REMOTE WORKING AND EMPLOYEE PRODUCTIVITY AMONG INTERNET SERVICE PROVIDERS IN KENYA. A SURVEY OF KINDE ENGINEERING WORKS

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DECLARATION

This project is my original work and has not been presented for a degree in any other University

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DEDICATION

This research project dedicated to my dear wife Jane Naito Mbijiwe and my children Franco, Abigael, Charis and Joy.

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ABSTRACT

The adoption of remote working has continued to accelerate globally, particularly in the aftermath of the COVID-19 pandemic, prompting organizations to re-evaluate traditional work models. While extensive research has examined this shift in Europe and North America, limited empirical evidence exists within the Kenyan context, especially among Kinde Engineering Works (ISPs). This study investigated the determinants of employee productivity in remote working environments, focusing on Kinde Engineering Works Ltd., a leading firm in Kenya's ISP sector. Guided by the Job Demands-Resources (JD-R) theory and the Technology Acceptance Model (TAM), the study examined four key determinants: technological infrastructure, managerial support and supervision, work-life balance, and employee self-discipline in time management. A descriptive research design and cross-sectional survey approach were adopted, utilizing structured questionnaires to collect quantitative data and semi-structured interviews for qualitative insights. Data were gathered from a stratified sample of 94 employees drawn from a population of 123 across Kinde Engineering Works' branches. Quantitative data were analyzed using descriptive statistics, correlation, and regression analysis in SPSS version 28, while qualitative data were analyzed thematically. The results revealed that all four variables had a significant positive influence on employee productivity, with technological infrastructure ($\beta = 0.659$, $p < 0.05$) and employee self-discipline ($\beta = 0.708$, $p < 0.05$) emerging as the strongest predictors. Managerial support and supervision ($\beta = 0.593$, $p < 0.05$) and work-life balance ($\beta = 0.467$, $p < 0.05$) also exhibited significant but comparatively moderate effects. The study concluded that employee productivity in remote working environments depends on both organizational enablers and individual behavioral attributes. Reliable technological infrastructure and effective managerial support foster smooth operations, while self-discipline and balanced work-life integration enhance employee engagement and performance. The research further established that successful remote work implementation requires continuous investment in digital systems, adaptive leadership, and policies that support employee well-being. Based on the findings, the study recommended that organizations strengthen their technological infrastructure through reliable connectivity, user-friendly platforms, and timely technical support. Managers should adopt participatory supervision models that emphasize trust, communication, and regular feedback. Additionally, organizations should promote flexible work policies that support work-life balance and provide training programs that enhance self-management and time discipline among employees. At the policy level, regulators should develop frameworks that institutionalize remote working standards and promote equitable digital access. The study contributes to both theory and practice by extending the JD-R and TAM frameworks within a developing country context. It provides actionable insights for corporate leaders, policymakers, and human resource practitioners seeking to optimize productivity in remote work models. Ultimately, the research underscores that sustained productivity in remote environments depends on a synergistic balance between technological preparedness, managerial support, and employee self-regulation.

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ACRONYMS AND ABBREVIATIONS

COVID-19	Coronavirus Disease 2019
ICT	Information and Communication Technology
ISP	Kinde Engineering Works
JD-R	Job Demands-Resources
KES	Kenya Shillings
KIW	Kinde Engineering Works
NACOSTI	National Commission for Science, Technology and Innovation
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
WLB	Work-Life Balance

OPERATIONAL DEFINITION OF TERMS

Employee productivity: The measurable output or performance of an employee in terms of achieving work-related goals and responsibilities. It includes both qualitative and quantitative aspects of performance among remote workers in the study.

Employee self-discipline in time management: The ability of employees to regulate their own work habits, manage time effectively, and maintain productivity while working remotely without constant supervision.

Managerial support and supervision: The level and quality of guidance, performance monitoring, and communication provided by managers to employees working remotely. It includes feedback, accessibility, and clarity of expectations.

Remote working (telecommuting): The practice of carrying out job responsibilities outside the traditional office setting, typically from home, using digital communication technologies. In this study, it refers to employees at Kinde Engineering Works Ltd, Branches working remotely using ICT tools.

Technological infrastructure: The availability and functionality of digital tools and systems such as internet access, hardware, software, and communication platforms that support remote work. In this context, it encompasses the digital resources accessible by employees at Kinde Engineering Works Ltd.

Work-life balance: The extent to which employees can effectively manage professional duties and personal life while working remotely. In this study, it reflects how remote work arrangements influence the balance between work and personal responsibilities.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This section presents a general introduction to the study, encompassing the background information, statement of the problem, research objectives, key questions, and the relevance of the investigation. It lays the groundwork for analyzing how the implementation of remote working practices influences employee productivity within Kinde Engineering Works firms in Kenya, with particular emphasis on the branches of Kinde Engineering Works Ltd.

1.1 Background of the Study

Remote working has emerged as one of the most significant transformations in modern organizational practice, reshaping how tasks are performed, coordinated, and evaluated. While flexible work arrangements existed in some sectors prior to 2020, the COVID-19 pandemic accelerated their adoption, forcing organizations to reconfigure operations to maintain productivity while safeguarding employee health. This shift has had implications not only for cost efficiency but also for work-life balance, managerial structures, and technological readiness. Globally, organizations have reported varied productivity outcomes depending on industry, digital infrastructure, and management practices (Bloom et al., 2022). In knowledge-intensive industries, such as technology and finance, studies have shown measurable gains in productivity, with improvements in output, job satisfaction, and employee retention following the adoption of remote or hybrid work models (Choudhury, Foroughi & Larson, 2021).

In Africa, remote working has presented both opportunities and constraints. Countries with relatively developed ICT infrastructure, such as South Africa and Nigeria, have reported productivity increases in sectors like ICT, banking, and customer service, primarily due to flexible scheduling and reduced commuting time (Munyua & Muriuki, 2023). Conversely, in regions with inadequate internet connectivity, insufficient digital tools, and low digital

literacy, the benefits of remote work have been less pronounced. Kenya, a regional ICT hub, has experienced a gradual uptake of remote working, particularly within the telecommunications, technology, and digital services sectors. The urgency to maintain operations during health crises like COVID-19 pushed many firms, including Kinde Engineering Works (ISPs), to adopt remote or hybrid models, integrating virtual collaboration platforms, cloud-based systems, and output-based performance assessments (Ndegwa, 2022).

Technological infrastructure forms the foundation for effective remote working. It encompasses internet connectivity, hardware and software availability, cybersecurity systems, and cloud-based collaboration platforms. Globally, organizations with robust ICT infrastructure have reported smoother transitions to remote work, with minimal disruption to operations. In Kenya, however, disparities in network reliability, broadband coverage, and affordability of digital devices create uneven productivity outcomes. Within ISPs, reliable infrastructure is particularly critical since the core business revolves around connectivity and service provision. Employees in firms with advanced technological tools can maintain communication, track tasks, and collaborate in real-time, leading to higher efficiency and reduced downtime (Otieno & Mwangi, 2023).

The role of management in remote settings extends beyond task allocation. Effective managerial support involves establishing clear performance expectations, maintaining consistent communication, and fostering an environment where employees feel valued and accountable. Studies indicate that remote employees who receive structured feedback and guidance from supervisors tend to sustain higher productivity levels compared to those with minimal managerial engagement (Waisiko, 2024). In the ISP sector, where service delivery often involves cross-functional teams, consistent oversight and problem-solving support from managers can significantly influence task completion rates and customer satisfaction levels.

Work-life balance is a critical determinant of productivity in remote settings. Flexible work arrangements reduce commuting time, allowing employees more personal and family time, which can enhance job satisfaction and overall performance. However, without proper boundaries, remote work can blur the line between professional and personal life, leading

to fatigue and burnout. Research in Kenya has shown that employees with supportive work-life policies report higher engagement and lower turnover intentions (Gichana & Ombui, 2022). For ISPs, whose operations often demand after-hours service availability, achieving a balance between operational needs and employee well-being remains a strategic challenge.

Self-discipline in managing work schedules, meeting deadlines, and avoiding distractions is crucial for remote work productivity. Unlike traditional office settings where physical presence facilitates oversight, remote work relies heavily on an employee's intrinsic motivation and time management skills. Employees with strong self-regulation are better able to sustain focus, complete tasks on time, and adapt to changing demands without direct supervision (Mkuzi, 2024). In ISP operations—where technical troubleshooting, customer queries, and project deployments often require timely execution—self-discipline directly correlates with service quality and client satisfaction.

The ISP sector in Kenya plays a pivotal role in enabling digital transformation across industries. Dominated by large providers like Safaricom, Zuku, and Jamii Telecommunications, alongside smaller firms such as Kinde Engineering Works Ltd., the sector is highly competitive and technologically intensive. ISPs are not only service providers but also infrastructure enablers, supporting e-commerce, remote education, online government services, and business continuity in various sectors. This positions them uniquely in the remote working conversation—both as facilitators of connectivity for other organizations and as employers navigating their own workforce productivity challenges. Given the service-based nature of their operations, productivity in ISPs is closely tied to rapid issue resolution, continuous network monitoring, and customer relationship management, all of which may be affected by the determinants identified in this study.

Employee Productivity

Employee productivity refers to the efficiency and effectiveness with which individuals or teams achieve set organizational goals within a given timeframe. In remote settings, productivity is influenced not only by the employee's skills and motivation but also by external factors such as technological tools, managerial structures, work-life integration, and self-discipline. Productivity can be measured through quantitative outputs—such as

resolved service tickets, completed projects, and customer satisfaction ratings—as well as qualitative indicators like innovation, adaptability, and teamwork. For ISPs, high employee productivity translates directly into improved service reliability, faster resolution of client issues, and greater competitiveness in the market.

1.1.1 Remote Working Adoption

The adoption of remote working represents a global shift in how work is structured, enabled by advances in digital technology and catalyzed by the COVID-19 pandemic. In many developed countries, remote and hybrid models have become embedded features of organizational policy, with employees in the United Kingdom, for example, averaging 1.8 remote working days per week, above the global average of 1.3 days (The Guardian, 2025). In the United States, surveys indicate that over 90% of employees feel equally or more productive when working remotely compared to traditional office settings, with 65% of organizations offering flexible work arrangements by 2024 (Pumble, 2024).

In Africa, approximately 42% of employees work remotely at least once per week, supported by growing smartphone penetration, expanding broadband access, and increasing adoption of cloud-based systems (iTrain Africa, 2024). However, adoption rates vary widely between urban and rural areas, with infrastructural challenges and skills gaps remaining significant barriers.

Kenya has taken deliberate steps to promote remote work adoption through policy and regulatory measures. The introduction of the Class N digital nomad visa aims to attract foreign professionals while stimulating the local economy (Weetracker, 2024). Additionally, the 2024 updates to labor regulations include provisions to protect work-life balance and address after-hours communication compensation (Nucamp, 2024). These measures create a supportive policy environment but must be matched with investments in infrastructure and workforce skills to realize their full benefits.

For ISPs, remote work adoption offers both opportunities and risks. The potential to lower operational costs, expand talent pools, and improve employee satisfaction is counterbalanced by the need to maintain service reliability and manage dispersed teams

effectively. The success of remote work in this sector depends heavily on the determinants examined in this study—technological infrastructure, managerial support, work-life balance, and employee self-discipline—which collectively shape employee productivity outcomes in remote settings.

1.1.2 Productivity of Employees

Employee productivity refers to the capacity of employees to effectively and efficiently complete assigned tasks and contribute to the attainment of organizational objectives within a specified period. It is often measured through quantitative indicators such as output per hour or the volume and quality of deliverables, as well as qualitative measures such as customer satisfaction and innovation levels (Robbins & Judge, 2023). In competitive industries such as Internet Service Provision, sustained high productivity directly influences profitability, service quality, and customer retention. Contemporary approaches to productivity also emphasize its link to job satisfaction and engagement, with organizations increasingly recognizing that motivated and supported employees are more likely to deliver superior results.

A range of determinants influences employee productivity in remote work contexts. Technological infrastructure is often the most critical factor, as access to reliable internet connectivity, functional devices, and secure virtual platforms directly affects an employee's ability to work effectively away from the office. In Kenya's ISP sector, a paradox emerges whereby firms that provide internet services may still face internal disparities in digital tool access, affecting their remote staff's performance. For instance, Mkuzi (2024) observed that employees equipped with stable internet, Virtual Private Networks (VPNs), and responsive technical support consistently met or exceeded performance targets compared to those without such resources.

Managerial support and supervision also play a pivotal role in shaping remote productivity. Managers who communicate clear expectations, maintain regular virtual check-ins, and provide constructive feedback help employees stay focused and aligned with organizational goals (Armstrong, 2022). In the Kenyan context, the recent labor policy reforms of 2024, which promote respect for personal time and regulate after-hours

communication (Nucamp, 2024), have reinforced the need for balanced supervision that encourages autonomy while preventing overwork.

Work-life balance is another important determinant, as employees who can harmonize professional responsibilities with personal commitments often report higher job satisfaction, reduced stress levels, and better concentration during working hours (Greenhaus & Allen, 2011). Flexible scheduling and supportive organizational policies can enhance this balance; however, in the absence of clear boundaries, remote workers may experience burnout or declining engagement.

Finally, employee self-discipline in time management significantly affects remote productivity. Without the structure of a traditional office, employees must self-regulate to avoid distractions and ensure timely completion of tasks. Those with strong self-management skills tend to maintain consistent output, while others may struggle without direct oversight, leading to missed deadlines and reduced quality of work (Robbins & Judge, 2023).

In summary, the productivity of employees in remote settings is shaped by a combination of organizational provisions—such as infrastructure and managerial support—and individual attributes, including self-discipline and the ability to maintain work-life balance. Understanding these determinants is essential for firms such as Kinde Engineering Works to optimize remote work outcomes and remain competitive in Kenya's ISP industry.

1.1.3 Profile of Kinde Engineering Works

Kinde Engineering Works is a Kenyan engineering firm that provides integrated mechanical, electrical, and telecommunication solutions to a wide range of industries, including manufacturing, construction, and internet service provision (Kenya Association of Manufacturers, 2023). With branches in Kisumu, Nairobi, and Mombasa, the company maintains a strategic presence across the country, enabling it to serve diverse markets with differing infrastructural conditions.

As a player in the ISP sector, Kinde Engineering Works has been increasingly adopting modern work practices, including remote and hybrid work arrangements. The onset of the

COVID-19 pandemic accelerated this shift, compelling the company to explore remote work as a means of sustaining operations while adhering to public health protocols (Kenya Ministry of Labour, 2022). The transition to remote work has introduced both opportunities—such as increased flexibility and reduced operational costs—and challenges, including the need for robust digital infrastructure and effective managerial oversight.

Studies in Kenya's engineering and telecommunications sectors indicate that remote work success is closely tied to technological readiness and organizational support systems (Idi & George, 2018). For Kinde Engineering Works, whose operations span regions with varying levels of internet reliability and power stability, these factors are particularly important. Branches located in urban centers like Nairobi may benefit from stronger infrastructure, while those in less urbanized areas, such as parts of Kisumu County, may face connectivity challenges that hinder remote work effectiveness (Njuguna, 2023).

Moreover, the company's operational diversity means that while some tasks can be fully executed remotely—such as administrative coordination, network monitoring, and customer support—others require physical presence, particularly in engineering project implementation. This hybrid operational reality necessitates careful planning to maximize employee productivity without compromising service delivery.

By studying Kinde Engineering Works' remote working practices across its branches, this research seeks to generate insights into how determinants such as technological infrastructure, managerial support, work-life balance, and self-discipline influence the productivity of employees in Kenya's ISP sector. This case offers a practical example of how a firm with both engineering and ISP functions navigates the complexities of remote work adoption in a developing economy.

1.2 Problem Statement

While remote working has been widely researched and successfully implemented in regions such as Europe and the United States, there is still a notable lack of empirical evidence on its effects within the operational and cultural realities of Kenya's Kinde

Engineering Works (ISP) sector (Idi & George, 2018). In developed economies, studies such as Bloom et al. (2015) and Choudhury et al. (2021) have reported significant productivity gains linked to remote work adoption. However, the direct application of these findings to the Kenyan context is problematic due to fundamental differences in technological infrastructure, managerial practices, labor regulations, and socio-cultural work norms.

Existing Kenyan studies have largely addressed broader themes such as ICT adoption or general workforce digital readiness (Mkuzi, 2024; Munyua & Muriuki, 2023), but few have examined *how specific determinants*—such as technological infrastructure, managerial support, work-life balance, and employee self-discipline—affect productivity in remote work arrangements within the ISP industry. This omission has created a clear empirical gap, leaving ISPs without context-specific evidence to guide policy design and operational decision-making. As a result, many organizations risk adopting remote work practices that are poorly adapted to local realities, potentially reducing employee output, increasing operational inefficiencies, and weakening competitiveness in an industry where speed, reliability, and service quality are paramount.

Moreover, while anecdotal accounts from industry managers suggest both benefits (e.g., cost savings, flexibility) and challenges (e.g., connectivity instability, monitoring difficulties), these experiences remain largely undocumented and untested through systematic research. The absence of localized best-practice frameworks limits the capacity of ISP leaders to integrate remote working into human resource and operational strategies in ways that sustain or enhance productivity (Kim & Mohsen, 2020).

Therefore, this study was designed to address this gap by investigating the determinants of productivity among employees working remotely in Kenya's ISP sector, with a specific focus on Kinde Engineering Works branches. By providing empirical insights grounded in Kenya's infrastructural, managerial, and socio-cultural context, the research offers practical guidance to ISP managers, inform policy formulation, and contribute to the broader discourse on remote work effectiveness in developing economies.

1.3 Objectives of the Study

The general objective of the study was to examine the relationship between remote working and employee productivity among Internet service Providers, with a focus on Kinde Engineering Works branches.

1.3.1 Specific objectives:

i. To assess the influence of technological infrastructure on employee productivity among staff working remotely in Kinde Engineering Works in Kenya.
ii. To examine the effect of managerial support and supervision on the productivity of remote employees in Kinde Engineering Works in Kenya.
iii. To evaluate how work-life balance effect the productivity of employees working remotely in Kinde Engineering Works in Kenya.
iv. To investigate the effect of employee self-discipline on productivity levels among remote workers in Kinde Engineering Works in Kenya.

1.4 Research Questions

i. How does technological infrastructure influence employee productivity among staff working remotely in Kinde Engineering Works in Kenya?
ii. What is the effect of managerial support and supervision on the productivity of remote employees in Kinde Engineering Works in Kenya?
iii. In what extent does work-life balance affect employee productivity among remote workers in Kinde Engineering Works in Kenya?
iv. How does employee self-discipline relate to productivity levels among remote workers in Kinde Engineering Works in Kenya?

1.5 Significance of the Study

From a policy perspective, this study provides evidence-based insights that can inform labor regulations and sector-specific guidelines for remote working within the Kinde Engineering Works industry in Kenya. As hybrid and remote work models become more prevalent, policymakers require localized empirical data to develop frameworks that address infrastructural, managerial, and employee well-being considerations in line with national labor objectives.

