly acquire new skills in order to manage wildlife properly. By conceptualizing knowledge as a competitive asset, the theory offers a perspective whereby the Kenya Wildlife Service (KWS) may prioritize training of staff, organizational learning, and knowledge-sharing mechanisms. Despite its criticisms, the theory holds that long-term organizational success in the wildlife sector hinges on the ability to capture, store, and use both scientific and indigenous knowledge in a digitalized environment, promoting ecological sustainability as well as conservation efficiency.

2.2.4 Constraint Theory

Goldratt (1984) developed the Theory of Constraints (TOC), which he introduced to managers in his book “The Goal”. This theory identifies various obstacles that hinder management and manufacturing systems from achieving their objectives. Goldratt (1990) sought to highlight these constraints and address them to reduce vulnerability. TOC assists managers in pinpointing the weakest links by examining processes, organizations, individual team members, and any other factors that impede project success. Once these limiting factors are identified, managers can implement strategies to mitigate their negative impact, thereby enhancing overall project performance.

A significant strength of this theory is its unique problem-solving approach known as Thinking Processes. These processes align effectively with Lean methodology, as they require

organizations to bridge the gap between their current situation and an ideal outcome. When integrated, these methodologies enable companies to focus on increasing capacity while simultaneously reducing waste and costs.

In weaknesses, TOC has been criticized for oversimplifying complicated organizational procedures. The theory puts the assumption that most performance problems emanate from an individual or few barriers, but in the field, organizations present numerous interwoven bottlenecks not sequentially manageable without comprehensive strategies. This reductionistic tendency will thus ignore systemic and external variables also dictating performance (Rahman, 1998). Further, TOC has been blamed for its short-term thinking at the expense of long-term strategy. The approach has the tendency to emphasize quick bottlenecks for the purpose of improving throughput but sometimes ignores long-term organizational goals such as innovation, flexibility, or long-term sustainability (Mabin & Balderstone, 2003). In an environment such as wildlife management in which ecosystem processes take place slowly, explication of short-term barriers could postpone the formulation of long-term conservation strategies.

In addition, the weakness is that TOC has a tendency to neglect to particularize variability and uncertainty in real systems. When compared to the original application context where TOC gets its beginning manufacturing environments, conservation or services involve dynamic external conditions like the change of climate, politics, or social interactions that cannot smoothly ride onto TOC's linear model (Gupta & Boyd, 2008). The second weakness of TOC lies in its implementation difficulty. TOC has to be implemented through a gigantic organizational as well as cultural change, especially in the identification of constraints where all the activities are established for the elimination (collapse) of the same. Most of the institutions are against doing so due to reasons of traditional practice, unavailability of

resources, or lack to cope with such thinking (Cox & Schleier, 2010). Additional theories were introduced into the research so that weaknesses are addressed.

Despite these criticisms, TOC has been effective in many areas of project planning and management, capable of resolving problems that occur during the project lifecycle span. It is typically used for scheduling projects, handling capacity, and resource allocation, enabling organizations to determine their weaknesses and recreate procedures for optimal use. The strategy has also been used in monitoring and evaluation to make sure that projects are aligned with their goals. By analyzing constraints, managers are better placed to allocate limited resources, concentrate on critical activities, and ensure results are at the level demanded. In doing this, TOC ensures the greatest likelihood that projects are completed within time, within budget, and at appropriate levels of quality, and it enhances sustainability. TOC has useful contributions to project managing within the wildlife industry, especially when combined with computer technologies.

By identifying such limitations as aged monitoring systems, limited ranger capacity, or inadequate community cooperation, for instance, searchers reveal potentialities for priority interventions in technologies like satellite monitoring, electronic patrol reporting, or cellular phone applications for community-based reporting. In this way, such technologies mitigate threats by rectifying system impediments, thereby optimizing the efficiency of conservation programs. For the Kenya Wildlife Service (KWS), TOC implementation with technology solutions will grant greater security for wild species, improved anti-poaching, and greater stakeholders in alliances. In the long run, the strategy puts the wildlife industry in a position to attain greater performance by combining constraint-based problem-solving with data-driven innovation.

2.3 Empirical Review

The section presented information on the reviewed literature, guided by the study objectives: digital platforms, technology in project management, technology in administrative management and digitalization process and the performance of Wildlife sector of Kenya

2.3.1 Digital Platforms on Performance of Wildlife Sector

Information and communication technology (ICT) are being utilized to send Details of the destination to potential wildlife sector members around the world with the advent of mobile and Internet technology. This is becoming increasingly prevalent and popular in the majority of nations because information technology can potentially save operational costs and improve productivity. Information infrastructure will need GIS to provide space-travel information online for efficient sales of the wildlife (Maiti, Majumdar, Shukla, Koti & Gupta, 2018). Digital platforms have a significant influence on the performance of Kenya Wildlife. One can feel the impact in most sectors like conservation measures, tourism, data management, and outreach to communities.

At a global level, Ghosh (2020) examine Tourism Destination Promotion in respect to a change with the Technological Innovation. The study had highlighted the integration of technology, tourism and economic development. The study used the descriptive survey approach. He learned that technology could improve the tourism industry. Digitalization has the potential to attract tourists to offer more opportunities for reaching the various categories of products in the market. The wildlife tourism media should create high social acceptability among readers during reading and in interest for animals and activities that they engage in. Experience, comparison of rates, and website ratings may allow customers to learn about many destinations. In Italy, following earlier research by Pangani (2023) to identify the effect of digital business strategy on creation of value in multinational companies in Italy, value creation systems can be attained through application of digital technology projects by organisations.

The cross-sectional survey method used, recruited 128 respondents. Stratified random sampling was used. Data were gathered through key informant interviews and self-administered questionnaires. The SPSS program was used to run descriptive analysis on the quantitative data. The study established that technology enables an individual to make use of advanced technology like GPS tracking, camera traps, and drones to track wildlife mobility patterns and behavior. It enhances research and conservation efforts. The findings of the study established that in order for multinational companies to increase their competitive edge, facilitate value creation, and draw more customers, they should embrace digital business strategy. The results of this was context-specific to Italy therefore, the Results could not be generalized in Kenya's context. which is the gap this study will bridge. Kansakar, Munir and Shabani (2019) utilized an Australian study to examine the impact of the internet on wildlife management in Australia. The target population in this study was the 50 Australian wildlife management centers.

Directors of marketing or sales, chief information officers, chief financial officers, or general managers of strategic business units were the key informants in this study. 86 of the 97 randomly selected executives of the target market in the research completed the survey questions correctly. The researchers utilized a two-stage analysis procedure for analyzing their data. By applying estimation of the structural equation model and hypothesis testing, this was done. As indicated by the research, the IT strategy contributed to better outcomes in the wildlife sector and boosted the organization-client relationship. Most nations have utilized the full web GIS system with the aim of enhancing the wildlife business. For instance, Achieng and Makori (2017) created an open-source web GIS platform in Nigeria to plan, manage, and maximize the wildlife sector's performance. Questionnaires were used to obtain data, and 56 wildlife officers were surveyed.

It was discovered that a web application is updated at regular intervals and utilized to serve a larger number of people. Wildlife performance has been enhanced positively and significantly by the use of this platform. Wei (2012) conducted a similar study in which web GIS was created by combining spatial data with multimedia data like text, voice, and video. Internet technologies and e-commerce through Business to Consumer transactions have significantly contributed to the wildlife business of Kenya, thus improving online marketing. As of March 31, 2018, the world had 2.38 billion active users, according to Facebook Newsroom (2019). Onder, Gunter, and Gindl (2020) conduct research on whether Facebook is an effective channel for KWS management to communicate and its role in generating revenue. The research employed 210 management employees as a sampling population.

Questionnaires adapted from a descriptive survey design were administered to collect data. Facebook was mostly utilized by the wildlife firm to build brand awareness and stimulate client participation, according to the report. Using web technology, video files, audio, and geolocational information were integrated to build a multimedia web GIS application with strong tools for internet spatial query response. There were no trip planning capabilities on these websites that would facilitate trip customization, though. With the Business to Consumer transactions, e-commerce and internet technologies have significantly impacted Kenya's wildlife industry, thus boosting online marketing. As of March 31, 2018, 2.38 billion monthly active users worldwide, according to Facebook Newsroom (2019). Onder, Gunter, and Gindl's (2020) study on Facebook effectiveness as a tool of communication by KWS management and its ability to generate revenue. The research utilized 210 management personnel as a sample. Descriptive survey questionnaires were used in data collection.

Facebook is primarily utilized by the wildlife firm to generate brand consciousness and foster client interaction, according to the report. It bridges individuals of a common interest and is dynamic and interactive. Marketing of wildlife on Facebook offers tourist destinations a

chance to engage with customers one-on-one, present their companies to potential tourists, and create a branded experience through Facebook ads. Literature review finds several gaps that this study seeks to bridge. Theoretically, most of the research in the industry has explained the relationship between the growth of the economy, tourism, and technology without referencing models that explain how the online platforms directly affect the performance of the wildlife industry. Theoretically, however, while previous research is ready to yield the role of online platforms in advertising, conservation, and consumer interactions, not much synthesis of such determinants finds its way into a complete framework that represents their aggregated impact on outcomes in the wildlife sector. Contextually, most of the research has been carried out in the developed world like Italy and Australia, whose infrastructural, institutional, and technological environments are quite different from those of Kenya and, therefore, results are less locally applicable. Methodologically, past research has depended mainly on cross-sectional questionnaires and descriptive surveys that are not likely to reflect dynamic changes in the adoption and utilization of digital platforms over time, or reflect sensitively mediating and moderating variables affecting performance in the wildlife industry.

This study therefore fills these gaps by situating the research in the Kenyan context, adopting a more comprehensive conceptual framework, and employing rigorous methods, descriptive survey design and pragmatism research philosophy to give context-based and actionable information. 2.3.2. Project Management and Wildlife Sector Performance Digital technology has a revolutionary effect on wildlife sector performance. The strategic implementation of these technologies can make wildlife conservation more effective and efficient such that wildlife is safeguarded and made sustainable for future generations. The Global Positioning System (GPS) technology enables researchers to measure an animal's position and distance from sample points and its exact pattern of movement (Stewart, Fisher, Burton & Volpe, 2018). These technologies have enabled the detection of extraordinary

habitats, exploration of the social life of reintroduced populations, and the discovery of hitherto unknown life history traits of threatened species.

Technology borne on animals obtains high-resolution information that can be used to study an animal's physiology, behavior, demography, community interactions, and environment (Also known as AVEDs (animal-borne video and environmental information gathering systems)) (Raymond et al., 2015).

In Worldwide Hospitality and Tourism Themes, Chevers and Spencer (2019) explored customer satisfaction with Jamaican wildlife tourism based on information and communication technology.

A correlational survey design was employed in the study and addressed 12 wildlife tourism departments. Questionnaires were used in the data collection. Pearson correlation and hierarchical regression analysis were employed to check the data. Results indicated that wildlife tourism has to continuously upgrade as there is a shift in the needs of visitors in the modern digital age. The investors have to bring in a new theme that highlights the species in their natural surroundings to boost the appeal factor of the destination. Mix of specialization can improve tourist satisfaction.

Tourist satisfaction will intensify the positive experience of being with animals.

Wildlife tourism involves more investment to develop value for animals to feed and protect them for a sustainable ecosystem. Monitoring and surveillance such as drones and camera traps can monitor wildlife population and follow poachers in real-time. Camera traps capture photographs of wildlife automatically, producing data on species presence and behavior. Accordingly, the application of digital technology in the wildlife sector can be beneficial in enhancing the performance of the sector. In Singapore, Mangal and Karmarkar (2021) studies on the business and information technology in examine if the safari activities have an impact on the tourist's attitudes in the country. The study employed exploratory method

and examined Whether views of tourists within the country, particularly concerning wildlife conservation, are shaped by their safari experience. Twelve key informants gathered data. The research participants were purposively selected and undertook phenomenology qualitative research via face-to-face interviews. The outcomes of the study revealed that electronic media are critical to the marketing of Singapore's wildlife tourist destinations to the global world. Technological systems assist in attracting visitors, which increases conservation revenue. The research advised that there is a need for real-time data communication and sharing platforms in planning anti-poaching operations, enabling faster action against threats. Birds, geolocators of low weight, or satellite tracking devices have made it realistically feasible to reconstruct the wintering locations and migratory routes of large and small birds could offer chances to test hypotheses regarding migration strategies. Different sensors have been combined into compact, portable units to observe the internal as well as the external conditions of free-ranging animals (Raymond et al., 2015). The intention behind further applications of technology in captivity, including those related to animal behavior and conservation, is to advance scientific research across various domains and promote animal welfare.