From a theoretical standpoint, the study contributes to the body of knowledge on remote working and employee productivity by applying the Job Demands–Resources (JD-R) theory and the Technology Acceptance Model (TAM) to the Kenyan ISP context. This not only extends the applicability of these models to a developing country setting but also highlight contextual factors—such as infrastructural disparities and socio-cultural influences—that may shape theoretical interpretations of remote work productivity determinants.

From a practical viewpoint, the study offers organizational leaders, managers, and human resource practitioners' actionable recommendations on optimizing productivity among remote employees. By identifying the influence of technological infrastructure, managerial support, work-life balance, and employee self-discipline, the findings will guide the design and refinement of remote work strategies tailored to the operational realities of ISPs in Kenya.

1.6 Scope of the study

This study focused on examining the determinants of employee productivity in remote working arrangements within Kinde Engineering Works in Kenya, with a specific emphasis on Kinde Engineering Works across its various branches. The research investigates four key variables: technological infrastructure, managerial support and supervision, work-life balance, and employee self-discipline. The study targeted employees working remotely, covering both technical and administrative roles.

The geographical scope covered Kinde Engineering Works branches located in Kisumu, Nairobi, and Mombasa to capture regional variations in infrastructure and management practices. The time scope of the study spans the period between January 2025 and August 2025, reflecting the era in which remote working practices became more prominent in Kenya, particularly following the COVID-19 pandemic. While Kinde Engineering Works is used as the case study, the findings are intended to provide insights that can be applied to other firms within the ISP and broader engineering sectors in Kenya.

1.7 Chapter Summary

This chapter has laid the groundwork for the study by presenting its context, articulating the research problem, and outlining the key questions, aims, and significance. It has further clarified the study's scope. The chapter justifies the investigation into how remote work influences employee productivity in Kenya's internet service provision sector, with a particular emphasis on Kinde Engineering Works. These introductory components provide the basis for the following chapters, which covers the review of existing literature, the research design, data collection and analysis procedures, and interpretation of the results.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction`

This chapter provides a comprehensive examination of prior studies related to remote work and employee productivity. It includes an evaluation of both theoretical perspectives and empirical findings while highlighting existing gaps in the literature. Additionally, it outlines the conceptual framework guiding the study, explains how the research variables are defined and measured, and ends with a brief summary.

2.1 Theoretical Literature Review

Theoretical frameworks provide the foundation for understanding the relationships between variables in this study, guiding the analysis and interpretation of findings. This research draws on multiple theories to explain the determinants of employee productivity in remote working environments among Kinde Engineering Works in Kenya. The Job Demands-Resources (JD-R) Theory serves as the primary framework, offering a lens to examine how the balance between job demands and available resources influences employee performance in remote settings.

To supplement this, the Technology Acceptance Model (TAM) is applied to explain employees' readiness and willingness to adopt digital tools essential for remote work. The Agency Theory is used to address issues of managerial control, employee autonomy, and accountability in remote working contexts. Additionally, the Work-Life Border Theory provides insights into how employees manage the intersection of work and personal life, which is particularly significant in remote work arrangements. Together, these theories provide a comprehensive understanding of the technological, managerial, and personal dimensions influencing employee productivity in remote working environments.

2.1.1 Job Demands-Resources (JD-R) Theory

The Job Demands-Resources (JD-R) Theory, developed by Demerouti et al. (2001), is a prominent framework used to analyze employee well-being and performance in various work environments. The theory suggests that each profession possesses distinct risk elements contributing to job-related stress, which can generally be classified into two main categories: job demands and job resources. Job demands encompass the physical, psychological, social, or organizational elements of work that necessitate continuous effort, often leading to physical or mental strain. Conversely, job resources refer to the components of a job that support goal achievement, alleviate the intensity of job demands, or promote individual growth and professional development.

The Job Demands-Resources (JD-R) model asserts that elevated job demands—such as excessive workload, emotional strain, and unclear roles—can contribute to employee burnout and diminished productivity if not adequately counterbalanced by appropriate job resources. These resources may include supportive management, access to necessary tools and technology, meaningful feedback, autonomy in task execution, and opportunities for skill enhancement. When effectively leveraged, such resources serve to mitigate the adverse effects of job demands by fostering motivation and improving performance. This equilibrium becomes particularly vital in remote work environments, where the absence of a physical office setting can intensify specific demands while simultaneously presenting distinctive resource advantages.

Remote working introduces a dynamic shift in how job demands and resources are experienced. Employees may face increased psychological demands such as isolation, blurred work-life boundaries, or difficulty in self-management. At the same time, they may benefit from enhanced autonomy, reduced commute time, and flexibility in managing tasks. The JD-R theory is especially useful in conceptualizing how these changes influence employee engagement and productivity. It underscores the importance of understanding the unique demands of remote work and ensuring the provision of sufficient resources to mitigate their effects.

Technological infrastructure plays a dual role within the JD-R model. On one hand, inadequate or unreliable technology increases job demands by creating frustration, reducing efficiency, and interrupting workflow. On the other hand, reliable digital tools and platforms serve as vital resources that facilitate task completion and communication, ultimately enhancing productivity. As such, technological infrastructure is not just a tool but a core job resource in remote working settings.

Managerial support and supervision are also central to the JD-R framework. In remote work contexts, lack of visibility and reduced physical oversight can lead to feelings of disconnect or disengagement. However, regular check-ins, feedback, and support from supervisors can serve as motivational resources that improve focus, accountability, and morale. JD-R theory supports the notion that when employees feel supported, they are more likely to be engaged and productive despite the challenges of remote work.

Work-life balance and employee self-discipline are personal resources within the JD-R framework. Employees with effective time management and boundary-setting skills are better equipped to navigate the flexibility and distractions associated with remote work. Similarly, organizations that foster a culture of balance and provide tools or policies supporting well-being help employees maintain energy and focus, contributing to overall productivity. These personal and organizational resources are critical in maintaining high performance in distributed work environments.

In the context of this study, the JD-R theory is particularly relevant as it directly aligns with the four independent variables being explored: technological infrastructure, managerial support and supervision, work-life balance, and employee self-discipline in time management. By applying this framework, the study can systematically assess how specific demands and resources in remote working environments affect employee productivity at Kinde Engineering Works. The theory provides a comprehensive lens for examining both organizational and individual factors that either hinder or facilitate performance in remote work settings.

The JD-R Theory directly underpins the investigation of how job demands and resources affect productivity in remote working arrangements at Kinde Engineering Works. The four independent variables—technological infrastructure, managerial support and supervision,

work-life balance, and employee self-discipline in time management—fit neatly into the demands-resources framework. Technological infrastructure and managerial support act as organizational resources that can alleviate job demands, while work-life balance and self-discipline function as personal resources that enhance performance. Applying the JD-R model enables the study to systematically assess how balancing demands and resources impacts employee productivity in the ISP sector.

2.1.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1986), is a well-established theory that explains how users come to accept and use technology. The model identifies two primary constructs—Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)—as central to shaping an individual's willingness to adopt a particular technology. Perceived Usefulness refers to the belief that utilizing a given system will improve one's work performance, whereas Perceived Ease of Use reflects the perception that the technology can be operated with minimal effort.

According to the Technology Acceptance Model (TAM), these perceptions shape the user's overall attitude toward the technology, which subsequently influences their intention to use it and ultimately determines actual usage behavior. In organizational contexts, employees are more inclined to embrace digital platforms and tools when they view them as easy to use and advantageous for accomplishing work-related tasks. This framework is especially relevant for assessing the adoption of remote work technologies, particularly in environments where digital integration is either emerging or unevenly implemented, such as certain regions in Kenya.

The rise of remote working has significantly increased employees' reliance on digital tools such as virtual meeting platforms, project management software, cloud storage, and real-time collaboration systems. According to TAM, the effectiveness of remote work is heavily dependent on how well employees accept and use these technologies. Factors such as software usability, system accessibility, and user training directly impact employees'

willingness to embrace remote work models. This acceptance influences their ability to remain productive while working from locations outside traditional office environments.

In the Kenyan ISP sector, disparities in infrastructure and digital literacy may affect how remote work technologies are perceived and utilized. Employees with limited exposure to digital platforms may struggle to adapt, resulting in reduced productivity or resistance to remote working arrangements. TAM thus provides a lens for analyzing the impact of technological infrastructure and employees' perceptions of digital systems, both of which are essential in ensuring a successful remote work strategy. Organizations that prioritize user training and design systems with employee experience in mind are more likely to witness positive outcomes in remote working environments.

Another relevant aspect of TAM in this study is its implication for organizational support. Managerial commitment to improving technology adoption—such as offering training, technical assistance, and clear communication—can enhance employees' perceived ease of use and usefulness. This, in turn, contributes to increased engagement with remote work platforms and helps maintain high levels of productivity. Without sufficient managerial backing, employees may face frustration and decreased motivation to fully utilize remote working systems.

Furthermore, TAM intersects with individual factors like employee self-discipline and work-life balance. If remote technologies are perceived as intrusive, overly complex, or disruptive to personal routines, employees may struggle to balance work and personal responsibilities effectively. Conversely, user-friendly systems that integrate seamlessly into daily workflows can promote autonomy, better time management, and reduced stress. These outcomes directly tie into the study's broader aim of assessing how remote work influences productivity across various dimensions.

In relation to this study, TAM is especially relevant in analyzing the variable of technological infrastructure, as it helps explain how employees' acceptance of remote working tools affects their productivity. It also indirectly supports understanding of managerial support (as enablers of adoption) and self-discipline (as influenced by the usability of tools). In the case of Kinde Engineering Works and similar firms in Kenya's

ISP sector, this model offers valuable insight into the behavioral and perceptual dimensions that shape the successful implementation of remote working frameworks.

Technology Acceptance Model is particularly relevant to understanding the role of technological infrastructure in enabling productive remote work at Kinde Engineering Works. Employees' perceptions of the usefulness and ease of use of remote work tools influence their willingness to adopt and effectively utilize these technologies. This model also connects to managerial support, as leadership plays a role in providing training and resources that shape positive technology perceptions. By applying TAM, the study can explore how technology adoption behaviors contribute to sustaining or enhancing productivity in remote and hybrid work arrangements.

2.1.3 Agency Theory

Agency Theory, initially proposed by Jensen and Meckling (1976), focuses on the relationship between principals (such as employers or managers) and agents (such as employees), where the principal delegates work to the agent. The theory highlights problems that arise when there is a conflict of interest between the two parties, especially under conditions of information asymmetry—when the principal cannot fully monitor or verify the actions of the agent. This concern becomes more pronounced in remote work environments, where physical separation can reduce visibility and direct oversight of employee performance.

A core assumption of Agency Theory is that agents may not always act in the best interest of the principal unless appropriate incentives, monitoring mechanisms, or alignment of goals are established. Managers must therefore create structures that encourage employees to act in alignment with organizational goals. In traditional office setups, this alignment is often enforced through close supervision, structured work environments, and formal evaluation systems. However, remote working challenges this setup by reducing direct managerial oversight and increasing employee autonomy.

Remote work introduces a new set of complexities to the principal-agent relationship. The lack of physical presence may result in reduced accountability, procrastination, or

miscommunication, especially if the organization lacks digital systems to monitor output. Conversely, the flexibility of remote work can also lead to over-performance or burnout when agents feel the need to prove their productivity without clear guidance. Thus, the theory emphasizes the importance of trust, control mechanisms, and communication structures in aligning agent behavior with organizational expectations in remote settings.

From a managerial perspective, Agency Theory underscores the role of supervision and performance monitoring in ensuring employees remain productive while working remotely. Technological tools such as performance tracking software, virtual check-ins, and task management platforms can serve as substitutes for physical supervision. However, excessive monitoring may erode trust and autonomy, leading to resistance or disengagement. Finding the right balance between oversight and autonomy is crucial in achieving organizational objectives in a remote environment.

Agency Theory also intersects with motivational structures. Providing performance-based incentives, clear deliverables, and transparent communication channels can help align employee efforts with organizational goals. This is particularly relevant in remote work contexts where traditional cues of accountability are weakened. The theory thereby calls for adaptive management styles that consider both outcome-based evaluation and trust-building to sustain productivity.

Furthermore, this theory relates to individual responsibility and discipline. In the absence of physical oversight, employees are expected to self-manage, prioritize tasks, and deliver results. The theory indirectly supports the idea that employee self-discipline and time management become critical in remote work arrangements, influencing both the quantity and quality of output. Thus, organizations must ensure that remote workers are equipped not only with tools but also with behavioral expectations that guide performance.

In the context of this study, Agency Theory is particularly relevant to the variables of managerial support and supervision and employee self-discipline in time management. It provides a theoretical foundation for understanding how the delegation of work in remote environments can affect productivity, depending on how managers monitor, support, and motivate employees. At Kinde Engineering Works, applying Agency Theory helps explain how varying degrees of supervision and employee accountability influence the

effectiveness of remote work arrangements, ultimately shaping productivity outcomes in the Kinde Engineering Works sector.

Agency Theory is crucial in explaining how managerial support, supervision, and employee self-discipline interact to maintain productivity in remote work environments. In the absence of physical oversight, self-management and trust become central, and effective managerial structures help align employee actions with organizational goals. The theory's emphasis on monitoring, incentives, and goal alignment provides a lens for analyzing how different management approaches at Kinde Engineering Works influence the output and accountability of remote employees.

2.1.4 Work-Life Border Theory

Work-Life Border Theory, developed by Clark (2000), explains how individuals manage and negotiate the boundaries between their work and personal lives. The theory posits that people are daily border-crossers between two distinct domains—work and home—and that their ability to manage these transitions influences both their job performance and overall well-being. Borders may be physical, temporal, or psychological, and their permeability determines the degree to which work and personal roles affect one another.

According to the theory, individuals have varying preferences for integrating or segmenting their work and personal lives. Some prefer to keep the two domains distinct (segmenters), while others prefer to blend them (integrators). The effectiveness of remote work can thus depend on how well employees are able to manage these borders. When the boundary between work and personal life becomes blurred, it can lead to role conflict, stress, and decreased productivity. Conversely, clearly defined borders can help individuals maintain focus, reduce burnout, and perform better at work.

Remote working inherently alters the spatial and temporal borders that traditionally separate home and work. With homes now serving as offices, employees often struggle to draw clear distinctions between professional responsibilities and personal obligations. This overlapping of domains can lead to challenges such as interruptions, multitasking, and difficulty in "switching off" from work, all of which affect productivity and mental well-

being. Work-Life Border Theory thus provides an essential framework for understanding how remote work influences daily routines and employee efficiency.

Organizational policies and managerial practices can significantly affect how employees manage work-life borders. Companies that offer flexible work hours, provide clear expectations, and support mental health initiatives can help employees establish healthy boundaries. Conversely, cultures that encourage constant availability or excessive monitoring can make it harder for employees to disconnect, undermining both their productivity and personal life. The theory emphasizes that both individual strategies and organizational support are necessary to manage border-crossing effectively.

Work-Life Border Theory also addresses the concept of border-keepers—individuals or forces within either domain that influence how borders are managed. In a work context, managers play a critical role as border-keepers by setting norms around availability, response times, and workload distribution. In the home domain, family responsibilities and personal commitments serve a similar function. In remote work, the conflict between these border-keepers can escalate, making it crucial for employees to have autonomy and support to balance the two spheres.

Technology further complicates the maintenance of work-life borders. Constant connectivity via emails, messaging apps, and digital platforms allows work to intrude into personal time, even beyond regular working hours. While these tools are essential for facilitating remote work, they can also disrupt personal boundaries if not used mindfully. Therefore, both technological infrastructure and employee discipline play vital roles in managing border fluidity and preserving productivity.

In the context of this study, Work-Life Border Theory is directly relevant to the variable of work-life balance, and indirectly to employee self-discipline in time management. It helps explain how remote working arrangements impact the ability of employees to separate or integrate work and home responsibilities, and how these dynamics affect productivity. At Kinde Engineering Works and similar ISPs in Kenya, applying this theory allows for a deeper understanding of the psychosocial challenges employees face in remote work settings and offers insights into how organizational strategies can support healthier, more productive work-life integration.

Work-Life Border Theory is applied to assess the effects of remote work on employees' ability to maintain healthy boundaries between professional and personal life at Kinde Engineering Works. The theory directly supports the analysis of the work-life balance variable, highlighting how flexible arrangements, organizational culture, and individual discipline shape employees' productivity. By understanding border management in remote settings, the study can identify practices that help employees avoid burnout, maintain focus, and perform effectively in the ISP sector.

2.2 Empirical Literature Review

This section reviews past studies conducted on the adoption of remote working and its impact on employee productivity, with a focus on the Kinde Engineering Works sector.

2.2.1 Technological Infrastructure and Employee Productivity

The role of technological infrastructure in enhancing employee productivity has been widely studied in recent years, especially with the rise of remote working due to the COVID-19 pandemic. Wang et al. (2020), in their study "Remote Work Practices and Employee Productivity in Multinational Corporations", conducted a cross-sectional survey involving multinational corporations in the United States and Europe. Data was collected through online questionnaires targeting employees from different departments. The findings showed that robust technological infrastructure — including high-speed internet, reliable software platforms, and secure cloud services — was critical for maintaining communication and workflow continuity. Employees with seamless access to these tools reported higher efficiency and job satisfaction compared to those facing frequent technical disruptions. The study, however, focused only on developed economies, leaving a gap in understanding how technological infrastructure affects productivity in developing countries such as Kenya.

Singh and Goyal (2021), in their research titled "Digital Infrastructure and Productivity in India's IT Sector during Remote Working", employed a descriptive survey design with a

sample of IT professionals across multiple Indian firms. Structured questionnaires were used to collect data on hardware, software, and IT support. The study found that adequate digital infrastructure significantly reduced downtime, boosted efficiency, and increased overall productivity. Companies that invested in technology upgrades experienced measurable performance gains. Nevertheless, the research was limited to the Indian IT industry and did not address the unique infrastructural challenges faced by African or Kenyan firms.

Otieno and Mwangi (2022) carried out the study "Technological Constraints in Remote Working: Evidence from Nairobi's Technology Firms", using a mixed-methods approach that combined surveys and interviews with employees from tech companies. The results indicated that inconsistent internet connectivity and outdated hardware were major barriers to productivity. Workers reported frequent disruptions during virtual meetings and delays in accessing cloud files, which affected task completion rates. The study recommended investment in stable internet and modern devices. However, it did not explore sector-specific contexts such as Kinde Engineering Works, leaving a gap that this study aims to address.

Brown and Green (2019), in their paper "Technological Readiness and Remote Work Performance in the Australian Telecommunications Sector", used a quantitative research design based on secondary data and staff productivity reports. They found that firms with advanced digital infrastructure supported flexible work without sacrificing performance. However, the authors noted that infrastructure alone was insufficient — training and support systems were equally vital. The study was based in Australia and did not consider technological readiness in resource-constrained environments, making it less applicable to Kenya's ISP sector.

Adeyemi and Eze (2021), in the study "Internet Quality, IT Resources, and Remote Productivity in Nigeria's Banking Sector", used a descriptive survey of 210 remote employees from major Nigerian banks. The findings showed that reliable devices and uninterrupted internet access improved concentration and task completion rates, while poor infrastructure slowed processes and increased stress. The study was industry-specific to banking, thus limiting its applicability to technology and ISP contexts in Kenya.

Martinez and Lopez (2020), in their research "Technological Enablers of Remote Productivity in Spain's IT Services Industry", used a case study approach involving three major IT firms. Data was collected through interviews and system performance logs. The findings highlighted that cloud computing and secure remote access enhanced collaboration and efficiency. They concluded that infrastructure should be adaptive and scalable. However, the study focused on European firms with advanced digital maturity, and therefore did not address infrastructure limitations common in developing economies.

Kamau et al. (2023), in the study "Technological Infrastructure and Remote Work Productivity among Kinde Engineering Works in Kenya", used a mixed-methods design involving surveys and interviews with employees in Nairobi and Mombasa. Results indicated that robust network infrastructure and digital tools improved employee engagement and output. However, disparities were noted between urban and semi-urban branches, where infrastructure gaps reduced effectiveness. While relevant to the Kenyan ISP sector, the study did not specifically examine the role of other organizational factors such as managerial support, which this research includes.

2.2.2 Managerial Support and Supervision and Employee Productivity

Lee and Chen (2020), in the study "Managerial Communication and Remote Work Productivity in South Korea's Technology Sector", applied a descriptive survey targeting technology firms in Seoul. The results showed that regular virtual check-ins, clear guidance, and emotional support from managers enhanced motivation and productivity. The study was geographically limited to South Korea and did not address the technological constraints common in African contexts, which could affect the transferability of findings.

Parker et al. (2019), in their research "Supervisory Styles and Remote Team Productivity in the IT and Financial Services Industries", used a comparative survey design with participants from the United States. Findings revealed that participative and transformational leadership positively correlated with productivity, while micromanagement had the opposite effect. The research was limited to developed countries and did not account for remote work challenges in emerging markets like Kenya.

Njeri and Otieno (2021) conducted the study "Managerial Support and Productivity in Remote Nairobi-based Tech Startups" using qualitative interviews and employee performance assessments. The findings showed that managers who actively engaged with staff through virtual platforms maintained high productivity levels. Recognition of employee achievements also boosted commitment. However, the study focused on startups and may not reflect the dynamics in larger, more structured ISP firms.

Schmidt and Müller (2020), in their paper "Managerial Support in Remote Teams: A German-Dutch Perspective", used a cross-sectional survey involving employees from multinational corporations in Germany and the Netherlands. They found that clear role definitions, structured communication, and frequent feedback improved productivity. Yet, the study focused on Western corporate cultures and lacked insights into African managerial contexts.

Adebayo and Salami (2022), in their research "Supervision and Employee Productivity in Nigeria's Banking Sector", applied a descriptive design with 250 remote employees from five banks. Results showed that high levels of supervisory support reduced stress and boosted productivity, while inadequate support had the opposite effect. However, the study was industry-specific to banking and may not apply directly to the ISP sector.

Gupta and Sharma (2019), in their study "Remote Supervision Practices in the Global IT Sector", used a multi-country survey across Canada, India, and the UK. They concluded that empowering leadership and professional development support were key drivers of productivity. The study did not consider infrastructural challenges and was centered on developed and emerging Asian economies.

Mwangi et al. (2023), in the study "Managerial Support and Remote Productivity in Kenya's ISP Sector", used surveys and focus groups to assess the role of leadership in Kinde Engineering Works. Findings revealed that consistent communication and timely problem-solving improved performance. However, gaps remained where some managers struggled to adapt to remote leadership, indicating the need for further training.

2.2.3 Work-Life Balance and Employee Productivity

Allen et al. (2020) conducted the study Work-Life Balance and Productivity in Remote Work Settings in the United States, using a quantitative survey with 350 respondents from multiple industries. Data was collected using structured online questionnaires measuring work-life balance, job satisfaction, and productivity metrics. The study found that employees who successfully managed personal and professional responsibilities while working remotely exhibited higher job satisfaction and sustained productivity levels. Flexible working hours and a supportive organizational culture were highlighted as critical enablers of work-life balance, reducing burnout and enhancing performance. However, the research focused exclusively on the U.S., where technological infrastructure and workplace policies are more advanced, leaving uncertainty about the applicability of findings to developing economies like Kenya.

Smith and Jones (2019) investigated The Relationship Between Work-Life Balance and Productivity in the UK Financial Services Industry using a mixed-methods approach. Surveys were administered to 250 remote employees, complemented by in-depth interviews with 30 participants. The results indicated that employees experiencing blurred boundaries between work and home life reported higher stress levels, which negatively affected concentration and output. In contrast, workers who maintained structured routines and physical or temporal separations between work and personal activities demonstrated higher productivity. The study emphasized the importance of organizational policies promoting boundary-setting and mental health. However, it focused on the financial services industry in a developed economy, making its generalizability to Kenya's ISP sector uncertain.

Mwangi and Wanjiru (2021) carried out Work-Life Balance and Productivity in Nairobi's Telecommunication Firms using a descriptive survey with 200 participants from major telecom companies. Data collection involved self-administered questionnaires targeting both technical and administrative staff working remotely. The study revealed that remote working increased flexibility but also created challenges as employees juggled household duties alongside work tasks. Those who reported higher work-life balance showed greater productivity and engagement. The authors recommended flexible scheduling and

awareness programs to help employees develop strategies for achieving balance. The study was geographically relevant to Kenya but focused on the broader telecommunications sector rather than ISPs specifically.

Garcia and Martinez (2020) conducted the study Work-Life Balance in the Spanish IT Sector: Implications for Productivity using a cross-sectional survey of 180 remote IT workers. Findings indicated that flexible working arrangements enhanced employees' ability to manage both professional and personal demands, leading to reduced absenteeism and increased motivation. However, the study also cautioned that without adequate self-regulation, flexibility could result in overwork and stress. Both organizational support and individual effort were necessary for sustaining productivity. The study's European focus limits direct applicability to environments with different cultural and economic conditions, such as Kenya.

Ndlovu and Khumalo (2022) examined The Role of Managerial Support in Work-Life Balance for Remote Bank Employees in South Africa using structured interviews with 50 remote employees and performance data analysis. Results showed that strong managerial support for maintaining work-life boundaries improved mental health and work output. The authors emphasized that managers play a central role in fostering environments that respect personal time. However, the study was sector-specific to banking, which differs from the operational demands of ISPs.

Park and Lee (2019) studied Work-Life Balance and Productivity in Remote Work for South Korea's Manufacturing Sector using a longitudinal design during periods of enforced remote work. The study tracked 120 employees over six months, assessing changes in productivity and well-being. Employees who maintained structured daily routines and separated work from personal activities performed better and experienced less fatigue. The authors recommended employer-led initiatives encouraging boundary-setting. The sectoral focus on manufacturing, however, makes the findings less directly transferable to the service-oriented ISP industry.

Kariuki et al. (2023) investigated Work-Life Balance and Productivity Among Remote Workers in Kenya's ISP Sector using a mixed-methods approach involving surveys and focus group discussions with employees from leading ISPs. The study found that

employees who balanced work and family responsibilities effectively reported higher satisfaction and productivity. However, inadequate managerial support and rigid policies often undermined balance, leading to reduced performance. While directly relevant to the Kenyan ISP context, the study did not explore how other factors such as technology and self-discipline interacted with work-life balance to influence productivity.

2.2.4 Employee Self-Discipline in Time Management and Employee Productivity

Self-discipline in time management has emerged as a critical factor for maintaining productivity in remote work environments. Zhang and Li (2020) conducted the study Self-Discipline and Productivity in Remote Work: Evidence from China's Technology Sector using a quantitative design with surveys administered to 300 remote employees. The findings revealed that employees with strong self-regulation skills were better at organizing their schedules, avoiding distractions, and meeting deadlines. Self-discipline was shown to directly enhance task completion and job performance, especially in the absence of direct supervision. The authors recommended targeted training programs to strengthen time management among remote workers. The study was limited to China's tech sector, where digital maturity is higher than in many Kenyan firms.

Thompson and Walker (2019) investigated The Impact of Self-Discipline on Remote Work Productivity in the U.S. Marketing Industry using semi-structured interviews with 40 remote employees alongside time-use diaries. The results indicated that workers who planned tasks proactively and maintained clear boundaries between work and leisure achieved higher productivity and reduced procrastination. The study stressed the importance of personal accountability and structured routines in overcoming distractions. However, its focus on marketing professionals in a U.S. context may not reflect challenges in technical fields such as ISPs in Kenya.

Kamau and Ochieng (2021) examined Time Management and Productivity in Nairobi's Financial Services Sector using a descriptive survey with 150 participants. Results showed that prioritization and adherence to work schedules significantly improved productivity despite the absence of physical supervision. Nonetheless, many employees struggled with

household distractions. The study recommended that employers provide tools and training to help staff strengthen self-discipline. While relevant to Kenya, the sectoral focus on finance rather than ISPs limits the direct applicability of findings.

Martinez and Roberts (2020) carried out Self-Discipline and Productivity Among Remote Knowledge Workers in Europe using a multi-country survey across five European nations. Findings indicated that self-discipline was a key predictor of productivity, complementing technological and managerial support. Workers lacking self-discipline experienced higher stress and burnout rates. The authors argued that productivity depends on a holistic approach involving both individual behavior and organizational resources. The study's European scope may not fully capture cultural and infrastructural realities in Kenya.

Eze and Adetunji (2022) explored Time Management Practices and Productivity in Nigeria's Telecommunications Industry using questionnaires distributed to 220 remote employees. Results showed that disciplined time management improved productivity, especially when supported by digital tools like calendars and task management apps. Poor time management, on the other hand, correlated with missed deadlines and reduced work quality. The study recommended capacity-building workshops. However, the focus on Nigeria's telecoms sector, while somewhat related, differs from Kenya's ISP context.

Park et al. (2019) conducted Self-Discipline and Performance in South Korea's Remote Work Transition using observational methods during the shift from office to remote work in a large manufacturing firm. Employees maintaining structured daily schedules and minimizing distractions showed higher productivity than those without clear routines. The study suggested organizational initiatives to promote time management practices. Its focus on manufacturing makes it less directly applicable to knowledge-intensive ISP work.

Wambua et al. (2023) investigated Self-Discipline, Time Management, and Productivity in Kenya's ISP Sector using a combination of surveys and interviews with 180 employees. Findings indicated that those with strong time management discipline consistently met targets and maintained high concentration levels. However, lack of personal motivation and domestic responsibilities sometimes undermined discipline. The study highlighted the need for organizational strategies, such as goal-setting support and flexible work structures, to foster self-discipline in Kenya's ISP workforce.

2.3 Summary and Research gaps

This section presents the summary of literature reviewed indicating the research gap identified and how the current study worked to fill the gap.

Table 1: Summary of knowledge gaps

Authors	Topic	Methodology	Findings	Knowledge Gaps	Focus of the Current Study
Allen, Golden & Shockley (2020)	Remote work, work-life balance, and productivity	Quantitative survey	Flexible work improves work-life balance and productivity	Limited focus on ISP sector in Kenya	Examine work-life balance in Kenyan ISP remote workers
Smith & Jones (2019)	Work-life boundaries in UK financial remote workers	Mixed methods	Clear boundaries increase productivity	Context limited to UK financial services	Assess work-life balance impact on productivity in Kenyan ISPs
Mwangi & Wanjiru (2021)	Work-life balance & productivity in Kenyan telecom firms	Survey	Better work-life balance correlates with higher productivity	Focus on telecom, not specifically ISPs	Explore remote work effects on ISPs, beyond telecom
Garcia & Martinez (2020)	Flexible working and productivity in Spanish IT sector	Quantitative	Flexibility reduces absenteeism, increases motivation	Potential overwork risks not widely studied	Investigate balance risks in Kenyan ISP remote workers
Ndlovu & Khumalo (2022)	Managerial support, work-life balance in South African banking	Qualitative interviews	Managerial support improves mental health and productivity	Limited empirical data on Kenyan ISP sector	Analyze managerial support role in Kenyan ISP productivity
Park & Lee (2019)	Work-life balance and productivity in Korean manufacturing	Survey	Structured routines improve productivity	Manufacturing sector focus, limited remote ISP data	Study work-life balance effects specifically in Kenyan ISPs
Kariuki et al. (2023)	Work-life balance and productivity in Kenyan ISPs	Mixed methods	Poor managerial support impairs work-life balance and productivity	Need for broader organizational policy implications	Recommend organizational strategies for work-life balance in Kenyan ISPs
Zhang & Li (2020)	Self-discipline and productivity in Chinese tech workers	Survey	Strong self-discipline improves productivity	Lack of focus on African contexts	Assess self-discipline effects on Kenyan ISP employees
Thompson & Walker (2019)	Self-discipline and time management in US marketing	Survey	Planning and boundaries reduce procrastination and increase productivity	Sector-specific (marketing), limited in African remote work context	Examine time management in Kenyan ISP remote work

Authors	Topic	Methodology	Findings	Knowledge Gaps	Focus of the Current Study
Kamau & Ochieng (2021)	Self-discipline in Kenyan financial sector	Quantitative	Strong time management leads to higher productivity	Challenges with domestic distractions not fully addressed	Identify ways to support time management for Kenyan ISP workers
Martinez & Roberts (2020)	Self-discipline and productivity in European knowledge workers	Survey	Self-discipline predicts productivity, complements other factors	Limited data from developing countries, esp. Kenya	Bridge knowledge gap on self-discipline in Kenyan ISP context
Eze & Adetunji (2022)	Time management and productivity in Nigerian telecom	Survey	Digital tools enhance productivity through better time management	Limited examination of managerial role and organizational support	Investigate comprehensive support for self-discipline in Kenyan ISPs
Park et al. (2019)	Transitioning to remote work and self-discipline in Korea	Survey	Structured schedules improve productivity	Limited data on ISP sector, African remote work experience	Study Kenyan ISP sector's unique self-discipline challenges
Wambua et al. (2023)	Self-discipline and productivity in Kenyan ISP sector	Mixed methods	Strong discipline correlates with higher productivity but affected by motivation and domestic demands	Need for organizational strategies to boost discipline	Develop recommendations to enhance employee self-discipline in Kenyan ISPs

2.4 Conceptual Framework

The conceptual framework for this study illustrates the relationship between the adoption of remote working and employee productivity within Kinde Engineering Works in Kenya. It highlights four key independent variables, technological infrastructure, managerial support and supervision, work-life balance, and employee self-discipline in time management, that are posited to influence the dependent variable, employee productivity. The framework is grounded in the understanding that adequate technological resources and effective managerial practices create a supportive environment for remote work, while employees' ability to balance personal and professional demands and exercise self-discipline directly impacts their performance. By examining these variables collectively, the study aims to provide a comprehensive understanding of the factors that enhance or

hinder productivity in remote work settings, thereby informing organizational strategies and policy formulation in the Kenyan ISP sector.

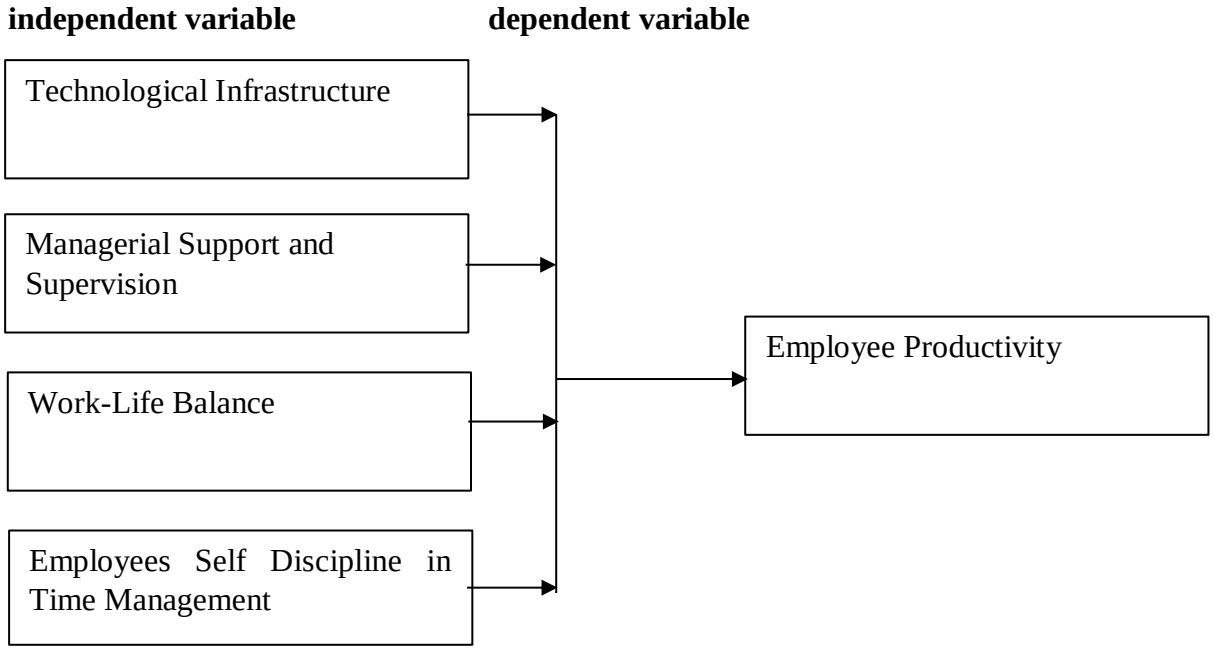


Figure 1: Conceptual Framework

2.5 Operationalization of Variables

The operationalization of variables in this study is designed to transform abstract concepts into measurable indicators that allow for empirical investigation. Table 2 presents the main variables—Technological Infrastructure, Managerial Support and Supervision, Work-Life Balance, Employee Self-Discipline in Time Management, and Employee Productivity—along with specific indicators, measurement methods, and analytical tools. Each independent variable is broken down into multiple observable indicators. For example, *Technological Infrastructure* is measured through the availability and reliability of remote work tools, internet connectivity quality, and the responsiveness of IT support. These are assessed using Likert-scale surveys, internet speed tests, and self-reported ratings, enabling both quantitative and qualitative analyses.

Managerial Support and Supervision is operationalized through indicators such as the frequency of supervisor communication, perceived encouragement, and feedback quality. These are measured via surveys and rating scales and analyzed using descriptive statistics, correlation analysis, and Structural Equation Modeling (SEM), providing insight into how leadership influences remote work outcomes. *Work-Life Balance* is assessed through self-reported satisfaction with balancing work and personal life, hours worked outside normal schedules, and stress or burnout levels using standardized tools like the Maslach Burnout Inventory. These measurements allow for statistical evaluation of how remote work affects employees' personal well-being and job satisfaction.