As an example, scientific inquiry into animal cognition that derives much benefit from technology can prove to be a useful tool for the assessment of the welfare, behavior, and general temperament of animals kept in zoos (Cronin et al., 2018). One recent Japanese research on the application of technology in the conservation of animal species was conducted by Cronin et al. (2018). Using cross-sectional techniques, the authors gathered information from 320 national park managers through standardized questionnaires. The researchers, using simple cognitive tests, quantified the anxiety responses of three various ape Chimpanzees, Macaca fuscata, Pan troglodytes, a Japanese macaque, and lowland Wes gorillas, Gorilla to loud, unpredictable, and repetitive stimuli. The tests revealed how vital it is to know an animal's subjective or affective state in order to quantify its state of well-being, which might affect its

survival and reproduction. One of the keys to bettering their well-being may be ambient control like temperature, noise level, access to the outdoors or isolation, and interaction with non-technical objects. In a bid to reduce the rate of human-animal conflicts that have been very common in the region recently, Kenya animal Service has used innovation and technology in monitoring wildlife movements. Information management system of the Kenya Wildlife Service was examined in research done by Njeri (2017) up to financial performance as well as management of income risk.

1,286 respondents who worked in national parks where an information management system was utilized to collect fees to enter the park made up the target population.

296 employees in total were selected to represent the target population. A sequential questionnaire was used to gather data, and descriptive statistics was used in analysis. The article contends that the use of an information management system has improved networking of the Wildlife sector and the communities by automatically checking tariffs and electronically identifying customers to ensure that there are no tariff collisions. Eunice (2018) examines the way that travel and tourism businesses in Kenya have utilized digital technology to facilitate their competitiveness. In the research, a descriptive cross-sectional research design was used. All the 117 tour companies based in Nairobi were the study population. Utilizing Yamane's formula, a sample size of 65 travel and tour companies was selected. The major data were gathered by using a questionnaire containing closed-ended and open-ended questions.

Nairobi-based firms interact with their customers on Facebook, Twitter, and LinkedIn, according to the study.

Kenyan tour and travel firms, according to the survey, must have good procedures and processes in place so that they can encourage the utilization of digital technology. Utilization of digital technology must be made part of the company's short-term and long-term plans. Apart from that, Tours & Travels management should conduct ongoing training for its employees so

that they have the ability to do their job. Theoretically, the bulk of the research attention is on the technology hardware such as GPS, drones, and camera traps without aligning their analysis appropriately within such project management theories that elucidate how planned planning, implementation, and assessment influence the outcome of the wildlife sector. Contextually, the bulk of the available evidence comes from developed economies and hence less applicable to Kenya's wildlife industry.

Methodologically, previous research has relied on descriptive and cross-sectional designs, correlational models, or small qualitative samples, which restrict the possibility of detecting longitudinal effects of project management interventions and reduce generalizability.

This study therefore tries to fill these research loopholes by grounding its investigation in project management concepts, taking a holistic conceptual framework, situating the study in Kenya's wildlife industry, and employing questionnaires to gather primary data and worked with a large sample size of 323 management staff to generate context-specific knowledge. 2.2.3 Technology in Administrative Management and Performance of Wildlife Sector Administrative management plays a critical role in the performance of the wildlife sector. It can ensure effective policy enforcement, best resource use, operational efficiency, stakeholder involvement, transparency, accountability, and crisis management. Proper administrative practice may be crucial to the achievement of conservation goals, protection of wildlife, and facilitation of sustainable approaches within the sector. Internationally, a study by Goll and Rasheed (2019) investigated the effect of top management demographics, rational decision-making, environmental munificence, and wildlife sector performance. From a 509-person survey sample using a questionnaire, data were gathered from various wildlife sectors. Variable relationships were determined through correlation and regression analysis. The findings showed that employee commitment increased wildlife sector performance by 56% to 94%. Performance of wildlife sector is also strongly connected with delegation, employee's

motivation, and competency building. Employee's motivation alone isn't impacting performance of wildlife sector hence there is a need to study on administrative management and performance of wildlife sector.

Effective administrative management can ensure sustainable wildlife conservation practices. Effective administrative management can help maintain endangered species and ecosystems. Lo, Wang, Wah and Ramayah (2020) in Malaysia explored the critical success factors of wild sector performance in Malaysia. In a survey of 36 manufacturing firms in Macedonia, data were gathered.

Quantitative methods and statistical data analysis were used to test the hypotheses.

Perception of wild sector performance is positively associated with effective usage of employee engagement.

More specifically, there was a statistically significant correlation between the management's beliefs of the performance in the wild sector and employee engagement and empowerment initiatives and the use of self-managed teams.

The research, though, made use of simple random sampling, which restricts the ability to obtain a sample representative of the entire population and hence is a methodological deficiency. Instituting administrative management plans to handle crises such as natural disasters, epidemics, or human-wildlife conflict is part of minimizing their effects on wildlife. Wassem et al. (2019) examined the role of managerial support and capacity on effectiveness. The primary purpose of the research was to examine the role of capacity development and motivation on employees' success in Pakistan's wildlife department. In this study, the influence of capacity building and motivation on the performance of workers was examined based on employee retention as a mediator. The study was conducted on high-level management employees working in Pakistan's wildlife sector. The target population of 200 employees was

selected. For evaluation and analysis of the primary data gathered through the study, Information was gathered using a standardized questionnaire.

Descriptive statistics and casual modelling techniques were then utilized for analysis.

Descriptive statistics were carried out through SPSS programme, while casual modelling was carried out through SMART-PLS. The study discovered that capacity development significantly contributed to influencing staff output. Improved commitment and confidence among employees desiring to create a successful culture and gain competent competence are attributed to employee retention. Elnaga and Imran, A. (2013) researched the effectiveness of training and expansion in Nigerian wildlife and tourism against employee success and firm competitiveness. The research broadly sought to explore how training and expansion affect employee efficiency and competitive advantage in Nigeria's wildlife-tourism industry. The entire workforce within the industry was targeted.

Descriptive statistics were used to examine 223 randomly selected questionnaires of the target group. Training and development were proved to affect employees' performance and organizational effectiveness according to the study. It is easier to conduct with regard to training staff using the new technology. Zeynab et al. (2018) considered how the use of technology affected organizational performance in Kenya. The main objective of the study was to determine the roles organizational capacity, customer knowledge management, technology, and customer orientation play in managing the industry and workforce at large. The main data from 155 respondents who made up the target group were gathered using a systematic questionnaire. The research findings also verified that information technology, customer knowledge management, and organizational ability were all positively correlated with the effectiveness of an organization. Organizational performance would seem to be influenced by the effectiveness of administrative management in general. Literature studied indicates some knowledge gaps such that the majority of studies have theoretically addressed leadership,

employee motivation, and training without relating them sufficiently to administrative management theory that describes how technology integration enhances organizational systems to enhance sustainable wildlife performance. At a conceptual level, research has examined specific elements like organizational competence, training, or employee motivation, but very few have brought these variables together within an end-to-end system connecting administrative management, technology tools, and industry performance with much evidence available being from countries such as Malaysia, Pakistan, and Nigeria, which have different administrative infrastructures and information technology environments than Kenya and hence less directly transferable. Methodologically, others employed descriptive surveys, correlation or regression models with low representativeness and cross-sectional designs, which are of low power to detect long-term effects of technology-based administrative management on wildlife sector performance.

This study therefore fills such research gaps by employing administrative management theory, illuminating an integrated conceptual frame, situating the question in the Kenyan wildlife sector, and employed some more holistic approach to generate context-specific findings. 2.3.4 Digitalization Process and Wildlife Sector Performance Digitalization can transform the game in the area of productivity in the wildlife sector globally. With the application of digital technologies, the wildlife sector can improve conservation, boost data collection and analysis, and involve the public more effectively. Globally, Pochino, Vieira and Nechita (2021) examined long-lasting digital consumer involvement tactics from the standpoint of tourist recovery. 20 people were chosen using a purposeful and random sample technique respondent for the survey from different places across the world. A google form questionnaire survey of respondents was used to collect data. The investigator used descriptive statistics to analyze data and tables to present results. The study found that digitalization process in wildlife sector facilitate global collaboration among wildlife administrators,

allowing for the sharing of data, research findings, and conservation strategies of wildlife. Also, promoting open data enhances transparency and collaboration among the wildlife sector. However, the study used purposive and simple random sampling techniques while this study will use a stratified sampling method thus presenting a methodological gap.

In India, Suneel and Shekhar (2020) did a study on digitalization on a paradigmatic strategy for the growth of the Indian tourism sector. The design of this study is based on a survey. The researchers used a questionnaire to collect data, and Pearson's product moment correlation coefficient analysis was used to analyze the data. Survey results show a significant positive correlation between digitalization process and the performance of wildlife sector. The integration of internet of things devices in protected areas creates smart parks that can monitor environmental conditions, wildlife movements, and human activities in real time. Virtual safaris and digital wildlife experiences can allow people to experience wildlife and support conservation efforts remotely, reducing the environmental impact of tourism. The study was on digitalization on A methodical approach to the growth of the tourism sector and did not look into effects of technological skills, employee's commitment and infrastructure management on the performance of wildlife sector which this study seeks to find out.

In Rome, Trends, Varas and Tseng (2019) study on role of digital technology process at the service of wildlife sector in Rome. The study used descriptive and explanatory research designs. The sampling method was random, where the sample size was 184 people. Use LISERL software to evaluate information and test theories to meet study goals. The results show a positive relationship between digital technology process and to service quality and improved wild sector performance. The study further revealed that remote sensing and Geographic Information Systems (GIS) can provide essential tools for monitoring and managing wildlife habitats. The study farther revealed that digital technology such as the use of drones for aerial surveys, is efficient in covering large and inaccessible areas, thus enhancing

data accuracy and comprehensiveness. However, the study made use of use of descriptive and explanatory research designs while this study will use cross-sectional research design to explore digital technological and performance of wildlife sector in Kenya thus presenting a methodological gap.

An investigation on digital tourism, smartphones, the internet, and travel in Africa was conducted by Adeola and Evans (2019). Through a questionnaire, information was collected from twenty-seven (27) managers or owners and one hundred and nineteen (119) workers of small and medium-sized enterprises, who were randomly selected. With the help of descriptive statistical tools, the obtained data were subjected to statistical analysis. The findings show that the digitalization process is significantly improve the performance of wildlife sector. However, the results relied on preference sampling which is not appropriate for hypothesis testing and generalization of results therefore providing a methodological gap. Digitalization can enhance the performance of the wildlife sector globally by improving data collection and analysis, enabling better resource management, fostering global collaboration, and engaging the public. These advancements may lead to more effective and sustainable conservation efforts, ultimately contributing to the protection and preservation of wildlife and their habitats worldwide. This study was conducted in Africa in general and the findings may not be generalizing in Kenya context to find out the effect of digitalization process on the performance of Wildlife sector.

A study by Kamau (2020) focused on the application of machine learning to predict poaching activity in Kenya. Descriptive and explanatory study designs were employed in this research. A selection of 5 participants from Kenya wildlife sector was involved in the study. The study uses questionnaires to answer the research questions. It turned out that AI and machine learning have emerged as powerful tools in wildlife protection. The use of predictive analytics to identify poaching hotspots and optimize patrol routes, can enhance the efficiency

of conservation efforts and resource allocation aiding in proactive conservation measures. Digitalization process in wild life sector It is feasible to put in place feeding frameworks, remotely regulate industrial processes in real time, and offer ongoing information gathering, analysis, and use to adhere to environmental and safety regulations. This may enhance the performance of wildlife sector.

The study focused on the application of machine learning to predict poaching activity in Kenya and used descriptive and explanatory research designs. The current study seeks to investigate digital technological and performance of wildlife sector in Kenya with the focus on how digitalization process through technological skills, employees' commitment and infrastructure management affect the performance of wildlife sector in Kenya.

2.3.5 Digitalization Effect of Wildlife Protection Policies and Performance of KWS

In the face of escalating environmental challenges, the conservation and management of wildlife have emerged as pivotal elements in the quest to preserve Earth's rich biodiversity. Wildlife conservation and management are paramount in ensuring the survival of diverse species and the protection of ecosystems. Laws like the "Environmental Safety Law," "Grassland Law," "Forest Law," "Water Law," and "Entry-Exit Animal and Plant Quarantine Law," according to Li (2022), are all concerned with protecting wild animals and their natural surroundings as well as controlling their use from various perspectives to preserve an ideal living space for them.

Employing a survey for a global population, Gao et al. (2023) evaluated the primary threats and conservation strategies for bats in China; in a similar way their study tactics and methods can be successfully applied to different animals. The investigation included 1,200 participants and used across-sectional research methodology. SPSS Version-26 was used for a descriptive analysis of the quantitative information. According to the report, ecological harm

and contamination of the environment have destroyed the habitat of plants and animals, drastically reduced the number of species, and caused some to go extinct.