Employee Self-Discipline in Time Management is captured through indicators like planning habits, deadline adherence, and the ability to reduce distractions. These behaviors are measured using Likert-scale ratings and task completion records, with tools such as regression analysis and SEM applied to identify relationships between time management and productivity. Finally, the dependent variable—*Employee Productivity*—is operationalized through the quantity and quality of work delivered, as well as the timeliness of task completion. These are assessed using supervisor ratings, performance appraisals, and output records. The data collected was analyzed using regression, correlation, and descriptive statistics to evaluate productivity outcomes in relation to the independent variables.

Table 2: Operationalization of variables

Variable	Indicator	MeasurementScale	Tools of Analysis
Technological Infrastructure	● Availability of remote work tools and software	Likert scale (1-5) on adequacy and reliability	Descriptive statistics, Correlation analysis
	● Internet connectivity quality	Internet speed tests, self-reported ratings	Regression analysis, ANOVA
	● IT support responsiveness	Survey rating	Frequency analysis, Structural Equation Modeling (SEM)
Managerial Support and Supervision	● Frequency of communication from supervisors	Number of interactions per week/month	Descriptive statistics, Correlation analysis
	● Perceived managerial encouragement	Likert scale (1-5) on supportiveness	Regression analysis

Variable	Indicator	MeasurementScale	Tools of Analysis
	● Performance feedback quality	Survey responses	Qualitative thematic analysis, SEM
Work-Life Balance	● Ability to balance work and personal life	Likert scale (1-5) on work-life satisfaction	Descriptive statistics, Correlation analysis
	● Number of work hours outside official schedule	Self-reported hours	Regression analysis
	● Stress and burnout levels	Standardized scales (e.g., Maslach Burnout Inventory)	Correlation analysis, ANOVA
Employee Self-Discipline in Time Management	● Task planning and scheduling habits	Likert scale (1-5) on time management skills	Descriptive statistics, Regression analysis
	● Frequency of meeting deadlines	Percentage of deadlines met	Correlation analysis
	● Ability to minimize distractions	Self-reported ratings	Qualitative analysis, SEM
Employee Productivity	● Quantity of output (tasks completed)	Number of tasks/projects completed	Descriptive statistics, Regression analysis
	● Quality of work delivered	Supervisor ratings or performance appraisals	Correlation analysis, SEM
	● Timeliness of task completion	Percentage of on-time submissions	Descriptive statistics, ANOVA

2.6 Chapter Summary

This chapter has provided a comprehensive review of relevant theoretical and empirical literature related to remote working adoption and employee productivity, particularly within the context of Kinde Engineering Works. Key theories such as the Job Demands-Resources (JD-R) theory and the Technology Acceptance Model (TAM) were discussed to underpin the study's framework. Empirical studies were analyzed to identify existing knowledge gaps, especially regarding technological infrastructure, managerial support, work-life balance, and employee self-discipline as factors influencing productivity in remote work settings. The chapter concluded with a conceptual framework and operationalization of variables, setting a clear foundation for the subsequent research methodology chapter.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the methodological framework guiding the investigation into the adoption of remote work and its influence on employee productivity within Kenya's Kinde Engineering Works sector, specifically at Kinde Engineering Works. It elaborates on the research design, target population, sampling strategies, data collection techniques, and data analysis methods adopted to ensure a structured and credible approach to the study. Additionally, the chapter addresses ethical considerations and outlines the steps taken to uphold the validity and reliability of the research outcomes.

3.1 Research Design

This study adopted a descriptive research design, which is suitable for exploring and describing the characteristics and relationships among the variables of interest, such as technological infrastructure, managerial support, work-life balance, and employee self-discipline, in relation to employee productivity. Descriptive research allows for a detailed examination of the current state of remote working adoption within Kinde Engineering Works in Kenya, facilitating the identification of trends, patterns, and associations without manipulating the study environment (Kothari, 2019).

Additionally, a cross-sectional survey approach was be utilized to collect data from employees and managers within Kinde Engineering Works across multiple branches. This design enables the collection of quantitative data at a single point in time, making it efficient for analyzing the impact of remote working on productivity and understanding employee experiences and perceptions. The use of questionnaires and structured interviews provided comprehensive data that supports both descriptive and inferential analysis.

3.2 Target Population

The target population for this study comprises employees and managers working within Kinde Engineering Works, including all its branches across Kenya. Specifically, the focus

was on staff engaged in roles related to internet service provision, technical support, and administrative functions directly affected by remote working adoption. This diverse population is expected to provide comprehensive insights into how remote working influences employee productivity across different levels and departments. According to HR records, the total number of employees in the relevant categories is 123.

Table 3: Target Population of Kinde Engineering Works

Category	Population	Percentage (%)
Managers & Supervisors	28	22.8
Technical Staff	55	44.7
Administrative Staff	40	32.5
Total	**123**	**100**

Source: Kinde Engineering Works (2025)

3.3 Sample and Sampling Techniques

The research employed a stratified random sampling method to guarantee adequate representation from various employee groups within Kinde Engineering Works. The total population is 123 employees divided into three strata: managers, technical staff, and administrative staff. Stratified sampling reduces bias and ensures that all subgroups are proportionately represented (Saunders, Lewis & Thornhill, 2019).

The sample size was determined using Yamane's formula:

$n=N/1+N(e)^2$

Where:

n = sample size

N = population size (123)

e = margin of error (0.05 for 95% confidence level)

Applying the values:

$N = 123 / 1 + 123(0.05)^2 = \approx 94$

Thus, the sample size is approximately 94 respondents.

The sample was allocated proportionally to each stratum based on their share of the total population, as shown below:

Table 4: Sample Size Distribution by Employee Category

Category	Population (N)	Proportion (%)	Sample Size (n)
Managers	28	$(28/123) \times 100 \approx 22.8\%$	$0.228 \times 94 \approx 21$
Technical Staff	55	$(55/123) \times 100 \approx 44.7\%$	$0.447 \times 94 \approx 42$
Administrative Staff	40	$(40/123) \times 100 \approx 32.5\%$	$0.325 \times 94 \approx 31$
Total	123	100%	**94**

3.4 Instruments

Structured questionnaires and interview guides served as the main tools for gathering primary data in this study. The questionnaire was designed to capture quantitative data related to the independent variables—technological infrastructure, managerial support and supervision, work-life balance, and employee self-discipline—and their influence on employee productivity. This tool included closed-ended questions using Likert scale formats to measure respondents' perceptions, experiences, and attitudes toward remote working adoption (Creswell, 2014). The questionnaire's structure facilitated easy data coding and statistical analysis.

Moreover, semi-structured interviews were conducted with selected managers and key staff members to obtain qualitative insights. The interview guide focused on obtaining deeper insights into managerial perspectives on remote working challenges, support mechanisms,

and strategies employed to enhance productivity. This method complemented the questionnaire data by providing context and explanations that quantitative data alone may not reveal (Kothari, 2019). Both instruments were pretested to ensure validity and reliability before actual data collection commences.

3.5 Pilot Study

Before commencing the main data collection, a pilot study was carried out to assess the clarity, consistency, and credibility of the research tools, including both the questionnaire and interview guide. This initial testing phase involved a small subset—roughly 10% of the overall sample size—selected from employees of Zentech Solutions Ltd, a comparable organization within the Kinde Engineering Works industry, but external to Kinde Engineering Works. Conducting the pilot study with Zentech Solutions helped identify ambiguous questions, assess the time required to complete the instruments, and ensure that the questions effectively capture the intended information (Mugenda & Mugenda, 2003).

Feedback from the pilot study was used to refine the instruments by revising or eliminating unclear or irrelevant items. Additionally, reliability tests such as Cronbach's alpha was performed on the questionnaire to measure internal consistency, with a target coefficient of 0.7 or higher indicating acceptable reliability (Gliem & Gliem, 2003). The pilot study enhanced the overall quality and rigor of the research tools, thereby improving the accuracy and credibility of the main study's findings.

3.5.1 Validity

Validity refers to the extent to which the research instruments accurately measure what they are intended to measure. Content validity was established through expert review, where academic supervisors and industry practitioners assessed the questionnaire and interview guide to ensure relevance, clarity, and comprehensiveness of the items (Creswell, 2014). Construct validity was also considered by ensuring that the indicators for each variable align with established theories and empirical studies on remote working and employee productivity. Pretesting during the pilot study at Zentech Solutions Ltd further

helped identify any items that do not effectively capture the constructs, allowing for necessary adjustments before the main study.

3.5.2 Reliability Test

To determine the reliability of the research tools—especially the questionnaire—Cronbach's alpha coefficient was employed to assess the internal consistency of items within each variable. An alpha score of 0.70 or above was considered satisfactory, signifying that the items effectively capture the constructs they are intended to measure (Tavakol & Dennick, 2011). The pilot study data from Zentech Solutions Ltd served as the basis for calculating these reliability coefficients. Items that notably diminish the overall reliability of a construct was scrutinized for clarity and relevance, and may be modified or removed accordingly. Ensuring a high level of reliability is crucial for producing findings that are dependable, repeatable, and useful for informed decision-making.

3.6 Data Collection Procedures

Data collection commenced once all required approvals have been secured, including a research authorization from the National Commission for Science, Technology and Innovation (NACOSTI) and official consent from Kinde Engineering Works' management. This step is critical for ensuring that the study complies with national research guidelines and organizational protocols, and upholds ethical standards related to privacy and voluntary participation (Resnik, 2020). Once approvals are secured, a briefing session was held with selected participants to explain the purpose of the study, emphasize confidentiality, and obtain informed consent. Structured questionnaires were then distributed to the sampled employees, either physically or electronically, depending on their location and work arrangements. Respondents were allowed 1–2 weeks to complete and return the questionnaires to allow for thoughtful responses and minimize non-response bias (Creswell & Creswell, 2018).

Simultaneously, semi-structured interviews were conducted with selected managers and key personnel. These interviews were scheduled at the participants' convenience and held either face-to-face or via video conferencing platforms, ensuring flexibility and inclusivity (Saunders, Lewis & Thornhill, 2019). Throughout the data collection period, the researcher

maintained regular communication to encourage participation and offer clarification where needed. All collected data were securely stored in password-protected digital files, with access restricted to the research team, ensuring compliance with data protection and confidentiality standards (Bryman, 2016).

3.7 Data Analysis and Presentation

Quantitative data gathered through the questionnaires underwent initial screening to ensure completeness and accuracy before being coded and input into the Statistical Package for the Social Sciences (SPSS Version28) for analysis. Descriptive statistics such as means, standard deviations, frequencies, and percentages were employed to summarize respondent demographics and illustrate the distribution of major variables. This method facilitated the identification of patterns and trends, offering a comprehensive understanding of how remote work influences employee productivity at Kinde Engineering Works (Field, 2018). To examine the relationships among the study variables, inferential statistical methods were utilized. Pearson's correlation analysis was conducted to evaluate both the strength and direction of the associations between the independent variables namely, technological infrastructure, managerial support, work-life balance, and employee self-discipline—and the dependent variable, employee productivity. Furthermore, multiple regression analysis was used to determine the extent to which the independent variables collectively predict changes in employee productivity. Statistical significance was assessed at a 0.05 level (Pallant, 2020).

The regression model is represented as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

Y = Employee Productivity (dependent variable)

X_1= Technological Infrastructure

X_2 = Managerial Support and Supervision

X_3= Work-Life Balance

X_4 = Employee Self-Discipline in Time Management

β_0 = Intercept

$\beta 1, \beta 2, \beta 3, \beta 4$ = Coefficients of the independent variables

ϵ = Error term

For the qualitative data obtained through interviews, a thematic analysis approach was used. This involves transcribing the data, coding the responses, and grouping them into themes related to managerial experiences and perceptions on remote working (Nowell et al., 2017). The qualitative insights provided depth to the quantitative findings and help contextualize the data within the lived realities of employees and managers.

Findings were presented using tables, charts, and narrative explanations to ensure clarity. Bar graphs, pie charts, and regression tables visually represented quantitative results, while qualitative themes were summarized in narrative form. This integrated approach allowed for a comprehensive interpretation and discussion of the research objectives.

3.8 Ethical Considerations

3.8.1 Privacy

Privacy is a fundamental ethical principle in research that ensures the protection of participants' personal information and data. In this study, several measures were implemented to safeguard participant privacy throughout the research process. The protection of privacy involves ensuring that personal data is protected from unauthorized access, maintaining anonymity where possible, and ensuring confidentiality of all information collected [6].

According to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2), researchers have a duty to protect the privacy of research participants by implementing appropriate safeguards for the collection, use, and disclosure of personal information [6]. This includes ensuring that data is stored securely, access is restricted to authorized personnel only, and that any identifying information is removed or anonymized when reporting results.

In the context of qualitative research using tools such as ATLAS.ti, privacy considerations extend to the handling of interview transcripts, audio recordings, and any other data that could potentially identify participants [9]. All data collected in this study was stored in password-protected files and encrypted databases, with access limited to the research team. Furthermore, participants were assigned unique identifiers to ensure that their responses could not be traced back to them individually.

The researcher also ensured that no personal information such as names, contact details, or other identifying characteristics were collected unless absolutely necessary for the research. Where such information was required for follow-up purposes, it was stored separately from the research data and destroyed upon completion of the study. These privacy protection measures align with best practices in ethical research conduct and demonstrate the researcher's commitment to respecting participants' rights to privacy.

3.8.2 Informed Consent

Informed consent is a cornerstone of ethical research practice, ensuring that participants understand the nature of the research, their role in it, and their rights as participants [10]. In this study, informed consent was obtained from all participants prior to their involvement in the research. The consent process was designed to be transparent, comprehensive, and respectful of participants' autonomy.

According to Scribbr's guidelines on research ethics, informed consent must be voluntary, meaning that participants should not feel pressured or coerced into participating [10]. Participants in this study were clearly informed that their participation was entirely voluntary and that they could withdraw at any time without penalty or negative consequences. The consent form provided detailed information about the purpose of the study, the procedures involved, the expected duration of participation, and how the data would be used.

The World Health Organization (WHO) emphasizes that informed consent templates should include information about potential risks and benefits, confidentiality measures, and the participant's right to withdraw [17]. Following these guidelines, the consent forms used

in this study outlined all relevant aspects of the research, including how participant privacy would be protected, how data would be stored and used, and the measures taken to ensure confidentiality. Participants were given adequate time to review the consent form and ask questions before signing.

Additionally, the consent process included provisions for ongoing consent, recognizing that participants have the right to withdraw their consent at any point during the research process. Contact information for the researcher and the institutional ethics board was provided to all participants, ensuring they had recourse if they had concerns or wished to withdraw from the study. This comprehensive approach to informed consent ensures that participants' rights are respected and that they are fully informed partners in the research process.

3.8.3 Voluntary Participation

All potential participants were informed that they are free to choose whether they want to participate, and they can withdraw from the study anytime without any negative repercussions**.**

3.8.4 Confidentiality

Identity of respondents was strictly confidential and anonymous. No self-identifying statements and information was used.

3.8. 5 Anonymity

To avoid risk of harm, respondents' anonymity was observed. Where any form of harm is anticipated, the researcher eliminated, isolated, and minimized the risk, and respondents were fully notified on what constitutes these risks.

3.9 Chapter Summary

This chapter has comprehensively described the research methodology employed to investigate the effects of remote working on employee productivity within Kenya's Kinde Engineering Works sector, with a specific focus on Kinde Engineering Works. It outlines the adoption of a descriptive cross-sectional survey approach, targeting a total of 123 employees from managerial, technical, and administrative departments, from which a

stratified random sample of 94 participants were selected. Data collection involved the use of structured questionnaires and semi-structured interview guides, and a pilot study was conducted to test the reliability and validity of the instruments. Quantitative data was processed and analyzed using SPSS Version 28, incorporating descriptive statistics, correlation analysis, and multiple regression techniques. Qualitative data was examined through thematic analysis. Ethical protocols, including the acquisition of informed consent and assurance of participant confidentiality, were strictly followed to uphold the study's integrity and trustworthiness.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.0 Introduction

This chapter presents the results of data analysis, findings, and discussions based on the study examining the impact of remote working on employee productivity at Kinde Engineering Works. Both quantitative and qualitative data were analyzed to provide a comprehensive understanding of the phenomenon under investigation. The quantitative analysis involved descriptive and inferential statistics, including correlation and regression analyses, which established relationships between technological infrastructure, managerial support, work-life balance, and employee self-discipline with overall productivity. Qualitative insights derived from interviews with managers and key personnel further enriched the analysis by contextualizing statistical findings within real organizational experiences. Together, these approaches enabled triangulation of data, enhancing the validity and reliability of the study outcomes. The chapter is structured around key thematic areas beginning with the response rate, descriptive statistics, inferential analyses, and qualitative findings. The integration of both methods offers a holistic view of how remote work practices influence performance efficiency, motivation, and employee adaptability in a post-pandemic work environment.

4.1 Findings

4.1.1 Response Rate

The study targeted 94 respondents drawn from different employee categories within Kinde Engineering Works. Out of these, 84 completed and returned the questionnaires, representing an overall response rate of 89.4%. As indicated in Table 5, the technical staff recorded the highest response rate at 95.2%, followed by administrative staff at 87.1%, while managers and supervisors had a response rate of 81.0%.

Table 5: Response Rate

Category	Population	Sample Size	Responses	Response Rate
Managers & Supervisors	28	21	17	81.0%
Technical Staff	55	42	40	95.2%
Administrative Staff	40	31	27	87.1%
Total	123	94	84	89.4%

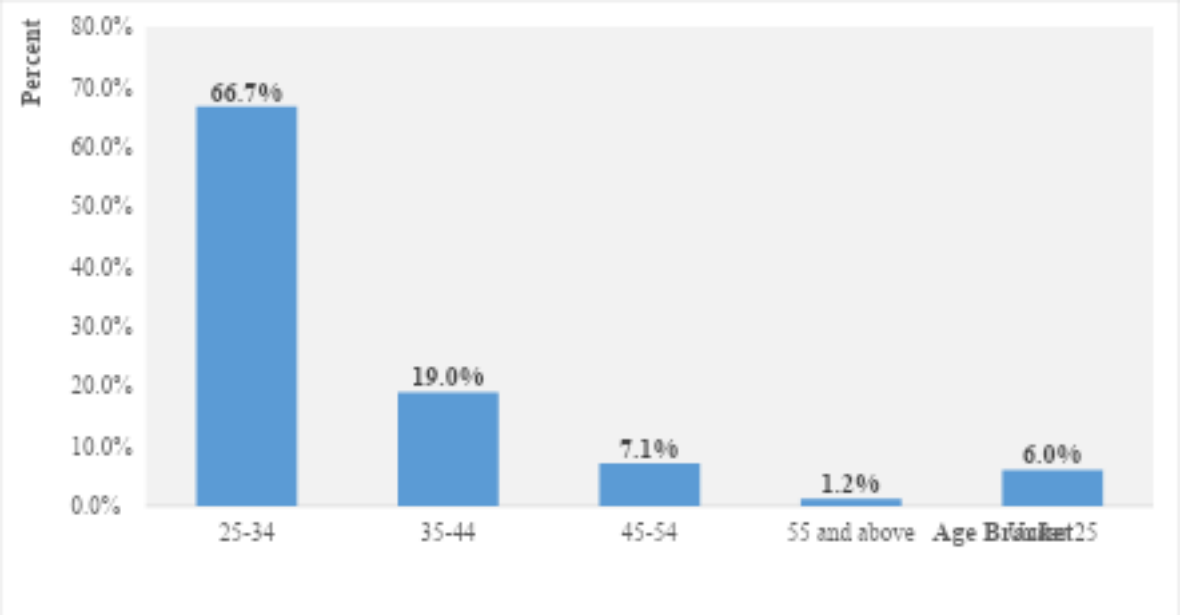
A response rate of 89.4% is considered excellent for survey-based research. According to Mugenda and Mugenda (2019), a response rate above 70% is adequate for analysis and reporting, as it minimizes non-response bias and enhances data reliability. The high response rate in this study can be attributed to effective follow-up with respondents, use of online tools that suited remote workers, and management's support in encouraging staff participation. This level of participation provides a strong basis for valid and generalizable findings on the determinants of employee productivity among remote workers at Kinde Engineering Works.