Lavery et al. (2019) analyzed the current threats to Australian rock wallabies. Descriptive survey design was considered in studying 320 employees in the Wildlife sector. Questionnaires were used in gathering information from the respondents. According to their research, the primary dangers to rock wallabies are loss of variation in genes, competition between exotic herbivores and an overabundance of native herbivores, shifts in fire circumstances, and hunting by exotic cats and foxes. They further provide important guidelines for efficient monitoring, and observation of the wildlife protection policies It has some ramifications for other wildlife species' protection.

A study in South Africa by Aryal, Dhungana and Silwal (2020) on agricultural regulating policies for wildlife protection employed mixed research method and both quantitative and qualitative data was gathered from 277 middle and lower management and 40 senior managements through survey tools and interview guide respectively. Descriptive analysis procedure was used to address quantitative data while a narrative thematic analysis handled the qualitative information. The findings revealed that promoting sustainable practices in agriculture, forestry, and fisheries is essential to minimize habitat destruction and facilitate coexistence with wildlife. Sustainable resource management reduces the negative impacts of human activities on ecosystems and helps maintain ecological balance, the strategies for effective wildlife conservation and management outlined here are interconnected and mutually reinforcing. Their implementation, supported by a collaborative and holistic approach, is essential for preserving Earth's diverse ecosystems and the multitude of species that depend on them. These efforts serve not only to protect wildlife but also to secure a sustainable future for our planet.

Looking into a study in Kenya by Kaltenborn and Linnell (2022) on Anti-Poaching and Law Enforcement on protection of wildlife. Using a Cross-sectional study design, 168 participants whose opinions were gathered through structured and unstructured questionnaires. From the analysis, it was stated that effectively combating illegal wildlife trade and poaching is a cornerstone of wildlife conservation. Strengthening law enforcement efforts through more rigorous penalties for offenders is crucial in deterring illegal activities. Public awareness campaigns are also vital, as they educate communities about the consequences of wildlife poaching and trade, reducing demand for illegal wildlife products. Robust anti-poaching measures protect endangered species and help maintain ecological balance.

The reviewed studies show that while legislation and policies are central to safeguarding wildlife as well as sector performance, there are certain gaps. Theoretically, existing studies highlight ecological risks and legislations but fail to view linking digitalization with policy implementation and wildlife sector performance. Further, previous studies emphasize threats to conservation, anti-poaching, and sustainability in an interventional way that does not in any way include digitalization as a means to effective policy implementation and sectoral performance. The evidence is mostly generalized from China, Australia, and South Africa and fails to present particular insights for Kenya Wildlife Service. Methodologically, most of the studies employed surveys and descriptive analysis yet did not report on sampling procedures and representativeness, making their findings questionable. This study therefore aims to narrow these gaps by situating the analysis in Kenyan context, integrating digitalization into wildlife conservation policy frameworks, and using an inclusive approach to engage the entire population under development.

2.4 Research Gap

The empirical literature discussed on digital technology on wildlife performance conceptually revealed that most studies that are available have not placed their research within comprehensive frameworks that could explain the relationship between technology and management practices to affect the performance of the wildlife sector. For instance, Lavery et al. (2019) focused on ecological dangers to Australian rock wallabies without linking the results to administration or digital platforms. As per Creswell (2014), "theory provides a lens for examining the relationships among variables, but its absence weakens the explanatory power of research." The present study fills this gap as it is based on Swanson's Systems Theory, Barney's Knowledge-Based Theory, Knowledge Management Theory, Customer Relationship Management Theory, and the Theory of Constraints, thereby providing a wide-ranging theoretical foundation.

At a conceptual level, existing studies have concentrated on isolated wildlife management aspects such as anti-poaching (Kaltenborn & Linnell, 2022), staff motivation (Goll & Rasheed, 2019), and GIS-based promotion (Achieng & Makori, 2017), yet lacking a shared platform offering integration with online platforms, project management, administrative systems, and policy digitalization. As Yin (2018) observes, "fragmented conceptualization constrains the transferability and generalizability of findings to wider contexts." The current study thus uses a grand conceptual model that captures the combined and individual effects of such variables on the performance of the Kenya Wildlife Sector in order to have an overall understanding of the phenomenon under investigation.

The evidence reviewed herein is mostly drawn from developed economies such as Italy (Pangani, 2023), Australia (Kansakar, Munir & Shabani, 2019), and Japan (Cronin et al., 2018) whose institutional settings, technology, and socio-economic conditions are rather dissimilar

to Kenya's. As Mugenda and Mugenda (2003) affirm, "findings derived from foreign settings cannot be transferred to local populations without modification." This research therefore plugs this contextual gap by situating the analysis in the Kenya Wildlife Service particularized, so that the findings are locally relevant and immediately applicable to Kenya's wildlife sector.

Methodologically, the majority of earlier studies relied primarily on descriptive surveys, correlation, or cross-sectional analysis (Chevers & Spencer, 2019; Aryal et al., 2020), with little detail on sampling strategies and analytical complexity. This creates concerns regarding validity, representativeness, and findings stability. Saunders et al. (2019) emphasize that "methodological rigor ensures that findings are both reliable and generalizable." To bridge this gap, the present study employed a quantitative approach along a pragmatist philosophy, used sample size of 323 management staff, and gathers data using structured questionnaires. Chi-square tests were utilized for data analysis in order to establish relationships and regression analysis is utilized in order to ascertain direction and magnitude of relationships between variables, hence enhancing robustness and inferential power.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The study design was discussed in this chapter that address the study challenge. The search also addressed the population target, sample and sampling processes, data gathering procedures and instruments for data collection. The study further looked at the validity as well as reliability of study instruments, piloting of tools, description of information analysis processes and consideration of ethical issues.

3.2 Research Philosophy

While Ganesha and Aithal (2022) stated that all assertions of knowledge must be substantiated by philosophical paradigms and viewpoints, Kombo and Tromp (2016) assert that delivering knowledge entails a systematic process for gathering, analyzing, demonstrating, and translating information in order to develop accurate solutions to problems. According to Handema et al. (2023), the science of conducting study and research approaches must be notified of the investigator's philosophical views of reality, knowledge, logic, and ethical stance, and the researcher's philosophical positions of authority should be derived from the goal or subjective characteristics of the variables in the research problem.

The study adopted a pragmatism research philosophy that allows the use of quantitative method. Pragmatism is justified because it prioritizes the implementation of research findings in real-world situations over the search for impersonal truths. It gives priority to approaches that have the best chance of resolving the current issue (Kankam, 2019). Various quantitative methodologies can be employed by researchers based on the situation and study question. This adaptability may produce outcomes that are more thorough and efficient. Real-world problems are the driving force behind pragmatic research, and the technique chosen is determined by how well it understands and addresses these difficulties (Islam, 2022).

3.3 Research Design

Creswell (2018) defines study design as the entire approach one takes to rationally and cogently connect the many study components, guaranteeing that the investigator successfully tackles the research challenge through a collection of primary and data. The study used a descriptive survey design because it is ideal for gathering detailed, factual, and quantifiable information The design enabled for close analysis of the link between the digital technological and performance of Wildlife sector. A descriptive survey allows the researcher to gather information from a large and diverse population within a minimal time frame, hence cost-effective and efficient (Creswell et al., 2017). It also makes it possible to conduct structured questions and questionnaires, which enable higher consistency and comparability of responses among respondents. The design also permits qualitative as well as quantitative data analysis, allowing the study to quantify patterns, relationships, and perceptions as they are expressed naturally without manipulating variables. This makes it the best technique to use in generating sound insights and finding out the associations established using Chi-square and regression analysis.

3.4 Target Population of the Study

The target group is the audience of interest that the researcher intended to study and where the sample was drawn (Majid, 2018). The population for this study was considered from KWS. The study targets 323 management staff serving the organization from different locations; Nairobi Headquarters, Central Lift Conservation Area, Southern Conservation Area and Tsavo Conservation Area was important for the process (KWS Basic Statistics, 2024). The four conservation areas are purposively considered to represent the Wildlife sector nationally, to make it easy in accessing data intended for the study. The statistics of the management staff was sourced by the researcher from the KWS Headquarters Nairobi, which has records for every conservation area.

The choice for the management staff in the study was further motivated by the fact that they directly interact with the new system of wildlife management and employ the digital technology in addressing their clients. This therefore ascertained the information required for the study. The study further considers Nairobi headquarters for being the convergent Centre of the Kenyan Wildlife sector. It serves as the sole source of the information regarding the digital use in the sectorial management. Finally, Central Rift Conservation Area, Southern Conservation Area and Tsavo Conservation Area are also considered as part of the study to represent Wildlife sector for various regions. This provided varied information in line with the study problem.

Table 3.1. *Population Statistics*

Category	Target population
Human Resource management	4
Security management	38
Finance management	5
Middle management staff	107
Lower management staff	169
Total	**323**

(KWS Basic Statistics, 2024)

3.5 Sample Size and Sampling Techniques

Sampling refers to the procedure of choosing a representative sample for a study from a broader population (Tuovila, 2020). This sample reflected the traits of the population it is taken from. Purposive sampling procedure was used to choose four conservation areas; Central Rift Conservation Area, Southern Conservation Area and Tsavo Conservation Area. These areas were purposively identified for the study. The purposive technique is preferred for the process because it enabled the selection of the specifically identified Kenya Wildlife reservation areas that was singly picked in their geographical positions. The data was sourced from the Management section of KWS, whose wide integration with the resources of the

organization and the responsibility to initiate changes in the organization will be at the position to help the study in understanding how digital technological would influence the performance of the sector. The study employed the inclusion sampling technique in sampling 169 lower management staff, 107 middle management staff, 38 security management, 4 human resource management, and 5 finance management (323) from the four regions as it ensured that all the significant categories of the respondents in the Kenya Wildlife Service were adequately represented. This was a suitable approach since the research was targeted at a comprehensive exploration of the contribution of digital platforms, project management, administrative management, and policy digitalization to system performance across different managerial levels and functional areas. By including the entire population instead of taking only a proportion, the approach minimized sampling error, improved the accuracy of findings, and provided a comprehensive image of the phenomenon under investigation. Also, it ensured that views from all the major departments were represented, thereby increasing the validity, reliability, and generalizability of the findings of the study in the organizational context. These statistics are considered significant for this research since they were primarily sourced from the KWS Basic Statistics 2024.

Table 3. 2. *Sampling Frame*

Category	Target population	Sample size	Percentages	Sampling technique
Human Resource management	4	4	1.2	Census
Security management	38	38	18	Census
Finance management	5	5	1.9	Census
Middle management staff	107	107	33.1	Census
Lower management staff	169	169	52.3	Census
Total	**323**	**323**	**100**	

Source: (KWS BASIC Statistics, 2024)

3.6 Data Collection Instruments

The Primary information gathering instrument for the research was structured Questionnaires. A questionnaire is a good approach, the simplest, and least expensive technique to gather data, claims Orodho (2018). It can gather a lot of data in a manageable amount of time. A questionnaire is free from the prejudice among participants who are not accessible and approachable, according to Kothari (2014). Consequently, a questionnaire was used to collect data from the KWS management staff. The study employed the application of both organized and unstructured enquiries. The methodical questions facilitated simple examination and interpretation of the information gathered. These enquiries reduced the diversity of the participants' answers. Conversely, the unstructured questionnaires collected data about the participants' experiences on digital technological and KWS performance.

The questionnaire comprised of five sections A, B, C, D, and E. Section ‘A’ gathered data which sought to identify each participant taking part in the study thus contains demographic information. Section ‘B’ addressed the digital platforms and wildlife performance, Section ‘C’ Project management and performance of wildlife sector, Section ‘D’ presents the administrative management and performance of the wildlife sector while Section ‘E’ gathered information on the digitalization process and the performance of Wildlife sector whereas ‘F’ wildlife protection policies, digital technology and performance.

3.7 Description of Data Collection Procedures

In order for the study to gather primary data, the researcher sought for an authorization letter from Catholic University of Eastern Africa stating the intention to carry out a research. This was followed by obtaining research permit from the National Commission for Science, Technology, and Innovation (NACOSTI). The investigator then secured an appointment with the KWS authorities about date and time to carry out data collection. On reaching the offices, the researcher introduced himself to the management for the consent to approach the staff. An

additional letter was attached to the questionnaire assuring confidentiality to the respondents. Both quantitatively and qualitatively information was gathered using questionnaires. The researcher allowed the participants to sign a consent form, engage voluntarily, and be guaranteed anonymity for the data collected (Schober, 2018). Furthermore, secondary data was gathered from the organizational records and documentation. The researcher sought permission from the management to be allowed to access documentation and records of the organization to carry out the study.