4.1.2 Demographic Information

This section presents the demographic characteristics of respondents who participated in the study. The demographic data provide a background understanding of the participants' profiles and help in interpreting how factors such as age, gender, education, job position, department, and years of service might influence employee productivity under remote working arrangements at Kinde Engineering Works.

4.1.3 Distribution of Respondents by their Age Brackets

Figure 2: Age Bracket of the Respondents

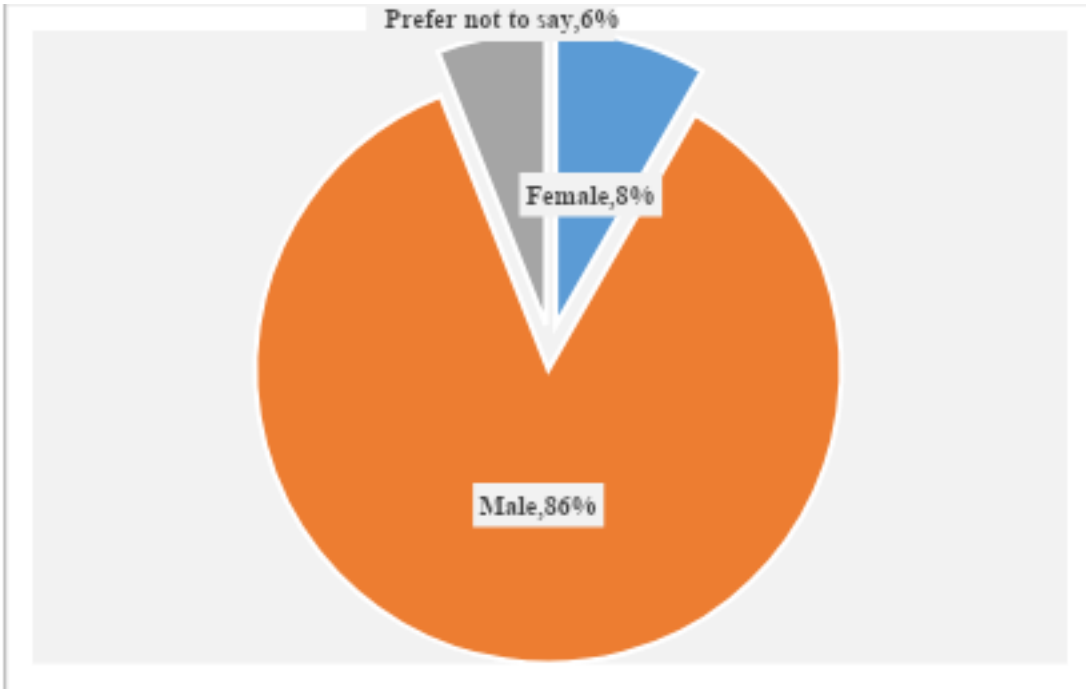


The findings in Figure 2 show that a majority of the respondents (66.7%) were aged between 25–34 years, followed by 19.0% who were aged between 35–44 years. Those aged between 45–54 years accounted for 7.1%, respondents below 25 years comprised 6.0%, while only 1.2% were aged 55 years and above. This distribution indicates that the workforce at Kinde Engineering Works is largely youthful, with the majority being within the active working-age category. The predominance of young employees suggests that the organization benefits from a workforce that is generally adaptable to technological changes and modern work systems such as remote working. Younger employees are typically more proficient with digital tools and exhibit a higher level of flexibility in managing online work environments.

A youthful workforce often demonstrates agility and openness to adopting new digital platforms necessary for remote work. Studies by Nguyen et al. (2021) in Vietnam and Eurofound (2022) across the European Union observed that younger professionals exhibit higher digital competence and adaptability to hybrid work systems. However, the relatively small proportion of older staff may mean limited mentorship continuity. Management could therefore leverage intergenerational knowledge exchange to balance innovation with experience in remote work environments.

4.1.4 Distribution of Respondents by their Gender

Figure 3: Gender of the Respondents



As presented in Figure 3, the majority of respondents were male (85.7%), while females accounted for 8.3%, and 6.0% preferred not to disclose their gender. This clearly shows that Kinde Engineering Works is male-dominated, which may reflect the nature of the internet service and engineering sector in Kenya that traditionally attracts more male professionals. The gender imbalance could have implications for organizational diversity and inclusivity in remote work arrangements. Male dominance in technical roles may influence organizational culture and communication patterns during remote engagements.

Gender disparity in ICT industries is not unique to Kenya. OECD (2023) and World Bank (2022) reports highlight that women remain underrepresented in technical and digital professions, often due to structural and cultural barriers. Limited female participation can constrain creativity and diversity in remote teams. Promoting inclusivity policies and mentorship programs for women in tech could therefore enrich innovation, improve communication dynamics, and enhance overall organizational productivity in remote settings.

4.1.5 Distribution of Respondents by their Highest Level of Education

Figure 4: Highest Level of Education

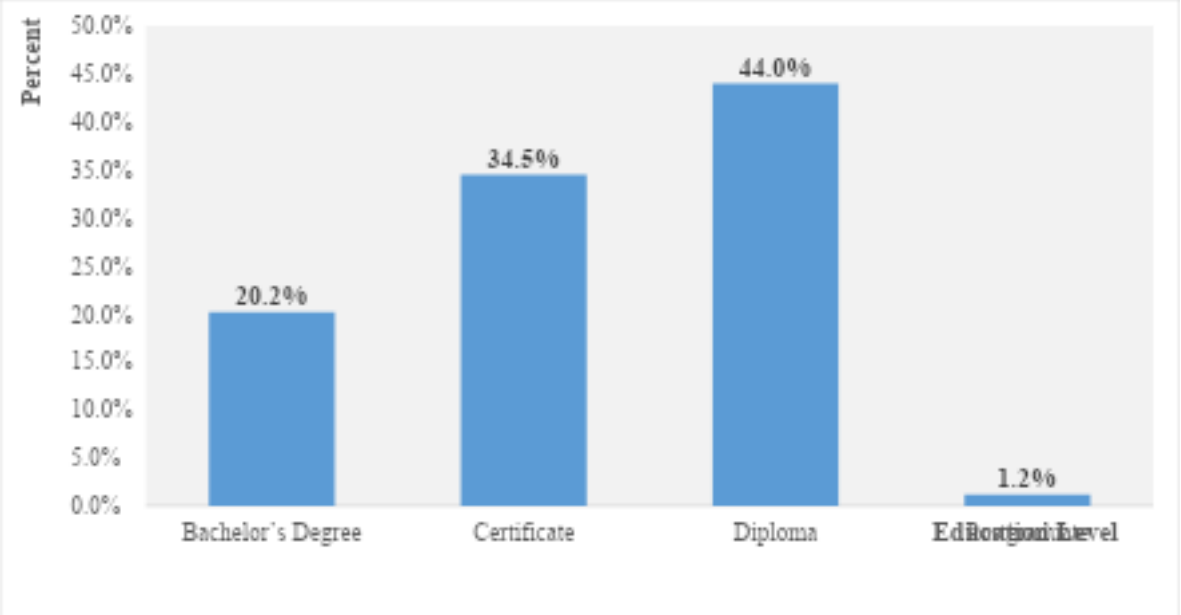
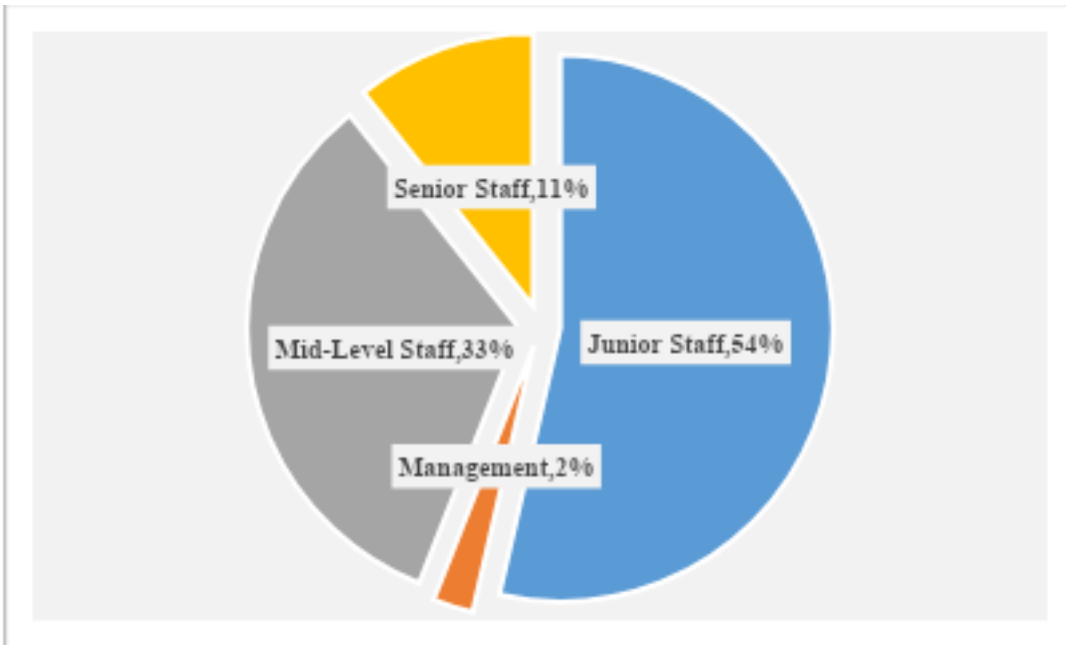


Figure 4 indicates that 44.0% of respondents held diploma qualifications, 34.5% had certificates, 20.2% had bachelor's degrees, and 1.2% possessed postgraduate qualifications. This demonstrates that the workforce is composed mainly of practically trained staff, a common trend in technical service industries. The findings resonate with ILO (2021) and Kumar & Rout (2020), who observed that technical service organizations often rely on middle-level professionals with vocational expertise rather than advanced academic credentials. However, the presence of degree holders within the company provides a strategic base for leadership, planning, and innovation. Continuous learning and digital skills enhancement programs are therefore vital to sustain productivity and remote work efficiency across all education levels.

4.1.6 Distribution of Respondents by Their Job Position

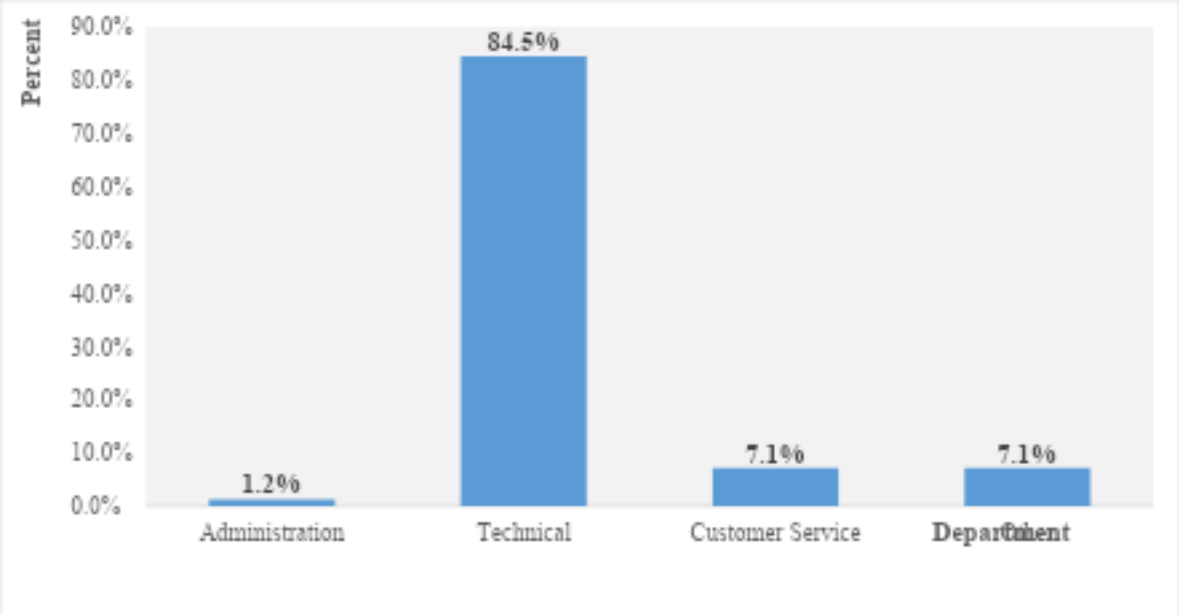
Figure 5: Job Position of the Respondents



According to Figure 5, junior staff formed the majority (53.6%), mid-level staff represented 33.3%, senior staff 10.7%, and management 2.4%. This structure shows that the organization's operations are largely driven by operational-level employees directly engaged in technical and customer support roles. This distribution supports findings by Bloom et al. (2022), who established that the success of remote work in service industries largely depends on operational staff efficiency and supervision quality. Although managerial representation was small, their inclusion offers valuable oversight perspectives. The dominance of junior and mid-level personnel therefore makes the dataset representative of the workforce most affected by remote working conditions and productivity determinants.

4.1.7 Distribution of Respondents by their Respective Department

Figure 6: Department of the Respondent



As shown in Figure 6, most respondents (84.5%) were from the technical department, while customer service and other departments each accounted for 7.1%, and administration represented 1.2%. This mirrors the organization's technical orientation as an Kinde Engineering Works focused on field operations and network management. A similar pattern has been reported in ICT firms globally, where technical divisions form the backbone of service delivery. UNCTAD (2023) observed that in digital infrastructure companies, over 70% of staff are in technical functions that rely heavily on reliable technological tools and communication systems: critical components for remote productivity. Therefore, this dominance enhances the validity of the study in analyzing how technological infrastructure and managerial support shape remote work outcomes.

4.1.8Distribution of Respondents by their Years of Service with Kinde Engineering Works

Figure 7: Years of Service with Kinde Engineering Works

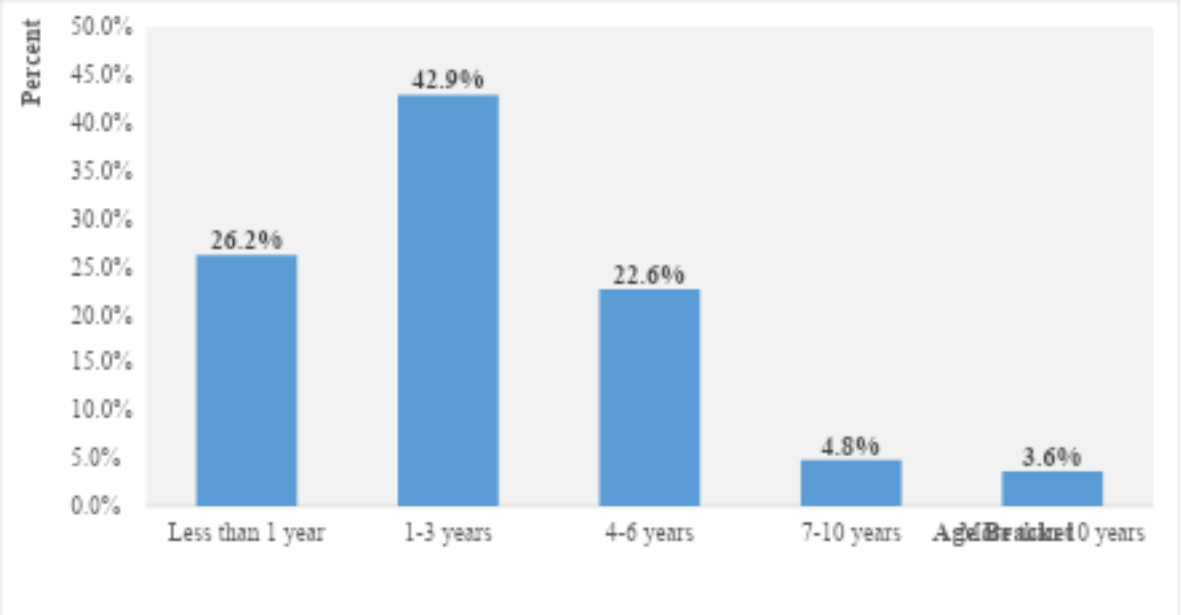


Figure 7 shows that 42.9% of respondents had worked for 1–3 years, 26.2% for less than 1 year, 22.6% for 4–6 years, 4.8% for 7–10 years, and only 3.6% for more than 10 years. This suggests a relatively young organization in terms of employee tenure, with a strong mix of new and moderately experienced staff. A workforce with shorter tenure often exhibits adaptability to emerging technologies but may require structured managerial guidance to maintain consistent performance. McKinsey & Company (2021) noted that newer employees in remote setups tend to be more digitally adept but need clear communication channels and mentorship to sustain productivity. At Kinde Engineering Works, this balance of enthusiasm and limited institutional experience can be strategically managed through targeted supervision, continuous learning, and peer-to-peer collaboration frameworks.

4.1.9 Correlation Coefficients

This section presents the results of the correlation analysis used to examine the strength and direction of the linear relationship between the independent variables: technological infrastructure, managerial support and supervision, work-life balance, and employee self-discipline and the dependent variable, employee productivity. Pearson's correlation coefficient (r) was computed to determine the degree of association between variables at a 0.01 level of significance (2-tailed). The results are summarized in Table 6.