3.8 Piloting of Instruments, Reliability and Validity

This section explains the internal consistency, piloting and validity of the study instruments. The sections addressed the instruments to be used in the actual study for data collection and ensuring that they are free from any errors.

3.8.1 Piloting of Instruments

A pilot study according to Gani (2020) refers to a preliminary and limited-scale investigation conducted before the primary research study. It involves testing the research methods, instruments, procedures, and protocols on a limited sample of the target population. To ensure the accuracy of pilot research, a sample size of 10% was used in the piloting of instruments since it is adequate according to (Tsang, Royse & Terkawi, 2021). The pilot study was conducted with a sample of 32 participants from Mount Kenya National Park. This location provided the sample required and therefore won't be included in the actual study. The pilot test evaluated the study aims' pertinence while evaluating the research instruments' comprehensibility. The engaged participants in the pilot study were excluded in the actual study. Before the data was actually collected, the researcher will adjust the research instruments based on the findings of the piloting and the responses' insights. This procedure assisted in modifying the instruments to guarantee their efficacy.

3.8.2 Validity of the Research Instruments

The question of whether a process is measuring what it promises to measure is known as validity (Nikolopoulou, 2022). This study focused on face and content validity. To enhance content and face validity of the instruments, the researcher ensured that the items in the questionnaire to cover all aspects of the variable. Further, expert opinion of the supervisors was sought as recommended by (Fernandez-Gomez et al., 2020) for them to rate the appropriateness of the items in relation to the variables of the study. The instruments were presented to postgraduate research expert, educational administration and planning of Catholic University of Eastern Africa. This helped to clear up any ambiguity of the research instruments. The researcher and the panel interrogated the relevance of each question in measuring the face and construct under investigation.

3.8.3 Reliability of Research Instruments

The degree of consistency in the data or results from a research tool following several trials is referred to as reliability (Al Jaghsi et al., 2021). The tool is deemed reliable if a participant receives the same score after taking the test twice, as determined by the researcher. According to Orodho (2018), reliability of the tools can be measured using the test-retest method. To ascertain the reliability of the research tools in gathering pertinent data, the researcher conducted a pilot study with a sample of 16 participants from Mount Kenya National Park. This population was excluded from the actual studies. In order to test the internal consistency of study tools, Cronbach Alpha reliability coefficient was used. Moshki et al. (2020) revealed that for a rate of 0.7-1.0, the instruments are accepted and if otherwise the instruments were revised and the same process repeated Cronbach Alpha reliability coefficient.

Table 3.3. *Reliability Test*

Variables	Chronbach Alpha Coefficient	Items
Digital Platforms	.865	10
Administrative Management	.784	10
Digitalization Process	.741	10
Wildlife Policies	.831	10

Source: Field Data (2025)

Table 3.3 is the reliability test of the independent variables against the performance of the wildlife sector, using Cronbach's Alpha coefficient. The results indicate that all variables cleared good to excellent internal consistency, verifying that items used to measure each construct were reliable. Digital Platforms recorded the highest Cronbach's Alpha of 0.865, indicating an excellent internal consistency of the 10 items. Similarly, Wildlife Policies also had a high reliability coefficient of 0.831, indicating high inter-item correlation. Administrative Management was also reliable at 0.784 Cronbach's Alpha, while the Digitalization Process had the lowest but still satisfactory reliability of 0.741, indicating that all the items of this construct measured the same underlying concept equally.

The threshold levels acceptable for Cronbach's Alpha state that a reading above 0.7 is acceptable in social science studies. Therefore, the reliability coefficients obtained for all four independent variables confirm the internal consistency of the measurement instruments used in this study. It implies that the questionnaire items were well developed and phrased in accordance with each construct, thus facilitating valid and reliable analysis of how these variables; digital platforms, administrative management, digitalization process, and wildlife policies are interrelated with the performance of the wildlife sector. Thus, the research proceeded with confidence in the data obtained from these constructs, ensuring the reliability and accuracy of the subsequent statistical analyses.

3.9 Data Analysis Techniques

The process of organizing data to extract useful information is known as analysis of information (Johnson, 2022). In order to investigate how digital implementation influences performance of Wildlife sector, the quantitative data was analyzed descriptively using measures of central tendency and dispersion, such as frequency distributions mean and standard deviation, computed using SPSS (version 25). Frequencies and tables, were used to display the data that has been analyzed. A statistical analysis was further conducted using Chi-Square and Multiple Regression to ascertain the effect of independent variables on the dependent variable.

3.10 Ethical Considerations

Moral principles that the investigator should take into account when using any research methodology at any point during the research design process are known as ethical concerns. strict compliance to study protocols, especially those concerning human participants, were given careful consideration. Since human subjects was included in the study, precautions were made to guarantee that they won't suffer any negative effects, and the research won't be done for selfish reasons.

Given that confidentiality may be governed by law, the investigator's primary responsibility ensured respondent privacy and to take all appropriate procedures to safeguard material collected or kept in any manner. Complete confidentiality was respected between the participants and the investigator. Only the data strictly gathered from the participants was recorded by the researcher. The Catholic University of Eastern Africa's Department of Postgraduate Studies provided the researcher with a letter of authorization to gather data. Additionally, the National Commission for Science, Technology, and Innovation (NACOSTI) was contacted to get a research authorization. As they complete the surveys, none of the participants felt threatened. Every respondent received the respect they deserve, free from bias

and stereotypes. The participants and the investigators had a positive relationship. To assist with data collection, the investigator got the respondents' free and informed permission.

CHAPTER FOUR

PRESENTATION, DISCUSSION AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents the results of the primary data which was collected through the use of the structured questionnaires, where Statistical Package for Social Sciences (SPSS) Software was used in descriptive analysis of data from the staff of Kenya Wildlife Service. The chapter also, discussed and interpreted the finding under the following areas: digital platforms on the performance of the wildlife sector, technology in project management on performance, technological use in administrative management on the performance of wildlife sector, digitalization process on the performance of wildlife sector and controlling effect of wildlife policies on relationship between technology use and the performance of wildlife sector. The chapter finally presents findings on the multiple regression for the variables relationship.

4.2 Response Rate

The primary data was collected from the Human Resource management, Security management, Finance management, and Middle management and Lower management. Researcher distributed 323 questionnaires to the staff out of which 313 questionnaires were fully filled and returned for analysis. This formed a response rate 96.9%. However, 10 participants never turned up, revealing 3.1%. The group met the threshold (50%) statistical significance as proposed by Aaron (2019). The significance level was affirmed by the percentage, indicating the confident of the true population, where value for the majority lies within the margin of error. This was a good participation, showing that each group was well represented. This is an acceptable response in the social sciences as approved by (Aaron, 2019).

Table 4.1. ***Response Rate***

Response	Expected population	Percentage
Staff turned up	323	96.9
Staff unturned up	10	3.1
Total	**323**	**100**

Source; Field Data (2025)

4.3 Demographic Information

This section presented data on background information of the staff of KWS who took part in the study. It addressed the areas including level of gender, age, level of education, work experience and the current roles played by the staff. The findings were analyzed in the table as shown.

Table 4.2. ***Demographic Information of KWS Staff***

Category	Attributes	Frequency	Percentage
Gender	Male	158	50.5
	Female	155	49.5
	Total	**313**	**100**
Age Group	18–25 years	96	30.7
	26–35 years	77	24.6
	36–45 years	78	24.9
	46–55 years	40	12.8
	56+ years	22	7.0
	Total	**313**	**100**
Level of Education	Postgraduate	44	14.0
	Undergraduate	163	52.1
	Diploma	79	25.2
	Certificate	22	7.0
	Secondary Education	5	1.6
	Total	**313**	**100**
Years of Experience	1–5 years	119	38.0
	6–10 years	60	19.2
	11–15 years	72	23.0
	16+ years	62	19.8
	Total	**313**	**100**
Current Role	Ranger	39	12.5
	Researcher	47	15.0

	Conservation Officer	60	19.2
	Park Manager	24	7.7
	Other roles	143	45.7
	Total	**323**	**100**

Source; Field Data (2025)

The gender balance of the respondents was very even, as 158 males (50.5%) and 155 females (49.5%) took part out of a total of 313 respondents. The nearly equal representation shows that the data collected was not gender-biased, and both female and male opinions were adequately represented in the study. The gender balance enhances the credibility of the results, particularly for gender-sensitive topics such as participation, leadership, or access to education.

In terms of age distribution, the largest age group was 18–25 years with 96 participants (30.7%), followed by the 36–45 years of age group with 78 participants (24.9%), and the 26–35 years, with 77 participants (24.6%). The 46–55 years and 56+ years age groups were underrepresented, with 12.8% (40 participants) and 7.0% (22 participants) respectively. This shows that a large proportion of the respondents were relatively young, possibly reflecting a high sample of young teachers and students. The range of ages also shows that the study includes a broad range of generational experiences and attitudes relevant to wildlife industry participation.

For the level of education, the majority were undergraduate degree holders (163; 52.1%), followed by diploma holders (79; 25.2%), and postgraduate qualifications (44; 14.0%). Other proportions possessed a certificate (22; 7.0%) and secondary education (5; 1.6%) respectively. The high proportion of degree holders suggests a well-educated group of respondents, especially among the management and security team, which contributes to the validity of data that they provided. The representation of diploma and certificate holders, presumably among middle or lower management staff, also adds diversity to the educational backgrounds included.

When examining years of experience in the wildlife profession, 119 respondents (38.0%) had 1–5 years of experience, which was a high percentage of early-career respondents. This was followed by 72 (23.0%) with 11–15 years of experience, 62 (19.8%) with over 16 years, and 60 (19.2%) with 6–10 years. This mix of experience levels bodes well for a balanced sample, mixing innovative thinking with long-term wisdom, which is helpful in interpreting both long-term and more recent trends in conservation practice.

In reference to job category, the majority 143 (45.7%) reported other roles. This category would presumably contain support staff, administrative staff, or other employment not specifically covered by the major job titles provided. Conservation officers were the next largest category with 60 (19.2%) respondents, followed by researchers (47; 15.0%), rangers (39; 12.5%), and park managers (24; 7.7%) respectively. This allocation indicates that the majority of participants are involved in unspecified or diverse operations within the wildlife sector. The fact that conservation officers, researchers, and rangers are highly represented indicates that the study was successful in obtaining the views of operational and field-level employees directly involved in wildlife management and conservation. The fewer proportionate number of park managers reflects the hierarchical nature of the organization, where managerial roles are less than field roles. Therefore, the division of roles provides a complete picture of KWS employees and allows inclusive analysis of views across the different levels of operation.

4.4 Digital Platforms on the Performance of the Wildlife Sector in Kenya

This section analyzed the data on the platforms employed by the KWS staff in their service delivery and how they further influence performance of the sector. Findings were as presented in the Figure 4.1 and Table 4.3 respectively.

Table 4.3. ***Social Networking Sites***

Sites	Frequency	Percentage
Face book	155	49.52
Instagram	26	8.31
Youtube	33	10.54
Tik Tok	18	5.75
X	28	8.95
LinkedIn	53	16.93

Source; Field Data (2025)

Table 4.3 shows Social Networking Sites illustrates the percentage of respondents' usage of various social media websites. The highest used site was Facebook by 155 respondents, which accounted for 49.52% of the total. This overwhelming majority has been taken as an evidence of the supremacy of Facebook as the primary social networking website among the respondents, maybe because it was the most familiar, available, and versatile used for communication, information exchange, and networking. Following Facebook, LinkedIn came in second most used with 53 users (16.93%), suggesting that a considerable majority of the respondents engage in professional networking and career development. Third on the list was YouTube with 33 (10.54%) users, reflecting a preference for video content, tutorials, and educational or entertainment material.

X (Former-Twitter) and Instagram also exhibited relatively similar usage, with 28 users (8.95%) and 26 users (8.31%), respectively. This indicates a moderate level of usage of photo/video-sharing sites and microblogging sites for potential rapidly delivered news or visually presented narratives. Furthermore, TikTok was utilized least by the participants, with 18 individuals (5.75%), suggesting that short-form video content does not appeal to this segment, possibly as a gauge of generational preference, professional inclination, or disinterest in entertainment-platforms.

From the findings, it was affirmed that while Facebook remains the strongest platform, there is growing engagement with professional and multimedia content through LinkedIn and YouTube. The lessened utilization of TikTok and Instagram may well be a sign of demographic drivers such as age, professional status, or levels of digital competency within the sample population. The findings concurred with that of Achieng and Makori (2017), who found that the use of web-based GIS platforms improved wildlife sector performance by enhancing outreach and frequent updates. Similarly, this study found that digital platforms such as social media and service tools improve operational efficiency and support conservation.