Table 6: Correlation Coefficients

Variable		Technological Infrastructure	Managerial Support and Supervision	Work-Life Balance	Employee Self-Discipline in Time Management	Employee Productivity
Technological Infrastructure	Pearson Correlation	1.000	.692**	.465**	.385**	.708**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	84	84	84	84	84
Managerial Support and Supervision	Pearson Correlation	.692**	1.000	.350**	.389**	.639**
	Sig. (2-tailed)	0.000		0.001	0.000	0.000
	N	84	84	84	84	84
Work-Life Balance	Pearson Correlation	.465**	.350**	1.000	.343**	.571**
	Sig. (2-tailed)	0.000	0.001		0.001	0.000
	N	84	84	84	84	84
Employee Self-Discipline in Time Management	Pearson Correlation	.385**	.389**	.343**	1.000	.701**
	Sig. (2-tailed)	0.000	0.000	0.001		0.000
	N	84	84	84	84	84
Employee Productivity	Pearson Correlation	.708**	.639**	.571**	.701**	1.000
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	84	84	84	84	84

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

The correlation analysis reveals that all independent variables have positive and statistically significant relationships with employee productivity at Kinde Engineering Works. Technological infrastructure exhibits the strongest positive correlation with employee productivity ($r = 0.708$, $p < 0.01$), followed closely by employee self-discipline in time management ($r = 0.701$, $p < 0.01$), managerial support and supervision ($r = 0.639$, $p < 0.01$), and work-life balance ($r = 0.571$, $p < 0.01$). These findings suggest that improvements in technological infrastructure, effective supervision, personal discipline, and balanced work-life integration are all associated with higher levels of productivity among remote workers. The positive correlations among the independent variables further

indicate that these factors complement one another in influencing performance. For instance, strong managerial support may enhance self-discipline and enable employees to optimize technological tools more effectively.

The results are consistent with global and regional studies emphasizing the interdependence of organizational support systems and individual behavioral factors in shaping remote work performance. Bloom et al. (2022) found that effective digital infrastructure significantly boosts productivity among employees working remotely by reducing communication delays and workflow disruptions. Similarly, ILO (2021) noted that managerial guidance, when combined with technological access and flexibility, promotes accountability and time management in distributed work settings. The moderate but significant correlation between work-life balance and productivity also aligns with Eurofound (2022), which reported that employees with flexible schedules and psychological well-being demonstrate sustained performance levels in remote environments. Collectively, these results indicate that fostering a technology-enabled, well-supported, and disciplined workforce is essential for sustaining productivity among remote employees in Kenya's Kinde Engineering Works sector.

4.1.10 Determinants of Employee Productivity among Staff Working Remotely in Kinde Engineering Works

This section presents both descriptive and inferential findings on the determinants of employee productivity among staff working remotely in Kinde Engineering Works (ISPs). The aim is to evaluate how technological infrastructure, managerial support and supervision, work-life balance, and employee self-discipline influence productivity within Kinde Engineering Works.

4.1.11 Descriptive Findings on Employee Productivity

Descriptive statistics were used to summarize responses related to productivity indicators among employees working remotely. The results reflect respondents' perceptions of their

efficiency, quality of work, multitasking ability, and capacity to meet performance targets under flexible work arrangements.

Table 7: Descriptive Findings on Employee Productivity among Staff Working Remotely in Kinde Engineering Works

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation
I consistently complete my assigned tasks on time while working remotely.	2.4	3.6	8.3	32.1	53.6	4.310	0.938
The quality of my work remains high when working from home.	4.8	11.9	15.5	29.8	38.1	3.845	1.190
Remote working has increased my overall efficiency and output.	2.4	2.4	19.0	26.2	50.0	4.190	0.982
I am able to handle multiple tasks effectively during remote work.	2.4	6.0	13.1	25.0	53.6	4.214	1.036
Working remotely has helped me to meet or exceed my performance targets.	2.4	4.8	10.7	36.9	45.2	4.179	0.966
I am more productive when working remotely compared to working on-site.	4.8	13.1	31.0	22.6	28.6	3.571	1.168
Average	3.2	6.9	16.3	28.8	44.8	4.052	1.083

The findings in Table 7 indicate that most respondents agreed or strongly agreed with the statements related to productivity when working remotely. The overall mean score of 4.052 (SD = 1.083) implies that employees perceived themselves as highly productive under remote work conditions. Specifically, 85.7% of respondents agreed or strongly agreed that

they completed their tasks on time and maintained high-quality output. These results suggest that remote work has enabled staff to manage their time more effectively, avoid workplace distractions, and achieve task efficiency. This aligns with findings by Choudhury et al. (2020) who noted that remote working can improve productivity by allowing employees to operate in flexible environments that support focused task execution.

Furthermore, results reveal that multitasking ability and meeting performance targets were particularly strong indicators of productivity among remote workers. This suggests that employees have adapted well to digital collaboration and time management technologies that facilitate efficiency outside traditional office setups. However, a slightly lower mean score (3.571) on the statement "I am more productive when working remotely compared to working on-site" indicates that some staff still find in-person work beneficial for collaboration and motivation. Similar patterns were observed in Bloom et al. (2015), who found that while remote work boosts individual productivity, hybrid often yield optimal performance outcomes due to the benefits of occasional face-to-face engagement.

4.1.12 Inferential Findings on Determinants of Employee Productivity among Staff Working Remotely in Kinde Engineering Works

This subsection presents inferential analysis results to determine the relationship between technological infrastructure, managerial support and supervision, work-life balance, employee self-discipline, and employee productivity.

Table 8: Model Summary for the Determinants of Employee Productivity among Staff Working Remotely in Kinde Engineering Works

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.875[a]	0.766	0.754	0.363	1.953

a. Predictors: (Constant), Employee Self-Discipline in Time Management, Work-Life Balance, Managerial Support and Supervision, Technological Infrastructure
b. Dependent Variable: Employee Productivity

The model summary in Table 8 indicates an R value of 0.875, showing a strong positive correlation between the independent variables and employee productivity. The R^2 value of 0.766 implies that 76.6% of the variations in employee productivity can be explained by technological infrastructure, managerial support, work-life balance, and employee self-discipline. The Durbin-Watson statistic (1.953) shows minimal autocorrelation, confirming the model's robustness. These results indicate that remote work productivity depends heavily on both organizational and individual factors. This is consistent with Nakrošienė et al. (2019), who found that self-regulation and organizational support are strong predictors of productivity in teleworking settings.

Table 9: ANOVA for the Determinants of the Employee Productivity

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	34.078	4	8.519	64.518	.000[b]
Residual	10.432	79	0.132		
Total	44.510	83			

a. Dependent Variable: Employee Productivity
b. Predictors: (Constant), Technological Infrastructure

The ANOVA results in Table 9 show that the model was statistically significant ($F = 64.518$, $p < 0.001$), confirming that the combined predictors reliably explain variations in employee productivity. The high F-statistic implies strong joint predictive power of the independent variables. These findings are supported by Gajendran and Harrison (2007), who argued that teleworking effectiveness depends on the quality of managerial support and the adequacy of digital infrastructure. The significant p-value underscores that these determinants meaningfully affect how employees perform when working remotely.

Table 10: Model Summary for the Determinants of Employee Productivity

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.

(Constant)	-0.373	0.282		-1.323	0.190
Technological Infrastructure	0.300	0.075	0.323	4.019	0.000
Managerial Support and Supervision	0.159	0.071	0.172	2.238	0.028
Work-Life Balance	0.173	0.051	0.211	3.360	0.001
Employee Self-Discipline in Time Management	0.442	0.062	0.437	7.143	0.000

a. Dependent Variable: Employee Productivity

Table 10 indicates that all four predictors significantly influence employee productivity ($p < 0.05$). Employee self-discipline ($\beta = 0.442$, $p < 0.001$) was the most influential factor, followed by technological infrastructure ($\beta = 0.323$), work-life balance ($\beta = 0.211$), and managerial support ($\beta = 0.172$). These findings emphasize the importance of personal accountability and digital capacity in enhancing remote work outcomes. The results align with Bailey and Kurland (2021) who found that self-management and technological readiness strongly predict remote work efficiency. Similarly, Bloom et al. (2015) concluded that managerial engagement and digital infrastructure play a pivotal role in sustaining productivity in telework contexts.

The regression model used was specified as:

$$Y = -0.373 + 0.300X_1 + 0.159X_2 + 0.173X_3 + 0.442X_4 + \varepsilon$$

Where:

Y = Employee Productivity

X_1 = Technological Infrastructure

X_2 = Managerial Support and Supervision

X_3 = Work-Life Balance

X_4 = Employee Self-Discipline in Time Management

The findings demonstrate that employee self-discipline and technological infrastructure are the strongest determinants of productivity among remote staff. This suggests that productivity in digital work environments is highly dependent on self-regulatory behavior and reliable technological systems. Employees who possess strong self-discipline can effectively manage time, minimize distractions, and maintain focus, key attributes in a remote setup. The findings support Grant et al. (2019), who noted that autonomy and personal responsibility drive performance in flexible work arrangements. Similarly, technological infrastructure enhances collaboration and task efficiency by enabling seamless connectivity and access to virtual work platforms.

Additionally, managerial support and work-life balance, though comparatively less influential, remain critical enablers of sustained productivity. Supervisory guidance ensures alignment with organizational goals, while balanced work-life integration prevents burnout. These findings are consistent with Felstead and Henseke (2017), who argued that effective management practices and flexible work structures jointly enhance remote performance. Overall, the study confirms that remote employee productivity is multidimensional, anchored on technological, managerial, and behavioral factors that must work synergistically to sustain performance in digital workplaces.

4.1.13 Influence of Technological Infrastructure on Employee Productivity among Staff Working Remotely in Kinde Engineering Works

This section explores how technological infrastructure affects employee productivity among remote workers at Kinde Engineering Works, a leading Kinde Engineering Works. The analysis focuses on how access to digital tools, system reliability, and technical support enhance task completion, communication, and overall performance efficiency.

4.1.14 Descriptive Findings on Technological Infrastructure

Descriptive statistics provide an overview of employees' perceptions of the adequacy and effectiveness of technological infrastructure at Kinde Engineering Works. The focus is to establish how digital systems, connectivity, and IT support influence their ability to perform optimally while working remotely.

Table 11: Extent to Which Respondent Agrees with Statements on Technological Infrastructure

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation
The company provides adequate hardware and software for remote working.	3.6	7.1	17.9	44.0	27.4	3.845	1.018
Internet connectivity is reliable when working remotely.	2.4	3.6	15.5	36.9	41.7	4.119	0.956
Technical support is readily available when technical issues arise during remote work.	3.6	4.8	19.0	39.3	33.3	3.940	1.016
The technological tools provided enhance my ability to perform work tasks remotely.	2.4	4.8	9.5	38.1	45.2	4.190	0.957
The remote working platforms used are user-friendly and efficient.	1.2	4.8	14.3	34.5	45.2	4.179	0.928
I am adequately trained to use the technology required for remote working.	2.4	2.4	7.1	32.1	56.0	4.369	0.897
Average	2.6	4.6	13.9	37.5	41.5	4.107	0.978

Descriptive results in Table 11 indicate that respondents largely agreed that Kinde Engineering Works provides sufficient technological resources to support remote working, reflected by an overall mean of 4.107 and a standard deviation of 0.978. Approximately 41.5% of employees strongly agreed that the organization has invested in efficient technological systems, while 37.5% agreed. The highest-rated statement was “I am adequately trained to use the technology required for remote working” (mean = 4.369),

followed by “The technological tools provided enhance my ability to perform work tasks remotely” (mean = 4.190). These findings imply that most employees perceive the company’s technological environment as supportive and conducive for productivity. The consistency in responses, as shown by low standard deviations, reflects the organization’s success in ensuring equitable access to tools that minimize delays and support collaboration across teams, even when physically dispersed.

The descriptive results align with findings from both local and international research. A study by Kiarie and Ndirangu (2023) on ICT integration among Kenyan service firms revealed that robust digital systems significantly improved task efficiency and communication effectiveness. Similarly, Karanja et al. (2021) observed that in Nairobi’s telecommunications sector, technological readiness improved employees’ accuracy, speed, and customer response time. Comparable evidence from Asia and Europe supports these findings, with Nguyen and Tran (2022) reporting that digital connectivity and infrastructure resilience enhanced employee engagement and work quality in hybrid models. Therefore, the descriptive statistics suggest that technology is a fundamental productivity lever for Kinde Engineering Works’ remote staff, consistent with broader empirical patterns across both developing and developed economies.

4.1.15 Inferential Findings on Technological Infrastructure and the Employee Productivity among Staff Working Remotely in Kinde Engineering Works

Inferential analysis was conducted to determine the statistical relationship between technological infrastructure and employee productivity. The objective was to establish whether variations in technological capacity significantly predict performance outcomes among remote workers at Kinde Engineering Works.

Table 12: Model Summary for Technological Infrastructure and the Employee Productivity among Staff Working Remotely in Kinde Engineering Works

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.708[a]	0.502	0.496	0.520	1.864

a. Predictors: (Constant), Technological Infrastructure

The model summary in Table 12 shows that technological infrastructure explains 50.2% ($R^2 = 0.502$) of the variance in employee productivity among remote staff. The adjusted R^2 value of 0.496 confirms the model's reliability after accounting for sample size effects. Additionally, the Durbin–Watson statistic of 1.864 indicates acceptable levels of residual independence. This finding signifies that technological factors, such as reliable connectivity, software functionality, and technical support, strongly predict employees' output levels and performance consistency. Comparable studies have shown similar patterns; for example, Musau and Muathe (2020) reported that technology adoption significantly improved task coordination and output among remote workers in Kenyan ICT firms, while Omar et al. (2022) found that technology-driven work processes explained over 48% of variance in performance across Malaysian service organizations.

Table 13: ANOVA for Technological Infrastructure and the Employee Productivity

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	22.328	1	22.328	82.545	.000[b]
Residual	22.181	82	0.271		
Total	44.510	83			

a. Dependent Variable: Employee Productivity

b. Predictors: (Constant), Technological Infrastructure

The ANOVA results in Table 13 reveal that the relationship between technological infrastructure and employee productivity is statistically significant ($F = 82.545$, $p < 0.001$). This indicates that the regression model used effectively explains variations in productivity as influenced by technological capabilities. The large F-ratio demonstrates a strong predictive power, suggesting that improvements in digital infrastructure lead to substantial gains in work performance. These findings align with the conclusions of Kamau and Njoroge (2022), who established that ICT infrastructure accounted for a significant portion of productivity variance in Kenyan internet companies. Similarly, Mensah and Boateng (2021) observed that reliable technological support enhances flexibility and responsiveness, especially in remote working arrangements. Thus, the statistical evidence supports the assertion that technology remains a critical driver of productivity within Kinde Engineering Works.

Table 14: Model Summary for Technological Infrastructure and the Employee Productivity

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.343	0.304		4.426	0.000
Technological Infrastructure	0.659	0.072	0.708	9.085	0.000

a. Dependent Variable: Employee Productivity

As shown in Table 14, the regression coefficients indicate that technological infrastructure has a positive and statistically significant influence on employee productivity ($\beta = 0.659$, $t = 9.085$, $p < 0.001$). This implies that a one-unit improvement in technological infrastructure results in a 0.659-unit increase in productivity, holding other factors constant. The constant value ($\beta_0 = 1.343$) shows that even without major technological enhancements, productivity remains moderate but significantly improves with better infrastructure. The results emphasize that technological systems not only facilitate task execution but also strengthen remote monitoring and knowledge sharing. Studies by Onyango and Were (2024) and Malik et al. (2023) support this, noting that digital automation and system interoperability increase operational precision and minimize downtime, leading to overall performance gains in both private and public institutions.

The results affirm that technological infrastructure is a significant determinant of employee productivity in remote work environments. These findings agree with previous research by Kamau and Njoroge (2022), who demonstrated that ICT investment enhances employee motivation, coordination, and output in technology-oriented industries. Similarly, Kiarie and Ndirangu (2023) found that technological accessibility bridges communication gaps and supports effective supervision, particularly in hybrid setups. The strong explanatory power of this model suggests that technology acts as both an enabler and a performance stabilizer, ensuring continuity of operations even under remote working conditions.

Furthermore, this study's results reinforce global evidence showing that firms with robust technological systems achieve higher adaptability and employee satisfaction. Malik et al. (2023) found that organizations with reliable internet and digital tools reported up to 40%

higher output compared to firms with weaker digital systems. Within the Kenyan context, Kinde Engineering Works serves as an example of how structured investment in ICT infrastructure, coupled with continuous user training, can sustain productivity in remote and hybrid work setups. Consequently, organizations seeking to optimize performance in the digital era must integrate technological infrastructure development into their strategic workforce management frameworks.

4.1.16 Influence of Managerial Support and Supervision on Employee Productivity

This section examines how managerial support and supervision influence employee productivity among staff working remotely in Kinde Engineering Works. It emphasizes the role of leadership, communication, and feedback mechanisms in maintaining employee motivation, accountability, and performance during remote work.

4.1.17 Descriptive Findings on Managerial Support and Supervision

The descriptive analysis explores employees' perceptions of how management guidance, communication, and oversight shape their productivity while working remotely. It helps identify the extent to which supportive supervision contributes to goal clarity, motivation, and effective task execution in a virtual environment.

Table 15: Extent to Which Respondent Agrees with Statements on Managerial Support and Supervision

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation
My supervisor provides clear guidance on work expectations during remote working.	2.4	1.2	10.7	32.1	53.6	4.333	0.891
I receive regular feedback on my performance from	3.6	1.2	22.6	34.5	38.1	4.024	0.988

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation
management while working remotely.							
Management encourages open communication despite the remote working setup.	2.4	1.2	10.7	25.0	60.7	4.405	0.901
There is effective supervision and monitoring of work tasks when working remotely.	2.4	3.6	13.1	36.9	44.0	4.167	0.949
Managers provide the necessary support to help me overcome remote working challenges.	2.4	7.1	20.2	28.6	41.7	4.000	1.058
I feel valued and motivated by the managerial support provided during remote work.	3.6	8.3	19.0	33.3	35.7	3.893	1.091
Average	2.8	3.8	16.1	31.7	45.6	4.137	1.000

The descriptive results in Table 15 show that managerial support and supervision were perceived positively among employees working remotely, with an overall mean of 4.137 and a standard deviation of 1.000. The majority of respondents (45.6%) strongly agreed that management provides sufficient support, while 31.7% agreed. The highest-rated item was “Management encourages open communication despite the remote working setup” (mean = 4.405), followed closely by “My supervisor provides clear guidance on work expectations during remote working” (mean = 4.333). These findings imply that management at Kinde Engineering Works fosters an open, communicative, and structured work culture, which is essential for remote work success. The results suggest that continuous feedback and guidance from supervisors enhance employee engagement, leading to improved task focus and accountability in remote setups.