Table 4.4. ***Digital Platforms and Wildlife Performance***

Statement	Mean	Std. Dev.
Social Media		
Image sharing networks has helped us access the movement of wildlife in a simpler way	4.17	1.07
The organization actively uses social media to share real-time wildlife updates	4.18	0.88
Service Platforms		
Blogging platforms have helped us share text, images, and videos to trace wildlife	4.23	0.86
Digital service platforms assist in tracking and recovering lost or injured wildlife	4.00	1.00
Service platforms make it easier to access permits and licenses for wildlife activities	4.19	0.96
Service platforms improve operational efficiency within the wildlife sector	4.17	0.93
Content Platforms		
Content platforms provide valuable knowledge on wildlife conservation practices	4.10	1.00
There is regular use of online content platforms for research or training in my field	4.23	0.92
The information on content platforms is reliable and relevant to Kenya's wildlife context	3.96	0.98
Average	**4.13**	**0.95**

Source; Field Data (2025)

Table 4.4 shows use and perceived use of social media, service platforms, and content platforms for wildlife conservation promotion. Discussion is founded on means, standard

deviations, and interpretation of respondents' comprehension. Conservation use of social media is evidently high. Photo-sharing web pages were also evaluated as very useful to facilitate animal movement tracking, with a mean of 4.17 (SD = 1.07), as an indicator of strong agreement accompanied by some variance. Organizational social media pages providing real-time wildlife alerts also had a mean of 4.18 (SD = 0.88), indicating high usage frequency and satisfaction, with minimal disagreement. These findings confirm that social media is an important available vehicle for speedy messaging and real-time wildlife monitoring.

Service websites were also ranked in the top, showing that they are widely applied in operation activities. Blog websites, for instance, were greatly suggested as being helpful to input multimedia data for wildlife observation, with a mean of 4.23 (SD = 0.86). Internet services used for the retrieval of injured or lost animals, while still rated as very high, were given a slightly lower mean of 4.00 (SD = 1.00) and showed greater variation and some problems with effectiveness. Obtaining permits and licenses via service websites was also much liked, as reflected in the mean of 4.19 (SD = 0.96), and expressed their effectiveness in reducing bureaucratic obstacles. In addition, service platforms were seen to improve operating effectiveness with a mean of 4.17 (SD = 0.93), indicating how they assist in streamlining conservation processes. Content platforms were seen to have a critical role in research and capacity building.

Their worth in providing useful information regarding wildlife conservation rated a mean of 4.10 (SD = 1.00). Similarly, their use in research and training rated a mean of 4.23 (SD = 0.92), testifying to their use in enhancing continuous professional development. There was, however, fairly less consensus regarding the reliability and local relevance of information that such sites presented, with a low mean of 3.96 (SD = 0.98). This indicates some hesitation towards localization or relevance of content to the Kenyan conservation context. Altogether,

the internet platforms had a mean of 4.13 total (SD = 0.95), reflecting very strong consensus and some response variation.

The study recognizes that the digital platforms, particularly social media, service platforms, and content tools, are central to wildlife conservation development in Kenya. They facilitate proper communication, tracking of animals, sharing of information, policy adherence, and building capacity. Challenges of platform availability, localized material, and accuracy of data expose areas of development through further training, policy advocacy, and context-adjusted digital tools. The current results are in alignment with Achieng and Makori (2017), who concluded that the use of web-based GIS platforms improved the performance of the wildlife sector by increasing outreach and providing updates in a timely manner. Similarly, the current study demonstrates online platforms, including social media and service tools, as drivers of operational efficiency and favorable for conservation.

4.5 Technological Use in Administrative on Performance of Wildlife Sector

The section analyzed the distribution of the participants according their understanding of various technological sections; digital infrastructures, social network and image management. See result in Table 4.5.

Table 4.5. ***Technological Use in Administrative on Performance of Wildlife Sector***

Statement	Mean	Std. Dev.
Continuous Research		
The department uses digital tools to monitor and track wildlife data	4.23	0.92
Real-time dashboards provide decision makers with live updates for timely wildlife intervention	4.06	0.88
Data Tracking		
The organization has adopted digital SOPs for standardized wildlife data collection	4.01	0.92
There is collaboration between researchers and field staff to support continuous learning	4.17	0.88

Organization consistently collects accurate and up-to-date data on wildlife populations	4.17	0.86
Consistent data tracking improves the quality of decision making	4.26	0.83
Knowledge Utilization		
There are clear protocols for data collection and reporting in my organization	4.19	0.86
The organization actively applies learned knowledge to improve field operations	4.12	0.87
There is adequate support to implement new knowledge in my work	4.04	0.88
Average	**4.14**	**0.88**

Source; Field Data (2025)

Table 4.5 shows statistics regarding how technology supports administrative management and impacts wildlife industry performance, which is measured in three categories: current research, monitoring data, and knowledge application. In the category of current research, it can be seen that computer tools significantly contribute to tracking and monitoring activities. The use of electronic equipment in monitoring and tracking wildlife statistics recorded a high mean of 4.23 (SD = 0.92), showing high agreement with low variability. Real-time dashboards, providing timely data for decision-makers, had a mean score of 4.06 (SD = 0.88) showing a better perception but with increased variability. Similarly, the implementation of electronic SOP.s to be utilized in routine data collection was also highly rated with an average of 4.01 (SD = 0.92). On the whole, these findings affirm that digital technologies are utilized in study and data collection operations to ensure responsiveness while maintaining consistency in wildlife projects.

The surveillance data component also highlights how technology enhances daily wildlife activity. Interstudy and fieldworker collaboration was strongly supported by a mean of 4.17 (SD = 0.88), indicating its importance in facilitating continuous learning. Systematic documentation of wildlife population quantities also functioned wonderfully at 4.17 (SD = 0.86). Most applicable to the current study was permanent information effect on decision-

making with the highest mean value of 4.26 (SD = 0.83) demonstrating that permanent watching enormously enhances evidence-based decision-making. The results suggest that monitoring data has profound roots in wildlife management and enhanced perception as a central aspect of boosted output quality in conservation. On knowledge utilization, it was discovered that organizations managed to convincingly translate data into meaningful information.

Systematic reporting and data collection processes reached a mean of 4.19 (SD = 0.86). Active utilization of learning from field operations reached a mean of 4.12 (SD = 0.87), demonstrating the focus on experiential learning. Facilitation of using new learning, even though obtaining a lower mean value of 4.04 (SD = 0.88), also reflected strong agreement, reflecting change facilitated but possibly more training and institution ability to implement. The total of the three themes had a mean value of 4.14 (SD = 0.88), reflecting strong agreement with relatively low variations in responses.

The study shows efficient use of digital technologies in administration management as a critical input that supports performance in the wildlife industry. Through enabling rapid acquisition of information, timely decision-making, collaborative communication, and systematic application of knowledge, technology is playing the role of a pillar in effective conservation management. Minor variations in attitudes are an indication of potential improvement through improved training, more universal diffusion of systems and procedures calibration, more in the exercise of knowledge. These findings align with Goll and Rasheed (2019), where administrative practices such as communication, delegation, and motivation propel performance in the wildlife industry. The research also shows how digital infrastructures propel communication, monitoring, and knowledge management. Zeynab et al. (2018) also confirmed that technological capacity positively affects organizational performance, in

confirmation of the existing research conclusion that digital systems are the essence of effective and sustainable conservation.

4.6 Digitalization Process on the Performance of Wildlife Sector

The study in this part looks into how the process of digital use influences the wildlife performance in Kenya. It focuses on the Digital Infrastructure, Social Network and the Image management. The findings were as presented in the Table 4.6.

Table 4.6. ***Digitalization Process and Wildlife Performance***

Statement	Mean	Std. Dev.
Digital Infrastructures		
The digital infrastructure in the organization supports efficient communication and reporting	4.19	0.88
There is access to reliable internet and digital tools necessary for conservation tasks	4.19	0.87
Digital tools and platforms have enhanced the monitoring and reporting of wildlife activities in protected areas	4.18	0.84
Social Network		
The organization uses data analytics from digital systems to guide wildlife conservation decisions	4.10	0.88
The organization participates in online conservation forums and partnerships	4.04	0.91
The organization leverages digital networks for expert consultations on conservation	3.99	0.89
Social media platforms are used to crowdsource funding and volunteers for conservation work	3.71	1.06
Image Management		
The organization uses digital campaigns to boost awareness of its conservation efforts	4.16	0.94
The media regularly features success stories from our conservation programs	4.13	0.85
Staff are trained or guided on how to represent the organization positively in public and online	4.05	1.00
Average	**4.07**	**0.91**

Source; Field Data (2025)

Table 4.6 represents the effect of digitalization processes on performance of the wildlife sector based on three dominant dimensions. These are social networks, image management,

and digital infrastructures. For digital infrastructure, the result depicts a very positive trend towards organizational systems that assist in enabling communication and reporting. The organizational infrastructure was graded very high with a mean score of 4.19 (SD = 0.88). Similarly, access to information on the internet and computers had a similar mean of 4.19 (SD = 0.87), showing agreement consistency. Wildlife activity monitoring and recording in conservancies through digital platforms also enjoyed good support with an equal mean of 4.18 (SD = 0.84). These findings together validate the digital infrastructure developed to serve as a solid foundation for administrative use, with growth in real-time communication, data interchange, and operations management being particularly emphasized.

The social network component relates to the use of digital frames for incorporation into conservation and collaboration decision-making. The use of data analysis in wildlife decision-making rated a mean of 4.10 (SD = 0.88). E-participation in electronic discussion and collaboration was also rated as positive with a mean of 4.04 (SD = 0.91). Use of computers in networks for consulting specialists achieved a score of 3.99 (SD = 0.89), indicating moderate but substantial adoption. Social media site usage to mobilize volunteers and money, however, was valued least at a score of 3.71 (SD = 1.06), suggesting some fear and more variability in response. This finding suggests that, although computer networks are best utilized in strategic coordination and consultation with professionals, their capacity to mobilize resources is in no way utilized to the fullest.The image factor explains how organizations are able to promote conservation activities via the internet. Internet advertising campaigns promoting awareness achieved a high mean of 4.16 (SD = 0.94), and press coverage of success stories got 4.13 (SD = 0.85). Representation and web-based public training for employees achieved a low mean of 4.05 (SD = 1.00) that shows although it is there, provision may vary with organizations. Overall, this category demonstrates that reputation and image management through digital

means is a matured and valued field of conservation practice, even if room exists for improvement in terms of consistency.

In general, the technological process achieved a composite mean of 4.07 (SD = 0.91) representing sturdy consensus with relatively narrow variability. This supports evidence that digital infrastructure and tools have a significant function in projecting conservation processes in the wildlife sector to facilitate communication, strategic partnerships, public communication, and exposure. Even though the findings are fairly positive, initiatives such as utilizing web-based platforms in fund-raising as well as media publicity among employees could benefit from targeted improvement towards fully leveraging conservation returns.

The findings of this research are in agreement with Suneel and Shekhar (2020), whose conclusion was that digitalization enhances monitoring and stakeholder engagement. While their study considered technology such as IoT and virtual safaris, this research highlights the policy and institutional support from within. Similarly, Kamau (2020) discussed the conservation aspect of machine learning, but this research widens the story by incorporating employee dedication and infrastructure to achieve a broader and more inclusive outcome.

4.7 Wildlife Policies on Relationship Between Technology Use and the Performance of Wildlife Sector

Wildlife policies are pivotal in determining the role that technology plays in enhancing performance within the industry. They provide guidance for influencing digital adoption, cooperation, and communication. They make sure that technology complements conservation goals. This section examines their role in moderating tourism, security, and people management. Table 4.7 displayed the results.

Table 4.7. ***Wildlife Policies on Technology Use and Performance of Wildlife***

Statement	Mean	Std. Dev.
Digital Infrastructure		
The organization's digital infrastructure complies with national ICT policies for conservation	4.05	0.92
Policy frameworks promote investment in advanced digital conservation tools	4.08	0.83
Technical support is readily available when digital systems face challenges	4.15	0.84
Social Network		
Wildlife policy encourages digital collaboration among conservation actors	4.09	0.84
Policy promotes capacity building through digital training networks	4.09	0.80
The legal framework supports digital outreach for conservation funding	4.10	0.81
Engaging with peer organizations through networks improves conservation outcomes	4.25	0.85
Image management		
Wildlife policies emphasize transparency in communication for public confidence	4.18	0.86
Policy encourages accurate and regular media updates on conservation efforts	4.18	0.74
The organization's digital infrastructure complies with national ICT policies for conservation	4.05	0.92
Average	**4.16**	**0.85**

Source: Field Data (2025)

Table 4.7 presents the analysis of the effect of wildlife policies on technology adoption and overall performance within the wildlife sector. For the digital infrastructure theme, results show relatively high confirmation of alignment of organizational systems with national ICT policies for conservation, with an average of 4.05 (SD = 0.92). Similarly, policy standards that promoted investment in advanced digital technology for conservation were scored at a mean of 4.08 (SD = 0.83). Technical support for digital technology was also most highly rated in this category at a mean of 4.15 (SD = 0.84). These results suggest that although there is overall infrastructure and it is aligned with national policy, responsive systems of assistance are highly

valued by conservation staff. The social network measure shows the effect of collaborative work online and policy on enhancing conservation effectiveness.

Electronic supportive-aided wildlife policy was rated at 4.09 (SD = 0.84). Capacity development through electronic networks for training was also highly supported at a mean of 4.09 (SD = 0.80). Legal frameworks aiding electronic extension for conservation financing was rated a mean of 4.10 (SD = 0.81). The highest rated response in this category was the need to communicate with peer organizations through networks, rated as 4.25 on the average (SD = 0.85). The scores from these indicate not only that electronic policies enable functional coordination but also knowledge sharing and collective problem-solving among the stakeholders of the conservation ecosystem. Image management as a trait defines how the wildlife policies attain openness and public involvement through electronic media.

Openness in communication as a prerequisite to gaining public trust reached a mean of 4.18 (SD = 0.86). Encouragement of open and consistent reporting by media was equally rated, reaching a mean of 4.18 (SD = 0.74), also the highest in the lowest standard deviation in the data, reflecting high concurrence. Rather surprisingly, the final item reaffirmed the role of cyber infrastructure compliance with a mean of 4.05 (SD = 0.92), consistent with the above results. The results emphasize that image management, media engagement and transparency, is at the very heart of conservation performance, well-assisted by good policy frameworks. Therefore, wildlife policies have a significant moderating effect on the relationship between technology adoption and performance in Kenya's wildlife sector. The items had an overall mean of 4.16 and standard deviation of 0.85, indicating high agreement with little variability. It is therefore implied that electronic systems, where policy-aligned, networked with technical support, and positioned in open communication practices, contribute to the operational and strategic performance of the wildlife industry. The record, however, also points to the need for

continued investment in infrastructure, technical support, and outreach activities in order to sustain achievement and public trust in conservation programs.

These findings resonate with those of Aryal, Dhungana, and Silwal (2020), who observed that effective wildlife conservation requires sustainable management solutions and collaborative strategies. However, unlike Aryal et al., who placed more focus on agriculture, forestry, and fisheries, the current study puts more focus on digital infrastructure, training networks, and ICT policy coordination.

4.8 Performance of Wildlife Sector

The performance of the wildlife sector refers to how conservation procedures, resource use, and ecological sustainability are being carried out. It encompasses biodiversity protection, habitat conservation, and response to emerging environmental challenges. Performance evaluation is very important for effective policy enforcement and future success in wildlife conservation. See findings in Table 4.8.

Table 4.8. ***Performance of Wildlife Sector***

Statement	Mean	Std. Dev.
Tourism attraction		
The organization's digital infrastructure complies with national ICT policies for conservation	4.05	0.93
Policy frameworks promote investment in advanced digital conservation tools	4.08	0.83
Technical support is readily available when digital systems face challenges	4.15	0.85
Wildlife Security		
Wildlife policy encourages digital collaboration among conservation actors	4.08	0.82
Policy promotes capacity building through digital training networks	4.09	0.82
The legal framework supports digital outreach for conservation funding	4.10	0.80
Human Activities		
Engaging with peer organizations through networks improves conservation outcomes	4.25	0.84

Wildlife policies emphasize transparency in communication for public confidence	4.18	0.88
Policy encourages accurate and regular media updates on conservation efforts	4.18	0.76
Image management plays a key role in building public trust and support for wildlife initiatives	4.26	0.90
Average	**4.36**	**0.78**

Source: Field Data (2025)

Table 4.8 presents a detailed analysis of performance across the wildlife sector. One of the most important sectors analyzed is organizational digital infrastructure alignment to national ICT policy. The findings revealed that the majority of organizations' infrastructures were aligned to the policy (M = 4.05, SD = 0.93). Similarly, policy milieus were also found to induce investment in high-technology digital conservation technology, as indicated by a slightly higher mean of 4.08 and more variable response pattern with a standard deviation of 0.83. Technical assistance was also discovered to exist when digital systems faced problems (M = 4.15, SD = 0.85). These findings establish the efficacy of policies in developing and sustaining technological infrastructure to support conservation-related tourism and administration.

Policy also plays an important role in enabling digital cooperation and operational security throughout the conservation landscape. Policy was found to enhance coordination among conservation stakeholders on digital platforms (M = 4.08, SD = 0.82). Building policy capacity through virtual networks of training was similarly most preferred with a mean value of 4.09 and standard deviation of 0.82. In the same manner, regulatory controls of electronic outreach enabling conservation funding were rated very highly (M = 4.10, SD = 0.80). The findings indicate the ever-growing importance of effective policy in enabling stakeholders to share information electronically, protect data, and employ legal fundraising tools.

The highest policy impact evidence was attained in areas of public attitude and people engagement. Peer organizational collaboration in internet-based groups rated highly in

optimizing conservation outcomes (M = 4.25, SD = 0.84). Policy-facilitated communication openness also had high support (M = 4.18, SD = 0.88) that showed openness creates trust in conservation among the wider community. Similarly, accurate and frequent contacts with the media were rated most highly (M = 4.18, SD = 0.76) and exhibited low dispersion and high consensus in response. In contrast to general views, image management was also highly rated as a necessary function in securing public endorsement and trustworthiness, which ranked most highly in the dataset (M = 4.26, SD = 0.90).

In agreement with these results, the overall mean across all dimensions of performance was 4.36 with a standard deviation of 0.78, which indicates a general agreement that in the industry, performance is being achieved. The consistency of high mean scores across tourism, security, and public engagement confirms the extensive coverage of policy. Above all, the concentration on image management and open communication enables institutional credibility and mobilizes donor and public support. Such results support that wildlife policies act as strategic enablers for enabling digital transformation and improved conservation results in a well-ordered and effective way. The results of the study are in agreement with Aryal, Dhungana, and Silwal (2020), which mentioned that sustainable agriculture, forestry, and fishery should be promoted in order to minimize habitat loss and peacefully coexist with wild animals.

4.9 Inferential Statistics

This section presented the analysis on the influence of independent variables on the performance of the wildlife sector in Kenya. Chi-Square test was used in this process where results revealed in the Tables.

Table 4.9. ***Digital Platforms and Wildlife Performance***

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	811.155[a]	754	.073
Likelihood Ratio	517.945	754	1.000
Linear-by-Linear Association	28.955	1	.000
N of Valid Cases	311		

Source: Field Data (2025)

The Chi-Square tests by analysis presented in Table 4.9 create the relationship between digital platforms and wildlife performance. The value of Pearson Chi-Square, which is 811.155, and its p-value, which is 0.073, are larger than the usual significance level of 0.05, which implies that there does not exist any statistically significant relationship with a confidence of 95%. However, the Linear-by-Linear Association is statistically significant (value = 28.955, p = 0.000), revealing a strong and significant linear relationship between the use of digital platforms and wildlife sector performance enhancement. This reveals that although the overall categorical relationship is not statistically significant, there exists a systematic relationship where greater use of digital platforms is associated with enhanced wildlife performance outcomes. Therefore, the research highlights digital platform integration as key in enhancing performance indicators in the wildlife sector. In difference, Achieng and Makori (2017) indicated that the use of web-based GIS platforms improved wildlife sector performance by enhancing outreach and frequent updates. Similarly, this study found that digital platforms such as social media and service tools improve operational efficiency and support conservation.

Table 4.10. ***Administrative Management and Wildlife Performance***

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1075.559[a]	806	.000
Likelihood Ratio	573.664	806	1.000
Linear-by-Linear Association	9.183	1	.002
N of Valid Cases	311		

Source: Field Data (2025)

Table 4.10 analysis tests the correlation between administrative management and wildlife performance. The Pearson Chi-Square of 1075.559 and p-value of 0.000 are significant at a confidence level of 95%, showing there is a strong correlation. Additionally, the Linear-by-Linear Association of 9.183 and p-value of 0.002 also indicates there is a strong positive linear relationship between administrative management practice and the performance of the wildlife sector. These findings suggest that increasing administrative management planning, coordination, leadership, and resource allocation enhances the performance of the wildlife sector. This suggests the necessity for improved administrative processes and structures towards achieving better outcomes in wildlife management and conservation. Compared to this, Goll and Rasheed (2019) concluded that administrative practices such as delegation, communication, and motivation significantly affect the performance of the wildlife sector. Also, this study highlights that digital infrastructures allow effective communication, monitoring, and image management.

Table 4.11. ***Digitalization Process and Performance of Wildlife Sector***

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	991.903[a]	832	.000
Likelihood Ratio	625.883	832	1.000
Linear-by-Linear Association	4.772	1	.029
N of Valid Cases	311		

Source: Field Data (2025)

Table 4.11 analysis examines the relationship between the process of digitalization and performance of the wildlife sector. Pearson Chi-Square test statistic value of 991.903 and p-value of 0.000 were determined to be related at the 95% confidence level. Also, the Linear-by-Linear Association value of 4.772 with a p-value of 0.029 again confirms strong positive linear association that shows, as more digitalization measures are implemented, the utilization of digital means, automation, and information systems; there is a corresponding increase in wildlife sector performance. These findings reiterate the importance of developing digital infrastructure and processes for enhancing operating efficiency and outcomes within the wildlife sector. Suneel and Shekhar (2020) supported the study by affirming that digitalization enhances monitoring and engagement.

Table 4.12. ***Wildlife Policies and Wildlife Performance***

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1223.673[a]	806	.000
Likelihood Ratio	607.975	806	1.000
Linear-by-Linear Association	22.966	1	.000
N of Valid Cases	311		

Source: Field Data (2025)

The Chi-Square tests in Table 4.12 measure the relationship between the performance of the wildlife sector and wildlife policy. Pearson Chi-Square of 1223.673 and a p-value of 0.000 show a statistically significant relationship at a 95% confidence level. Furthermore, the Linear-by-Linear Association of 22.966 and a p-value of 0.000 verify a strong significant positive linear relationship. This implies that properly designed and well-implemented policies within the wildlife industry, such as regulations, enforcement systems, and policy guidelines, play an immense contribution towards enhancing performance of the industry. Outcomes in this respect thus reflect the success of effective policy making and regulation in achieving sustainable management and conservation results. This study was supported by Kaltenborn and

Linnell (2022) who in their study illustrated that robust legal frameworks and public awareness campaigns are essential in deterring illegal wildlife activities.

4.10 Regression Analysis

Regression analysis is a statistical method to analyze the relationship among one dependent and one or more independent variables. Regression helps to identify the extent to which predictor variables influence a variable of interest. Regression helps research in identifying patterns, prediction, and checking the effect of Independent Variable on Dependent variable. Regression results are presented in this section to provide a measure of the influence of digital technology on the performance of wildlife sectors.

Table 4.13

Model Summary of Digital Technology on Performance of Wildlife Sector

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.335[a]	.112	.101	.83628

a. Predictors: (Constant), Wildlife Policies, Digital Platforms, Digitalization Process, Administrative Management
b. Dependent Variable: Wildlife Performance

The model's R = 0.335 shows a moderate, positive correlation between independent variables (Wildlife Policies, Digital Platforms, Digitalization Process, Administrative Management) and Wildlife Performance. The R^2 of 0.112 demonstrates that all these predictors together explain approximately 11.2% of variance in Wildlife Performance, leaving an enormous 88.8% of variance unexplained, reflecting weak explanatory power overall. Although the Adjusted R^2 of 0.101 is not much smaller, this tells us that after controlling for the number of predictors, the model's explanatory gain is quite small and possibly the result of adding a few predictors that are contributing very little. The Standard Error of the Estimate is

0.83628, so on average the observed Wildlife Performance scores are roughly 0.84 units distant from the model-predicted values. This provides an indication of predictive accuracy, with lower values reflecting greater model precision; hence, this value suggests moderate prediction reliability.

Table 4.14. ***ANOVA of Digital Technology on Performance of Wildlife Sector***

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.120	4	6.780	9.695	.000[b]
	Residual	214.004	306	.699		
	Total	241.124	310			

a. Dependent Variable: Wildlife Performance

b. Predictors: (Constant), Wildlife Policies, Digital Platforms, Digitalization Process, Administrative Management

Source: Field Data (2025)

The ANOVA results in Table 4.14 show that the regression model is significant statistically (F = 9.695, p = .000), indicating that the overall predictors of Wildlife Policies, Digital Platforms, Digitalization Process, and Administrative Management significantly predict Wildlife Performance differences. Having a Regression Sum of Squares of 27.120 against a Residual of 214.004, the model is describing a moderate percentage of the variance in the total (Total SS = 241.124), consistent with the earlier R^2 of 0.112. Although the percentage of variance explained is low, the significance is that the predictors contribute strongly to the model.