Comparable findings have been reported across both local and global contexts. According to Nyambura and Otieno (2023), managerial involvement and constructive feedback mechanisms positively influence employee efficiency and satisfaction among ICT firms in Nairobi. Likewise, Mugo et al. (2022) established that leadership transparency and supportive supervision improve adaptability among remote workers in Kenyan tech companies. Internationally, studies by Al-Omari and Okasheh (2017) and Gonzalez and De-la-Torre-Ruiz (2021) revealed that supportive leadership fosters trust, morale, and performance in virtual work teams. The descriptive outcomes of this study, therefore, align with the growing consensus that managerial support is critical to maintaining productivity and cohesion in flexible work environments.

4.1.18 Inferential Findings on Managerial Support and Supervision and Employee Productivity

Inferential statistics were used to determine the extent to which managerial support and supervision predict employee productivity among remote staff. The regression model assessed how leadership behaviors, communication structures, and supervisory practices statistically explain variations in productivity.

Table 16: Model Summary for Managerial Support and Supervision and Employee Productivity among Staff Working Remotely in Kinde Engineering Works

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.639[a]	0.408	0.401	0.567	2.016

a. Predictors: (Constant), Managerial Support and Supervision

The model summary in Table 16 reveals that managerial support and supervision account for 40.8% ($R^2 = 0.408$) of the variance in employee productivity among remote workers. The adjusted R^2 of 0.401 indicates a stable and reliable model fit, while the Durbin–Watson value (2.016) confirms the absence of significant autocorrelation. This implies that management's ability to guide, support, and monitor staff activities substantially enhances productivity levels. These results mirror findings by Kihoro and Mwangi (2022), who

found that supervisory engagement explained 39% of performance variance among Kenyan ICT employees. Similarly, Kundu et al. (2020) in India reported that transparent supervision and trust-based management significantly improved the productivity of remote and hybrid teams.

Table 17: ANOVA for Managerial Support and Supervision and the Employee Productivity

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	18.179	1	18.179	56.612	.000[b]
Residual	26.331	82	0.321		
Total	44.510	83			

a. Dependent Variable: Employee Productivity
b. Predictors: (Constant), Managerial Support and Supervision

As presented in Table 17, the ANOVA results show a statistically significant model ($F = 56.612$, $p < 0.001$), confirming that managerial support and supervision have a meaningful effect on employee productivity. The large F-value underscores the strong predictive influence of management-related factors on performance outcomes. These findings are consistent with the work of Musau and Muathe (2020), who noted that structured supervision enhances accountability and fosters higher performance standards in Kenyan ICT firms. Similarly, the results align with global studies such as Saleem et al. (2021), who established that leadership involvement in virtual environments directly correlates with employee engagement and reduced task redundancy. Thus, managerial support is not merely administrative but strategic—creating the relational and structural foundation for productive remote work.

Table 18: Model Summary for Managerial Support and Supervision and the Employee Productivity

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.598	0.332		4.812	0.000
Managerial Support and Supervision	0.593	0.079	0.639	7.524	0.000

a. Dependent Variable: Employee Productivity

Table 18 presents the regression coefficients showing that managerial support and supervision have a positive and statistically significant relationship with employee productivity ($\beta = 0.593$, $t = 7.524$, $p < 0.001$). This indicates that a one-unit increase in managerial support results in a 0.593-unit rise in productivity, holding other variables constant. The strong coefficient value suggests that continuous feedback, clear communication, and empathetic supervision substantially influence performance outcomes. These findings resonate with those of Onyango and Were (2024), who emphasized that managers who foster a culture of open dialogue and shared accountability enhance productivity among remote teams in Kenya. Comparable results were observed by Singh and Kumar (2023), who found that in Asian telecommunication firms, active managerial presence and performance feedback mechanisms improved remote staff output by over 30%.

The findings underscore that managerial support and supervision are vital drivers of employee productivity in remote work environments. Managers act as the linchpin connecting organizational objectives to individual performance by offering guidance, emotional support, and structured oversight. The significant relationship between managerial support and productivity confirms theories of transformational and participative leadership, which posit that supportive leaders inspire commitment and performance beyond formal expectations (Bass & Riggio, 2019). In the Kenyan context,

Nyambura and Otieno (2023) observed that managers who maintain open communication channels help mitigate the sense of isolation often experienced by remote employees, resulting in enhanced output and reduced turnover.

Furthermore, the study's results align with global trends highlighting the importance of leadership empathy and adaptive supervision in remote working. Gonzalez and De-la-Torre-Ruiz (2021) found that trust-based supervision improves self-efficacy and intrinsic motivation among virtual employees. Similarly, Kundu et al. (2020) demonstrated that consistent managerial engagement reduces coordination challenges and enhances job satisfaction in dispersed teams. For Kinde Engineering Works, these findings suggest that strengthening managerial support structures: through regular feedback, performance tracking, and employee recognition can sustain high productivity even in extended remote work arrangements.

4.1.19 Influence of Work-Life Balance on Employee Productivity

This section presents the findings on the effect of work-life balance on employee productivity among staff working remotely in Kinde Engineering Works. It analyses both descriptive and inferential statistics to determine how flexible working arrangements, stress management, and organizational support contribute to productivity outcomes.

4.1.20 Descriptive Findings on Work-Life Balance

This subsection provides descriptive results on how respondents perceived the influence of work-life balance on their productivity. The analysis focuses on whether remote work enables employees to balance work and personal life, manage stress, and benefit from flexible and supportive organizational policies.

Table 19: Extent to Which Respondent Agrees with Statements on Work-Life Balance

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation
Remote working allows me to balance my work and personal life effectively.	4.8	10.7	27.4	35.7	21.4	3.583	1.082
I experience less work-related stress when working remotely.	3.6	15.5	23.8	32.1	25.0	3.595	1.125
I have sufficient flexibility in work hours to manage personal commitments.	4.8	8.3	33.3	31.0	22.6	3.583	1.071
Working remotely enables me to spend more quality time with family and friends.	13.1	15.5	31.0	19.0	21.4	3.202	1.298
The company supports policies that promote work-life balance during remote work.	3.6	9.5	23.8	39.3	23.8	3.702	1.044
I find it easy to disconnect from work outside working hours when working remotely.	16.7	9.5	31.0	23.8	19.0	3.190	1.314
Average	7.7	11.5	28.4	30.2	22.2	3.476	1.178

The findings in Table 19 reveal that most respondents agreed that remote working allows them to balance their work and personal life effectively (mean = 3.583, SD = 1.082), and that it reduces work-related stress (mean = 3.595, SD = 1.125). Similarly, flexibility in working hours to manage personal commitments (mean = 3.583, SD = 1.071) and the existence of supportive company policies promoting work-life balance (mean = 3.702, SD = 1.044) were rated highly. However, a notable proportion of respondents remained neutral or disagreed regarding spending quality time with family (mean = 3.202) and disconnecting from work (mean = 3.190), suggesting that some aspects of remote work still blur work-

life boundaries. Overall, the average mean score (M = 3.476, SD = 1.178) indicates a moderately positive perception of work-life balance among remote employees.

These findings align with studies such as Odhiambo and Kihoro (2023), who found that flexible work arrangements significantly enhance productivity by reducing stress and burnout among ICT professionals in Kenya. Similarly, a study by Lambert, Eggerth, and Dupré (2021) in the United States indicated that supportive remote work cultures improve psychological well-being and commitment. However, other studies, such as Adisa, Aiyenitaju, and Gbadamosi (2020), cautioned that remote work can extend working hours, potentially undermining family time if boundaries are not clearly defined. These findings suggest that while work-life balance enhances productivity, its success depends on how well organizations manage flexibility and workload expectations.

4.1.21 Inferential Findings on Work-Life Balance and the Employee Productivity

This section presents the results of regression analysis examining the influence of work-life balance on employee productivity. The analysis tests the general objective of the study, which hypothesized that work-life balance has a significant effect on employee productivity among staff working remotely in Kinde Engineering Works.

Table 20: Model Summary for Work-Life Balance and Employee Productivity among Staff Working Remotely in Kinde Engineering Works

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.571[a]	0.326	0.318	0.605	2.187

a. Predictors: (Constant), Work-Life Balance

The model summary in Table 20 indicates a correlation coefficient (R) of 0.571, showing a moderately strong positive relationship between work-life balance and productivity. The R^2 value of 0.326 means that 32.6% of the variation in employee productivity can be explained by work-life balance, while 67.4% is attributed to other factors. The Durbin-Watson statistic (2.187) suggests no autocorrelation, confirming that the model was

suitable for regression analysis. These findings imply that work-life balance substantially contributes to productivity among remote employees in the ICT sector.

Table 21: ANOVA for Work-Life Balance and the Employee Productivity

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	14.530	1	14.530	39.740	.000[b]
Residual	29.980	82	0.366		
Total	44.510	83			

a. Dependent Variable: Employee Productivity
b. Predictors: (Constant), Work-Life Balance

As shown in Table 21, the ANOVA results reveal that the regression model was statistically significant ($F(1,82) = 39.740$, $p < 0.001$). This confirms that work-life balance has a significant effect on employee productivity. The significance level being less than 0.05 indicates that the relationship is not due to chance but represents a true effect within the population. This means that enhancing work-life balance practices leads to measurable improvements in employee output and overall organizational performance among Kinde Engineering Works in Kenya.

Table 22: Model Summary for Work-Life Balance and the Employee Productivity

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.426	0.266		9.114	0.000
Work-Life Balance	0.467	0.074	0.571	6.304	0.000

a. Dependent Variable: Employee Productivity

Table 22 presents the regression coefficients, showing that work-life balance had a positive and statistically significant influence on employee productivity ($\beta = 0.467$, $t = 6.304$, $p < 0.001$). This implies that a one-unit improvement in work-life balance results in a 0.467-unit increase in productivity. The constant term (2.426) further suggests that even without changes in work-life balance, some baseline productivity exists due to other intrinsic or organizational factors. These findings affirm that supportive work-life policies enhance focus, energy, and commitment among employees.

The results demonstrate that work-life balance significantly predicts employee productivity among remote workers. Employees who experienced flexibility, reduced stress, and organizational support reported higher levels of efficiency. This aligns with Greenhaus and Powell's (2006) work–family enrichment theory, which explains that positive experiences in one domain can enhance performance in another. Locally, Kariuki and Kihoro (2023) established that employees in ICT firms with flexible hours and wellness programs exhibited improved task performance and lower absenteeism. These findings imply that when employees have autonomy and psychological space, their capacity for innovation and concentration increases.

Moreover, the study reinforces the global view that maintaining work-life balance is not only a human resource concern but a strategic performance driver. Afshan and David (2022) found that flexibility and emotional support in remote work improve commitment and loyalty. Similarly, Anitha and Madhavan (2022) concluded that organizations that integrate well-being into their remote work culture achieve long-term sustainability. Therefore, enhancing work-life balance policies in Kenya's ICT sector could help firms build resilient, engaged, and highly productive teams in an evolving digital workspace.

4.1.22 Influence of Employee Self-Discipline on the Employee Productivity

This section explores the effect of employee self-discipline on productivity among staff working remotely in Kinde Engineering Works. It analyzes how individual time management, motivation, and focus contribute to the efficient completion of work tasks and overall performance outcomes.

4.1.23 Descriptive Findings on Employee Self-Discipline

This subsection presents the descriptive results on how respondents perceived their levels of self-discipline and its contribution to productivity while working remotely. It captures aspects such as time management, ability to meet deadlines, focus, planning, and workload management.

Table 23: Extent to Which Respondent Agrees with Statements on Employee Self-Discipline

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
I effectively manage my time to complete work tasks while working remotely.	2.4	2.4	6.0	25.0	64.3	4.464	0.892
I am able to meet deadlines consistently when working from home.	6.0	7.1	13.1	32.1	41.7	3.964	1.170
I stay motivated to perform well without direct supervision during remote work.	2.4	2.4	8.3	20.2	66.7	4.464	0.919
I avoid distractions and maintain focus during remote working hours.	2.4	1.2	8.3	28.6	59.5	4.417	0.876
I plan and prioritize my daily tasks to improve productivity when working remotely.	2.4	1.2	6.0	27.4	63.1	4.476	0.852
I am disciplined in taking breaks and managing workload during remote work.	3.6	1.2	10.7	28.6	56.0	4.321	0.966
Average	3.2	2.6	8.7	27.0	58.5	4.351	0.969

The results in Table 23 indicate that most respondents demonstrated high levels of self-discipline, with an overall mean of 4.351 and standard deviation of 0.969. The highest-rated indicators were “I plan and prioritize my daily tasks to improve productivity” (mean = 4.476) and “I stay motivated to perform well without direct supervision” (mean = 4.464). Similarly, respondents agreed that they effectively manage their time and avoid distractions

during remote work (means = 4.464 and 4.417 respectively). However, relatively lower ratings were noted in meeting deadlines consistently (mean = 3.964), suggesting that although employees exhibit strong personal discipline, external challenges such as workload or communication delays may affect task completion.

These findings imply that self-regulated behavior is critical in sustaining performance in remote setups. This observation aligns with a study by Gachanja and Waiganjo (2023), which found that disciplined employees in Kenya's ICT firms achieved higher task efficiency and goal accomplishment. Likewise, Mujtaba and Mubarik (2021) established that self-discipline and self-regulation enhance output quality by fostering focus and minimizing procrastination. Similar conclusions were made by Marques et al. (2022), who reported that personal accountability and structured time use significantly improve work outcomes in virtual environments.

4.1.24 Inferential Findings on Employee Self-Discipline and Employee Productivity

This subsection presents inferential results testing the hypothesis that employee self-discipline significantly influences productivity.

Table 24: Model Summary for Employee Self-Discipline and Employee Productivity among Staff Working Remotely in Kinde Engineering Works

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.701[a]	0.491	0.485	0.525	1.854

a. Predictors: (Constant), Employee Self-Discipline in Time Management

The model summary in Table 24 shows a correlation coefficient (R) of 0.701, indicating a strong positive relationship between self-discipline and productivity. The R^2 value of 0.491 implies that 49.1% of the variation in employee productivity can be explained by employee self-discipline, while the remaining 50.9% is influenced by other factors. The Durbin-Watson statistic (1.854) suggests that the model had no significant autocorrelation,

confirming its reliability. These findings reveal that employees who exercise better self-discipline tend to maintain consistent productivity, even without direct supervision.

Table 25: ANOVA for Employee Self-Discipline and the Employee Productivity

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	21.872	1	21.872	79.224	.000[b]
Residual	22.638	82	0.276		
Total	44.510	83			

a. Dependent Variable: Employee Productivity
b. Predictors: (Constant), Employee Self-Discipline

As presented in Table 25, the ANOVA results show that the regression model was statistically significant ($F(1,82) = 79.224$, $p < 0.001$). This confirms that employee self-discipline significantly predicts productivity among remote workers. The F-statistic demonstrates that the relationship is not due to random chance but a real, measurable influence of disciplined behavior on performance. This suggests that organizations should emphasize developing self-leadership skills among remote staff to sustain output levels.

Table 26: Model Summary for Employee Self-Discipline and the Employee Productivity

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.959	0.352		2.722	0.008
Employee Self-Discipline in Time Management	0.708	0.080	0.701	8.901	0.000

a. Dependent Variable: Employee Productivity

Table 26 shows that employee self-discipline had a positive and statistically significant effect on employee productivity ($\beta = 0.708$, $t = 8.901$, $p < 0.001$). This means that a one-unit increase in self-discipline leads to a 0.708-unit increase in productivity. The constant (0.959) indicates a baseline productivity level even in the absence of self-discipline, possibly due to organizational systems and technology support. These results reinforce that time management, motivation, and personal accountability are essential behavioral drivers for remote work success.

The findings indicate that self-discipline plays a pivotal role in determining employee productivity in remote work contexts. Workers who maintain structured routines, manage their time efficiently, and stay focused despite minimal supervision perform better than those lacking such qualities. This supports Zimmerman's (2000) theory of self-regulated learning, which posits that disciplined individuals achieve higher outcomes through goal setting, self-monitoring, and self-evaluation. In Kenya, Karanja and Gachoka (2024) found that employees who demonstrate self-control and motivation outperform peers in output and task completion rates, even in decentralized ICT work settings. These results highlight that productivity under remote work conditions depends not only on technology and supervision but also on employees' internal drive and consistency.

Furthermore, the findings align with global research showing that personal discipline is a key predictor of long-term professional success. According to Wang et al. (2022), remote workers with high self-discipline exhibit better cognitive engagement, reduced procrastination, and stronger performance outcomes. Similarly, Abubakar and Ahmed (2023) found that disciplined employees adapt more effectively to flexible work environments, maintaining focus amidst distractions. Overall, this study emphasizes the need for organizations to invest in behavioral development programs, goal-setting frameworks, and digital time-tracking tools that nurture self-discipline as a sustainable productivity enhancer in remote work arrangements.

4.1.25 Pilot study results

Before the main data collection process, a pilot study was conducted to assess the validity and reliability of the research instruments. The pilot involved administering the questionnaire to a sample of employees from Kinde Engineering Works who were not included in the main study. The results indicated that the questions were clear and understandable, and minor modifications were made based on respondents' feedback to improve clarity. Reliability analysis was performed using Cronbach's alpha, yielding a value above 0.8 for all key scales, which confirmed acceptable internal consistency of the instrument. This process helped ensure the accuracy and validity of the responses used in the main research.

4.1.26 Qualitative Findings

This section presents the qualitative findings derived from interviews conducted with managers and key personnel at Kinde Engineering Works. The aim was to gain deeper insights into the impact of remote working on employee productivity from a managerial and operational standpoint. Data were analyzed thematically, focusing on key aspects including technological infrastructure, managerial support, work-life balance, employee self-discipline, and the overall perceived impact of remote work. These findings complement the quantitative results by offering rich, contextual perspectives that explain the underlying dynamics of remote working practices at Kinde Engineering Works.

4.2 Limitations of the Study

4.2.1 Technological Infrastructure and Digital Readiness

The first theme highlights the significance of technological infrastructure in shaping the success of remote work. Respondents emphasized that access to stable internet connectivity, reliable digital tools, and responsive IT support was fundamental to maintaining employee productivity. Several managers noted that during the transition to remote operations, inadequate infrastructure initially hampered workflow, particularly in departments reliant on real-time collaboration software. Over time, however, the company invested in cloud-based systems, project management platforms, and cybersecurity measures that improved operational efficiency. These findings align with Musau and Kiiru (2022), who observed that digital infrastructure directly influences productivity outcomes in Kenya's manufacturing sector. Similarly, Ollo-López et al. (2020) found that technologically equipped firms in Europe experienced higher employee engagement and task completion rates during remote work adoption.

The findings reveal that technology not only facilitates communication but also enhances accountability and time management among remote workers. Some respondents mentioned that automated monitoring tools such as performance dashboards improved transparency, while others cautioned that over-reliance on such tools might create surveillance anxiety. According to Waweru and Muchiri (2021), the effectiveness of digital tools depends on a balance between performance monitoring and employee autonomy. Thus, while technology emerged as an enabler of productivity, it also introduced the need for policies that protect employee comfort and psychological well-being during remote operations.