Table 4.15. ***Coefficients of Digital Technology on Performance of Wildlife Sector***

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.271	.376		6.036	.000		
	Digital Platforms	.349	.082	.256	4.236	.000	.792	1.262
	Administrative Management	.033	.069	.029	.472	.037	.784	1.275
	Digitalization Process	-.005	.056	-.006	-.095	.024	.812	1.231
	Wildlife Policies	.154	.067	.138	2.291	.023	.802	1.247

a. Dependent Variable: Wildlife Performance

Source: Field Data (2025)

The analysis in Table 44.15 provides a running paragraph for each variable based on the standardized coefficients (Beta), significance levels (Sig.), and the direction of the unstandardized coefficients (B). A significant relationship exists between the variables if the P-value ≤ 0.05. Digital Platforms have the strongest and most significant positive relationship with Wildlife Performance. With a standardized Beta of 0.256 and highly significant p-value of .000, the results indicate that as the use of digital platforms increases, so too does wildlife performance. The unstandardized coefficient (B = 0.349) indicates that for every unit increase in the use of digital platforms, an increase of 0.349 units of wildlife performance occurs, and this is the strongest predictor in the model.

In addition, Wildlife Policies have a positive impact on Wildlife Performance to a large extent. The standardized Beta value of 0.138 and a p-value of .023 show that policy initiatives towards wildlife are associated with a noteworthy improvement in performance levels. The unstandardized coefficient (B = 0.154) implies that a one-unit increase in the effective implementation of policies leads to an increase in wildlife performance by 0.154 units, showing a moderately strong positive influence.

Further, administrative management is positively correlated with Wildlife Performance to a statistically significant small extent. The standardized Beta is 0.029, and while the effect

is negligible, the p-value of .037 shows that it has some role to play, no matter how small. The unstandardized coefficient (B = 0.033) shows that administrative improvement is linked with only a very small performance increase, reflecting a limited role in advancing outcomes.

Digitalization Process, however, has a negative and insignificant relation with Wildlife Performance. The standardized Beta is –0.006, and the unstandardized coefficient (B = –0.005) indicates that greater digitalization does not enhance performance, rather, it worsens it to some extent. Although the relationship is statistically significant (p = .024), the effect size is very small and negative and may indicate implementation inefficiencies. Therefore, the findings show that Digital Platforms and Wildlife Policies are the most significant positive drivers of Wildlife Performance, while Administrative Management has little impact, and the Digitalization Process, while significant is not effective in its current state.

Table 4.16. Correlations between the Wildlife Policies Digital Technology and Wildlife Performance

		Digital Platforms	Administrative Management	Digitalization Process	Wildlife Performance	Wildlife Policies
Digital Platforms	Pearson Correlation	1	.402**	.271**	.306**	.286**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	313	313	313	311	313
Administrative Management	Pearson Correlation	.402**	1	.270**	.172**	.285**
	Sig. (2-tailed)	.000		.000	.002	.000
	N	313	313	313	311	313
Digitalization Process	Pearson Correlation	.271**	.270**	1	.124*	.378**
	Sig. (2-tailed)	.000	.000		.029	.000
	N	313	313	313	311	313
Wildlife Performance	Pearson Correlation	.306**	.172**	.124*	1	.217**
	Sig. (2-tailed)	.000	.002	.029		.000
	N	311	311	311	311	311

Wildlife Policies	Pearson Correlation	.286**	.285**	.378**	.217**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	313	313	313	311	313

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

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

Table 4.16 correlation analysis examined the correlation between wildlife policies (control variable), independent variables (digital platforms, administrative management, and digitalization process), and wildlife sector performance. Positive and significant correlations between the variables were identified with varying magnitudes.

The findings show that wildlife policy was substantially and significantly correlated with digitalization processes ($r = .378$, $p < .01$), meaning that effective policy frameworks significantly enhance digitalization in the wildlife industry. This suggests that effective policies facilitate the ease with which there can be acceptance and adoption of digital tools in conservation and management. Similarly, wildlife policies were found to be positively correlated with digital platforms ($r = .286$, $p < .01$) and administrative management ($r = .285$, $p < .01$), both being of moderate strength. These results indicate that facilitating policies are crucial to drive the management practices as well as digital platform adoption for monitoring, reporting, and stakeholder management.

In terms of wildlife performance, policies had a weaker but positive relationship ($r = .217$, $p < .01$). This means that policies are crucial to sector performance but exert their influence in the short term to a lesser extent than over digitalization and organizational designs. Instead, policies can exert an indirect influence through affecting technology adoption and management practices that eventually enhance performance results.

From the findings, it can be stated that the correlation test suggests that wildlife policies are a main driver, underpinning digitalization and management systems that indirectly improve

improved wildlife performance. This implies the requirement to ensure policy measures are consistent with technology adoption and best administrative arrangements in the aim of building conservation impact.

4.11 Summary

This chapter presented response rate of the participants, demographic information, the interpretation and discussion findings, as was captured under the descriptive analysis, the inferential statistics; Chi-square, regression and the correlation between the controlling effect of wildlife policies on the independent and dependent variables. This further led to Chapter Five where summary, conclusion, recommendation and further studies were presented.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDIES

5.1 Introduction

This chapter presents a summary of the key findings on the influence of digital technology on the performance of the wildlife sector in Kenya. It further outlines the conclusions drawn from the study, provides practical recommendations for stakeholders in the sector, and offers suggestions for future research to build upon the insights generated by this study.

5.2 Summary of Findings

Summary of the study findings was on the digital technology and its influence on the performance of the Wildlife sector in Kenya. It was guided by the study objectives as presented.

5.2.1 Digital Platforms

The study established that online platforms are used across wildlife conservation, and the most used tool among them is social media. Photo-sharing websites and organizational sites highly ranked in monitoring migration patterns of animals and providing real-time feedback, justifying their importance in rapid communication and awareness creation. Service sites also worked effectively, primarily in providing permits and licenses, facilitating wildlife rescue operations, and optimizing operational effectiveness. Blogging platforms stood out for their role in providing multimedia content to support monitoring work, while content platforms were highlighted for supporting knowledge sharing, learning, and research towards conservation.

The findings showed a substantial mean rating of digital platforms ($M = 4.13$, $SD = 0.95$), highlighting their central role in enhancing conservation efficiency in Kenya. The tools

facilitate communication, monitoring, information sharing, policy compliance, and professional development. Some deficiencies were, however, mentioned, including low accessibility, doubts regarding content accuracy and localization, and variability in the effectiveness of some service tools. Filling these loopholes through targeted training, policy support, and context-configuring digital tools would even better promote the contribution of digital platforms to sustainable wildlife preservation.

5.2.2 Administrative Management

The study found that the application of digital technology in wildlife management and administration had a mean score of 4.14 and a standard deviation of 0.88. The high mean reveals agreement from the respondents that digital technology plays a significant role in monitoring, data collection, collaboration, and decision-making processes in conservation management. The comparatively low standard deviation once more reflects strong consensus among the participants and attests that digitalization is as much agreed upon to be a core driver of operational efficiency and effectiveness. These findings reveal that digital system integration has not only ensured the convenience of wildlife observation and research but also knowledge utilization and adaptive decision-making. The results reveal digital technology as a central actor in wildlife conservation management, providing timely, credible, and cooperative responses. General high scores reveal a trend towards digital adoption with minimal variations revealing areas for further enhancement through further training, expanded roll-out of systems, and **local adaptation.**

5.2.3 Digitalization Process

From the study, it was evident that digital infrastructures, social networks, and image management are most integrated in wildlife conservation with a composite mean of 4.07 and standard deviation of 0.91.

The score indicates there is general agreement that technological processes contribute largely to enhanced communication, reporting, decision-making, and public awareness. The findings especially pinpoint the excellence of organizational infrastructure, good internet connectivity, and electronic monitoring programs, which all scored very high and were considered most important in boosting administrative processes and control in conservation. There are certain inherent features of social networking and image management that gained moderate uptake and more variation.

For instance, while computer-based applications were much valued in volunteer mobilization, collaboration, and campaigns for awareness creation, they were not being implemented evenly in fundraising too. Similarly, web-based training of employees was introduced unequally among firms. These results suggest that while computer-based systems are already a good foundation for conservation management, there are areas of enhancement in resource mobilization, capacity building, and user consistency that can enhance their contribution to wildlife sector performance. 5.2.4 Wildlife Policies

The results indicate that wildlife policy plays an important role in facilitating the diffusion of digital infrastructure, social networking, and image management among the Kenyan conservation community.

The items in this dimension had a very high mean of 4.16 (SD = 0.85), an indicator of low variability and high agreement. The results are that organizational systems are mostly aligned with national ICT policies, and the most valued policies are those geared towards investment in digital preservation tools and technical assistance. Similarly, policies in the cyber domain were observed to enhance coordination and teamwork through online training, electronic outreach, and network building across organizations, peer organization communication being most graded. Similarly, image management was one of the support

pillars of conservation success, and openness, transparency, and top-level media engagement were most recommended.

These findings suggest that policy-oriented and network-based digital platforms improve communication, knowledge sharing, and stakeholder confidence, thereby moderating the technology adoption–sector performance relationship. The study further suggests the need for ongoing long-term investment in infrastructure, technical support, and outreach to realize the complete application of these policy frameworks in pursuing long-term conservation success.

5.2.5 Wildlife Sector Performance

The findings showed that wildlife policies significantly influence conservation performance and technology adoption with a mean of 4.36 and a standard deviation of 0.78, reflecting high agreement and low variance in responses.

Also, findings show that the policies have been able to balance organizational infrastructures and national ICT systems, encouraging investments in high-tech digital technologies, as well as technical support for conservation systems. They also emphasized the policy's role in promoting digital collaboration by means of network training, enhancing legal frameworks for conservation funding, and facilitating collaboration between stakeholders. It was most influential on image management through open communication, frequent contact with the media, and peer networking in the organization in high levels, showing the importance of openness and public confidence. Thus, the stability of strong mean scores across infrastructure, collaboration, and image management is an indicator of the manner wildlife policies are integrated to be strategic drivers of digital transformation, institutional credibility, and enhanced outcomes for conservation.

5.3 Conclusions

The study concluded that the digital technologies have an important role to play in improving the performance of the wildlife sector of Kenya, especially when strategically integrated into the organizational functions and facilitated by supportive policies.

Online platforms like social media, service portals, and content-sharing instruments were found to be instrumental in automating communication, monitoring wildlife, information sharing, and employee development. Social media tools particularly facilitated the instantaneity of news reports and community interaction, while service platforms facilitated access to procedures such as permit access and wildlife recovery. Content platforms were valued for their effects on research, training, and continuous learning, with only minor concerns about the reliability and contextual relevance of some content suggesting a need for greater localization and standardization. Technology use within administrative management also uncovered a positive effect on sectoral performance.

The use of real-time dashboards, electronic SOPs, and collaborative data collection by researchers and field personnel made monitoring more efficient, enhanced decision quality, and enabled continuous learning culture. Utilization of built-up knowledge and enabling implementation cultivated an ecosystem of performance where evidence-based decisions are made and adaptive methods are encouraged. The results affirm that digital technologies not only enhance the operational efficiency but also facilitate accountability and innovation in conservation. Administrative management was also transformed through digital infrastructures.

Electronic monitoring tools, effective reporting systems, and regular internet access were seen to boost organizational effectiveness. Social networks and online forums were seen to be used increasingly in decision-making and expert collaboration as per the study. However,

though involvement in professional virtual networks is predominant, crowdfunding and volunteer mobilization platforms remain untapped, indicative of untapped resource expansion potential. Online campaigns and strategic media attention playing a central role in image control as part of institutional reputation and citizen trust, though there may be a need to enhance consistency in staff training on representation across institutions. Digitalization process, when accompanied by national ICT policies, was highlighted as a performance improvement pillar in the wildlife sector.

Interviewees testified that their organizations are following ICT standards and acquiring robust technical support systems. Policy support was signaled to drive the adoption of advanced technologies, digital training networks, inter-organizational networks, and conservation fund lobbying. Most striking were peer-to-peer digital engagement and open communication, which ranked highly as their effectiveness in improving conservation impacts through collaborative learning and openness. They also support the contention that digitalization is more than technical progress but rather a strategic enabler of systemic conservation change. Finally, wildlife policies exerted an extremely strong moderating effect on technology uptake and sectoral performance.

Policy tools ensured coordination of digital infrastructure with national goals, encouraged investment in conservation technology, and facilitated adoption of systematic training and communication programs. Particularly, the policy roles of enhancing image management, public involvement, and inter-organizational trust were considered crucial in representing conservation efforts. The consistency of high mean scores for tourism, security, and human interaction variables brought out the point that without policy underpinnings, the full benefits of technology use may not be achieved.

5.4 Recommendations

In order to maximize the contribution of digital technology to the performance of Kenya's wildlife sector, the research recommends the following.

Wildlife organizations need to accord top priority to content localization and relevance in the sense that digital content used in training, research, and public engagement needs to be contextualized in a manner addressing the local context. It entails coordinating content with local conservation agendas, using local languages, and reflecting the cultural and ecological realities of the people involved. Contextualized content maximizes accessibility, user interest, and knowledge uptake among staff and stakeholders.

In addition, the study recommends expanding the use of platforms in order to mobilize resources. Conservation organizations and wildlife authorities are encouraged to use platforms such as crowdfunding sites, online grant platforms, and volunteer sign-up websites to expand their donor base and obtain foreign allies. This would increase grassroots support and enable the sector to tap into global networks of supporters and conservationists.

Furthermore, there is a pressing necessity to invest in connectivity and digital infrastructure. Government and conservation agencies need to come together and give protected areas good internet connectivity, cloud-based secure data systems, and real-time monitoring tools. This would make operations more effective, facilitate timely reporting, and support data-driven decision-making to plan conservation and response efforts.

The study further emphasizes policy-driven technology integration. Conservation policies should be continuously updated to enable upscaling of such emerging technologies as drones for surveillance, artificial intelligence for tracking, and blockchain for anti-poaching

tracing. Policy support will provide the regulatory, financial, and institutional frameworks necessary for guaranteeing innovation and technological advancement in the sector.

Besides, the study highlights capacity development and establishment of digital competency. Wildlife organizations should institutionalize regular training sessions to enhance employees with key digital competencies, ensure effective utilization of technology, and embed an innovation culture. These training sessions should be participatory, inclusive, and reflective of the evolving needs of digital conservation practices.

5.5 Recommendations for Future Studies

Future research could compare the relative effectiveness of specific digital technologies, such as drones, artificial intelligence monitoring systems, and mobile applications on key areas of wildlife management. These are wildlife monitoring, anti-poaching patrols, and habitat preservation. Through the examination of the performance of different technologies in different conservation areas in Kenya, such research may yield details of most cost-effective and effective tools for given conservation interventions.

Another area of research that is worth exploring is the influence of use of digital platforms on community engagement. Considering the impact of leveraging digital resources on community participation, public opinion, and trust in wildlife conservation initiatives, especially in localities where there is conflict between humans and wildlife, would be helpful in comprehending the influence of technology on the conservation authority-community relationship.

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Here is the updated list of citations in APA 7th edition format:

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APPENDICES

Appendix 1: Introduction Letter

I, Nelson Nyaga, being a post graduate student of the Catholic University of Eastern Africa conducting research on 'DIGITAL TECHNOLOGICAL AND PERFORMANCE OF WILDLIFE SECTOR IN KENYA,' chose your organization for this study. Therefore, I hereby request you to take a few minutes of your time and respond to the questionnaire attached herein. Information obtained through this process will be treated with utmost confidentiality and can only be used for academic purposes. Please note that you are under no obligation to give your name.

Kind regards.

Appendix 2: Questionnaires

SECTION A: Demographic Information

(Please tick [✓] the appropriate response)

1. Gender: [ ] Male [ ] Female [ ] Other

2. Age Group: [ ] 18-25 [ ] 26-35 [ ] 36-45 [ ] 46-55 [ ] 56+

3. level of Education: [ ] Postgraduate [ ] Undergraduate [ ] Diploma [ ] Certificate [ ] Secondary education

4. Years of Experience in the Wildlife Sector: [ ] Less than 1 year [ ] 1-5 years [ ] 6-10 years [ ] 11-15 years [ ] 16+ years

5. Current Role:

[ ] Ranger

[ ] Researcher

[ ] Conservation Officer

[ ] Park Manager [ ]

Other (Specify) ……..

SECTION B: DIGITAL PLATFORMS ON THE PERFORMANCE OF THE WILDLIFE SECTOR IN KENYA

Indicate the with a tick ☑ types of social media mostly employed in the delivery of services in your organization.

Social Networking Sites	
Face book	( )
Instagram	( )
You Tube	( )
Tik Tok	( )
X	( )
LinkedIn	( )

Please indicate with a tick ☑ whether you Strongly agree, Agree, Neutral, Disagree, strongly disagree with the statements in the table below.

Where, strongly Disagree= 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5

Statements	1	2	3	4	5
Social media					
Image-sharing networks has helped us access the movement of wildlife in a simpler way.					
The organization actively uses social media to share real-time wildlife updates					
Social media improves stakeholder engagement in wildlife protection efforts.					
Service platforms					
Blogging platforms has helped us share text, images and videos trace the wildlife					
Digital service platforms assist in tracking and recovering lost or injured wildlife.					
Service platforms make it easier to access permits and licenses for wildlife activities					
Service platforms improve operational efficiency within the wildlife sector.					
Content platforms					
Content platforms provide valuable knowledge on wildlife conservation practices.					
There is regular use of online content platforms for research or training in my field.					
The information on content platforms is reliable and relevant to Kenya's wildlife context.					

SECTION C: ADMINISTRATIVE MANAGEMENT ON THE PERFORMANCE OF THE WILDLIFE SECTOR IN KENYA.

Please indicate the extent to which you agree or disagree with the following statements. Use the scale where; 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree.

Statements	1	2	3	4	5
Continuous Research					
The department uses digital tools to monitor and track wildlife data.					

Real-time dashboards provide decision-makers with live updates for timely wildlife intervention.

The organization has adopted digital SOPs for standardized wildlife data collection.

There is collaboration between researchers and field staff to support continuous learning.

Data tracking

Organization consistently collects accurate and up-to-date data on wildlife populations.

Consistent data tracking improves the quality of decision-making.

There are clear protocols for data collection and reporting in my organization.

Knowledge utilization

The organization actively applies learned knowledge to improve field operations.

There is adequate support to implement new knowledge in my work.

Knowledge sharing among staff enhances wildlife conservation efforts.

SECTION D: DIGITALIZATION PROCESS ON THE PERFORMANCE OF WILDLIFE SECTOR OF KENYA

Please indicate the extent to which you agree or disagree with the following statements using the scale where: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Statements	1	2	3	4	5
Digital infrastructure					
The digital infrastructure in the organization supports efficient communication and reporting.					
There is access to reliable internet and digital tools necessary for conservation tasks.					
Digital tools and platforms have enhanced the monitoring and reporting of wildlife activities in protected areas.					
The organization uses data analytics from digital systems to guide wildlife conservation decisions.					

Social Network

The organization participates in online conservation forums and partnerships.

The organization leverages digital networks for expert consultations on conservation.

Social media platforms are used to crowdsource funding and volunteers for conservation work.

Image management

The organization uses digital campaigns to boost awareness of its conservation efforts.

The media regularly features success stories from our conservation programs.

Staff are trained or guided on how to represent the organization positively in public and online.

SECTION E: WILDLIFE POLICIES ON THE RELATIONSHIP BETWEEN DIGITAL TECHNOLOGY AND PERFORMANCE OF WILDLIFE SECTOR IN KENYA

Please indicate the extent to which you agree or disagree with the following statements using the scale where: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Statements	1	2	3	4	5
Digital infrastructure					
The organization's digital infrastructure complies with national ICT policies for conservation.					
Policy frameworks promote investment in advanced digital conservation tools.					
Technical support is readily available when digital systems face challenges.					
Social Network					
Wildlife policy encourages digital collaboration among conservation actors.					
Policy promotes capacity-building through digital training networks.					
The legal framework supports digital outreach for conservation funding.					

Engaging with peer organizations through networks improves conservation outcomes

Image management

Wildlife policies emphasize transparency in communication for public confidence.

Policy encourages accurate and regular media updates on conservation efforts.

Image management plays a key role in building public trust and support for wildlife initiatives.

SECTION F: PERFORMACE OF WILDLIFE SECTOR

Please indicate the extent to which you agree or disagree with the following statements. Use the scale where; 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree.

Statements	1	2	3	4	5
Tourism Attraction					
The diversity of wildlife attracts a high number of tourists.					
Tourism facilities (e.g., lodges, trails) are well-maintained and accessible.					
The local wildlife sector is effectively promoted to attract tourists.					
Wildlife Security					
Security patrols are regularly conducted in wildlife conservation areas.					
Anti-poaching strategies are effectively implemented.					
Wildlife security measures are supported by the local community.					
Human Activities					
Human encroachment negatively impacts wildlife habitats.					
Agricultural expansion contributes to the degradation of wildlife areas.					
Illegal logging and grazing interfere with wildlife sustainability.					
Community education programs reduce harmful human activities.					

Appendix 3: INTRODUCTION LATTER

THE CATHOLIC UNIVERSITY OF EASTERN AFRICA
A.M.E.C.E.A

SCHOOL OF BUSINESS & ECONOMICS
Department of Graduate Business Studies

P.O. BOX 62157 00200 Nairobi
Tel: 020-2525811-5, 8890023-4,
Email: gbs@cuea.edu or hodgbs@cue
Website: www.cuea.edu

Our Ref: CUEA/SoBE/GBS/JM/mba.rec/374/2025

19th March 2025

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: NELSON NYAGA MUNYI – REG NO: 1020094

The above named is a student at The Catholic University of Eastern Africa, Nairobi—Kenya, in the School of Business & Economics, Department of Graduate Business Studies. He is pursuing Master of Business Administration degree (Strategic Management Option).

As part of the MBA degree requirements, the University expects the student to write a research thesis. Nelson requires your assistance in carrying out his research study by providing him with a research permit and/or the necessary information. His thesis is entitled ***"Digital Technological and Performance of Wildlife Sector in Kenya".***

Any assistance accorded to Nelson will be highly appreciated. All the information provided will be used purely for academic purposes and will be treated with utmost confidentiality.

Thank you.

Yours faithfully,

THE CATHOLIC UNIVERSITY OF EASTERN AFRICA H.O.D. 19 MAR 2025 GRADUATE BUSINESS SCHOOL P. O. BOX 62157 - 00200, NAIROBI

Dr. Joseph Macheru, PhD., CPA-K
HEAD OF DEPARTMENT – GRADUATE BUSINESS STUDIES

APPENDIX 4: PLAGIARISM REPORT



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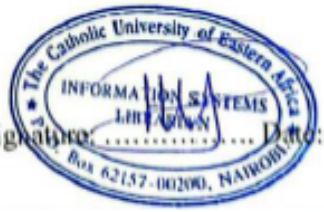
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- Cited Text

I HEREBY CONFIRM THAT **NELSON NYAGA** REG NO: **1020094**, SUBMITTED A CHECK OF ANTIPLAGIARISM ON CRITICAL EVALUATION OF **DIGITAL TECHNOLOGICAL ON PERFORMANCE OF WILDLIFE SECTOR IN KENYA. A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION (MBA) IN STRATEGIC MANAGEMENT, DEPARTMENT OF GRADUATE BUSINESS STUDIES, AT THE CATHOLIC UNIVERSITY OF EASTERN AFRICA.**

Verification by Systems Librarian:

Name: HARUN ..... MAINA ..... Signature: ..... Date: 25/9/2025





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The Catholic University of Eastern Africa

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20-Aug-25

FEE STATEMENT

Student No: 1020094
Name: Nelson Nyaga
Programme: Master of Business Administration

Settlement: PT(UBB)
Stage: Y3S2
Campus: LANGATA

DATE	DOC. NO.	DESCRIPTION	DEBIT	CREDIT	BALANCE
07/01/2016	OPJULY	As at 1st July 2016	17,250.00		17,250.00
06/03/2019	INVCH1249	REPLACEMENT OF LOST ID	500.00		17,750.00
06/07/2022	EMK0000014113	MPESA 07-06-2022 QF78BG2MG6		17,750.00	
09/15/2022	FINI22492	Postponement Fee: May 2013-Aug 2022	21,000.00		21,000.00
03/29/2023	RECBUFF-120	MPESA RCT1UUTCNH 29/03/2023-		21,000.00	
05/04/2023	REG0000027857	FEE FOR MAY-AUG23 , 2022/2023	69,000.00		69,000.00
05/04/2023	INVOICE 899720	Administrative Fee: May-Aug 2023	750.00		69,750.00
07/03/2025	INV20585	Plagiarism scanning charges	500.00		70,250.00
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Ref No: **752974**

Date of Issue: **29/September/2025**

RESEARCH LICENSE



This is to Certify that Mr.. Nelson Nyaga Munyi of Catholic University of Eastern Africa, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: Digital technological and performance of wildlife sector in Kenya for the period ending : 29/September/2026.

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