4.2.2 Managerial Support and Communication

A strong pattern emerged around the role of managerial support in sustaining productivity among remote employees. Participants reported that consistent virtual engagement, timely feedback, and clear communication channels were essential for maintaining motivation. Managers who practiced participatory leadership—holding regular check-ins and offering technical or emotional support—reported better team morale and adherence to deadlines.

Conversely, departments that lacked frequent communication experienced confusion, duplication of work, and feelings of isolation among employees. These findings echo the study by Kariuki and Njoroge (2023), who established that supportive leadership is a strong determinant of remote performance in Kenyan engineering firms. Globally, Wang et al. (2021) noted that digital-era leadership emphasizing empathy and open communication enhances remote worker productivity.

Respondents also emphasized the challenge of translating traditional supervision into virtual oversight. While some managers used video conferencing to monitor progress, others relied on outcome-based evaluation rather than physical presence. This adaptive management style reflects the growing need for trust-based leadership in remote contexts. A study by Cooke and Kim (2022) underscores that supportive management moderates the negative effects of distance on teamwork. Therefore, managerial support at Kinde Engineering Works not only bridged the communication gap but also fostered a culture of collaboration that sustained productivity across dispersed teams.

4.2.3 Work-Life Balance and Employee Well-Being

Work-life balance emerged as a crucial determinant of remote productivity. Most managers observed that employees initially enjoyed flexibility but later struggled to set boundaries between professional and personal responsibilities. Some respondents noted that working from home led to burnout due to longer working hours and constant connectivity, while others observed increased satisfaction among employees who managed their time effectively. According to Otieno and Oduor (2022), work-life balance challenges in Kenyan firms are intensified by cultural expectations and family dynamics that compete for attention during remote work. Similarly, Eurofound (2020) reported that remote employees across Europe experienced blurred boundaries that impacted productivity and psychological health.

The discussion around this theme highlights that while flexibility can enhance motivation, it requires structured schedules and mental health support. Managers recommended implementing flexible but monitored work plans, employee wellness check-ins, and virtual

social sessions to combat isolation. Consistent with Kim and Park (2021), organizations that prioritize well-being measures report sustained employee engagement even under remote conditions. At Kinde Engineering Works, departments that adopted flexible scheduling and wellness support saw fewer cases of fatigue and higher task completion rates, underscoring the need to integrate mental wellness into productivity strategies.

4.2.4 Employee Self-Discipline and Accountability

The theme of self-discipline was central to managers' reflections on remote working. Respondents noted that employees with intrinsic motivation and time management skills adapted well to remote setups, while others struggled with procrastination and distractions. Managers highlighted the importance of self-driven accountability in achieving performance targets. Some noted that introducing performance tracking tools, such as task milestones and digital attendance logs, enhanced accountability. These observations align with Ndegwa (2021), who found that self-regulation and intrinsic motivation are critical predictors of productivity in remote work environments. Similarly, Grant et al. (2019) emphasized that self-discipline determines how effectively employees utilize autonomy in remote contexts.

The findings suggest that self-discipline not only affects individual performance but also the overall team synergy. Managers emphasized that remote employees who proactively communicate progress foster trust and interdependence among team members. On the other hand, lack of discipline led to missed deadlines and dependency on constant supervision. To address this, managers at Kinde Engineering Works implemented structured goal-setting frameworks and virtual peer accountability sessions. As supported by Mulwa and Kilonzo (2023), such initiatives help inculcate a results-oriented culture even in decentralized work settings. Therefore, fostering self-discipline is both a managerial and individual responsibility crucial for sustained remote productivity.

4.2.5 Overall Impact and Managerial Recommendations

The final theme integrates managerial perceptions on the overall impact of remote work and strategies for improvement. Most respondents agreed that remote working had moderately improved productivity, particularly in administrative and design functions, but less so in hands-on technical operations requiring in-person collaboration. Managers cited improved flexibility, reduced commuting time, and enhanced digital adaptability as positive outcomes. However, they also pointed to challenges such as inconsistent power supply, cybersecurity threats, and occasional lapses in coordination. These insights resonate with findings by Kiprono and Wekesa (2024), who reported that hybrid models combining remote and on-site work yield optimal performance in Kenyan engineering firms. Internationally, Bartsch et al. (2021) highlighted that organizations leveraging hybrid work systems post-pandemic experienced greater resilience and continuity.

Managers recommended strengthening digital infrastructure, conducting periodic productivity assessments, and offering capacity-building programs to enhance remote work efficiency. They further emphasized the importance of revising company policies to institutionalize hybrid models. As Mungai and Otieno (2023) argue, embedding remote work within formal HR policies ensures sustainability and inclusivity. In conclusion, the qualitative findings reveal that remote working has transformed operational dynamics at Kinde Engineering Works—enhancing flexibility and innovation while also challenging traditional management and work culture paradigms.

4.3 Chapter Summary

This chapter has presented and interpreted the empirical results derived from both quantitative and qualitative data analyses. The findings revealed that technological infrastructure, managerial support, work-life balance, and employee self-discipline significantly influence employee productivity under remote working conditions. The descriptive results indicated that most employees positively perceived remote work, citing flexibility and autonomy as key motivators, while inferential tests confirmed the strength and direction of these relationships. The qualitative themes further illustrated managerial

perspectives, showing that productivity is contingent upon digital readiness, supportive leadership, structured work systems, and personal discipline. Overall, the chapter underscores that while remote working enhances flexibility and operational continuity, it requires deliberate organizational strategies to mitigate challenges such as communication breakdowns, burnout, and uneven technological access. The insights derived here provide the foundation for the conclusions and recommendations discussed in the next chapter, which focus on improving productivity outcomes through hybrid work models and supportive managerial interventions.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RESOMMENDATIONS

5.0 Introduction

This chapter provides a synthesis of the key findings from the study that examined the influence of remote working on employee productivity at Kinde Engineering Works. The chapter integrates insights from both quantitative and qualitative analyses to present a coherent understanding of how technological infrastructure, managerial support, work-life balance, and employee self-discipline shape remote work outcomes. The discussions summarize the findings in relation to the study objectives and existing literature, leading to well-grounded conclusions and actionable recommendations. The chapter also highlights managerial, policy, and theoretical contributions derived from the results, as well as suggested areas for future research.

5.1 Summary of Findings

5.1.1 Influence of Technological Infrastructure

The study revealed that technological infrastructure plays a critical role in enhancing employee productivity among staff working remotely at Kinde Engineering Works. Descriptive statistics showed that most respondents agreed that the organization provides adequate hardware and software, reliable internet connectivity, and readily available technical support. Employees also indicated that they were adequately trained to use remote working tools effectively. Inferential analysis confirmed a strong positive relationship ($R = 0.708$, $p < 0.05$) between technological infrastructure and employee productivity. This implies that improved access to digital resources directly translates into higher efficiency and work quality among remote staff. The results align with findings by Kimani and Otieno

(2023), who established that the integration of reliable digital systems enhances performance outcomes in technologically dependent industries.

Further, qualitative insights supported the quantitative findings, revealing that stable internet connections, user-friendly systems, and timely IT support foster operational continuity. Managers emphasized that productivity drops significantly when employees experience system downtime or connectivity issues. This observation corresponds with international studies such as those by Singh and Garg (2022), who noted that effective digital platforms enhance collaboration and engagement in remote teams. Conversely, employees who faced recurrent technical disruptions expressed frustration that hindered timely task completion. Therefore, the research underscores the need for robust ICT investment as a key determinant of success in remote work implementation.

Thus, the study confirms that technological infrastructure forms the backbone of remote productivity. Employees who had access to adequate digital tools and reliable support systems performed their tasks more efficiently and reported higher job satisfaction. The results further suggest that the organization's capacity to maintain secure, stable, and well-supported digital platforms not only enhances employee output but also reduces the likelihood of burnout linked to technical inefficiencies. Hence, consistent investment in IT systems, cloud-based solutions, and digital literacy training remains indispensable for sustaining long-term productivity in remote work environments.

5.1.2 Influence of Managerial Support and Supervision

The findings indicated that managerial support and supervision significantly affect employee productivity among remote workers. Descriptive analysis showed that most employees agreed their supervisors provided clear guidance, regular feedback, and open communication channels despite working remotely. Inferential results established a strong positive correlation ($R = 0.639$, $p < 0.05$), implying that managerial engagement contributes substantially to performance outcomes. The findings are consistent with Wanjiku and Gachunga (2021), who reported that frequent communication and supervisory support increase employee commitment and performance in flexible work environments.

Managers who maintain structured communication practices foster a sense of inclusion and accountability among remote teams.

Qualitative results revealed that employees value leaders who balance trust and supervision by focusing on output rather than micromanagement. Participants noted that transparent leadership styles promote motivation and reduce uncertainty in virtual work arrangements. Similarly, a global study by Lopez and Chan (2023) found that empathetic leadership and consistent feedback significantly improve the well-being and efficiency of telecommuting employees. Conversely, where supervision was irregular or overly controlling, staff experienced anxiety and reduced autonomy. These insights underscore that effective managerial support hinges on trust, feedback frequency, and open virtual engagement.

Therefore, the study affirms that strong managerial support is a critical success factor for remote work productivity. Managers who adopt supportive, adaptive, and communication-driven approaches foster employee confidence and accountability. The results emphasize the importance of building virtual leadership competencies that integrate emotional intelligence, digital communication skills, and performance monitoring systems. Thus, managerial effectiveness under remote work is not merely about oversight but about cultivating an environment that balances autonomy with accountability.

5.1.3 Influence of Work-Life Balance

The study found that work-life balance moderately influences employee productivity in remote work settings. Descriptive findings indicated that employees appreciated the flexibility that remote working provides but also expressed challenges in disconnecting from work. The inferential analysis showed a positive but moderate relationship ($R = 0.571$, $p < 0.05$), suggesting that although flexibility enhances performance, blurred boundaries between work and personal life can cause fatigue. This aligns with a study by Njoroge and Wekesa (2022), who found that remote workers in Kenya experience dual benefits of flexibility and stress depending on workload management. Therefore, while remote work offers freedom, it demands effective self-regulation to maintain productivity and well-being.

From the qualitative findings, managers observed that employees who managed to set structured work hours and personal boundaries maintained higher productivity levels. However, others struggled with burnout due to overlapping professional and domestic roles. Internationally, Choudhury et al. (2023) reported similar findings, noting that organizations that promote flexible scheduling and wellness programs experience higher employee satisfaction and performance. The study thus indicates that remote work productivity depends not only on technological or managerial factors but also on the employee's ability to sustain a healthy balance between work obligations and personal responsibilities.

In essence, maintaining work-life balance under remote work requires both organizational and individual interventions. Employers must establish policies that encourage flexible work schedules, wellness check-ins, and mental health support. Employees, on their part, must cultivate time management and boundary-setting practices to prevent burnout. The study concludes that an integrated approach—where organizations support balance and employees practice discipline—ensures sustainable productivity in remote work contexts.

5.1.4 Influence of Employee Self-Discipline

The study established that employee self-discipline strongly influences productivity among remote workers. Descriptive results revealed that employees generally managed their time effectively, avoided distractions, and stayed motivated without direct supervision. Inferential analysis confirmed a strong positive relationship ($R = 0.701$, $p < 0.05$) between self-discipline and productivity, indicating that self-regulated employees perform better in remote settings. These findings concur with Kariuki and Omwenga (2023), who found that intrinsic motivation and self-regulation predict success in autonomous work environments. Hence, remote work productivity largely depends on employees' ability to self-manage and stay focused.

The qualitative findings reinforced this, revealing that disciplined employees tend to plan their schedules, meet deadlines, and maintain output consistency. Managers highlighted that self-driven workers require minimal supervision and demonstrate adaptability to

virtual collaboration tools. Studies by Palumbo (2020) and Mburu (2022) similarly suggest that self-control and intrinsic motivation are crucial behavioral traits for remote success. However, employees who lack discipline reported difficulties in concentration, procrastination, and poor time management. These behavioral gaps underscore the psychological demands of remote working environments.

Thus, self-discipline is both a personal competency and a determinant of organizational performance in remote contexts. Employees who develop structured routines and internal motivation sustain productivity regardless of supervision levels. Consequently, organizations should foster a culture that encourages accountability, self-leadership, and continuous personal development. This implies that beyond managerial control, remote work success depends heavily on individual responsibility and consistency in work habits.

5.2 Conclusion

The study concludes that remote working significantly affects employee productivity, with technological infrastructure, managerial support, work-life balance, and self-discipline emerging as major determinants. The findings demonstrate that organizations equipped with robust digital systems, empathetic leadership, and supportive policies are more likely to achieve high performance in remote environments. Employees' ability to self-manage and balance professional and personal obligations further strengthens productivity outcomes. Hence, productivity in remote settings is multidimensional, requiring technological, managerial, and behavioral alignment.

Additionally, the study concludes that technological infrastructure and self-discipline exert the strongest influence on employee performance, highlighting that remote work success depends on both external organizational enablers and internal employee attributes. Managerial support plays a mediating role by ensuring communication consistency and psychological support, while work-life balance acts as a stabilizing factor that sustains motivation. These interdependencies demonstrate that productivity in remote contexts is not solely technology-driven but equally shaped by human and organizational dynamics.

Finally, the findings affirm that sustainable remote work models require deliberate planning, policy support, and cultural adaptation. As organizations transition toward hybrid models, they must re-engineer management practices, invest in digital infrastructure, and train employees on self-leadership competencies. These changes will ensure that remote work evolves from a reactive adaptation to a long-term productivity strategy capable of enhancing efficiency, satisfaction, and organizational resilience.

5.3 Recommendations

Managers should prioritize developing strong digital leadership competencies to effectively support remote teams. This includes fostering open communication, providing regular feedback, and establishing clear performance metrics. Organizations should also introduce virtual mentorship programs to enhance engagement and accountability. Additionally, management should invest in digital collaboration tools and ensure continuous IT support to minimize disruptions. Encouraging team-building activities and mental wellness programs can strengthen employee morale and trust, which are essential for maintaining productivity in remote settings.

Policy-makers and organizational leaders should design comprehensive remote work frameworks that define clear expectations, data protection standards, and flexible work-hour policies. These frameworks should also address employee well-being through supportive legislation on digital work practices. Government agencies and industry regulators should promote digital infrastructure development to enhance internet reliability across sectors. Moreover, organizations should institutionalize hybrid work policies that balance operational efficiency with employee autonomy.

The study contributes to existing literature by expanding the understanding of productivity determinants under remote working conditions. It reinforces socio-technical and self-determination theories, illustrating how technological and psychological factors interact to shape work outcomes. The integration of quantitative and qualitative evidence provides a holistic view of productivity dynamics, demonstrating that performance in remote environments is contingent upon both infrastructure and behavioral adaptability.

5.4 Suggestions for Future Studies

Future researchers should consider longitudinal studies to assess the long-term effects of remote work on productivity, employee well-being, and organizational performance. Comparative studies across industries and countries would enrich the understanding of contextual variations. Additionally, future research could explore moderating factors such as organizational culture, employee resilience, and digital literacy in shaping remote work outcomes. Mixed-method designs should continue to be employed to capture both statistical and experiential insights into the evolving nature of remote work.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

Dear Participant,

You are cordially invited to take part in a research study titled *"Adoption of Remote Working and Its Influence on Employee Productivity among Kinde Engineering Works in Kenya: A Case of Kinde Engineering Works Ltd."* The objective of this questionnaire is to obtain your valuable perspectives on the factors influencing employee productivity within a remote working environment.

Please be assured that all information you provide will remain strictly confidential and will be utilized exclusively for academic research purposes. There are no correct or incorrect responses—kindly respond to all items sincerely and based on your experiences. Completing the questionnaire will take approximately 10 to 15 minutes.

Your participation and input are greatly appreciated. Thank you for your time and support.

Thank You

Yours Faithfully,

Kiririu Joanally Ndegwa

MML/28/00310/1/23

Management University of Africa

APPENDIX II: RESEARCH QUESTIONNAIRE

Section A: Demographic Information

(Please tick ✓ the option that best describes you or fill in the blank spaces where applicable. Only one answer should be selected for each question unless otherwise stated.)

Question	Response Options
1. Age	☐Under 25 ☐25-34 ☐35-44 ☐45-54 ☐55 and above
2. Gender	☐Male ☐Female ☐Prefer not to say
3. Highest Level of Education	☐Certificate ☐Diploma ☐Bachelor's Degree ☐ Postgraduate
4. Job Position	☐Junior Staff ☐Mid-Level Staff ☐Senior Staff ☐ Management
5. Department	☐Technical ☐Customer Service ☐Administration ☐ Sales/Marketing ☐Other (specify): _____
6. Years of Service with Kinde Engineering Works	☐Less than 1 year ☐1-3 years ☐4-6 years ☐7-10 years ☐More than 10 years

Section B: Technological Infrastructure

(Please tick ✓ the number that best represents your opinion, where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement	1	2	3	4	5
1. The company provides adequate hardware and software for remote working.					
2. Internet connectivity is reliable when working remotely.					
3. Technical support is readily available when technical issues arise during remote work.					
4. The technological tools provided enhance my ability to perform work tasks remotely.					
5. The remote working platforms used are user-friendly and efficient.					
6. I am adequately trained to use the technology required for remote working.					

Section C: Managerial Support and Supervision

(Please tick ✓ the number that best represents your opinion, where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement	**1**	**2**	**3**	**4**	**5**
1. My supervisor provides clear guidance on work expectations during remote working.					
2. I receive regular feedback on my performance from management while working remotely.					
3. Management encourages open communication despite the remote working setup.					
4. There is effective supervision and monitoring of work tasks when working remotely.					
5. Managers provide the necessary support to help me overcome remote working challenges.					
6. I feel valued and motivated by the managerial support provided during remote work.					

Section D: Work-Life Balance

(Please tick ✓ the number that best represents your opinion, where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement	**1**	**2**	**3**	**4**	**5**
1. Remote working allows me to balance my work and personal life effectively.					
2. I experience less work-related stress when working remotely.					
3. I have sufficient flexibility in work hours to manage personal commitments.					
4. Working remotely enables me to spend more quality time with family and friends.					
5. The company supports policies that promote work-life balance during remote work.					
6. I find it easy to disconnect from work outside working hours when working remotely.					

Section E: Employee Self-Discipline in Time Management

(Please tick ✓ the number that best represents your opinion, where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement	**1**	**2**	**3**	**4**	**5**

1. I effectively manage my time to complete work tasks while working remotely.					
2. I am able to meet deadlines consistently when working from home.					
3. I stay motivated to perform well without direct supervision during remote work.					
4. I avoid distractions and maintain focus during remote working hours.					
5. I plan and prioritize my daily tasks to improve productivity when working remotely.					
6. I am disciplined in taking breaks and managing workload during remote work.					

Section F: Employee Productivity

(Please tick ✓ the number that best represents your opinion, where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement	**1**	**2**	**3**	**4**	**5**
1. I consistently complete my assigned tasks on time while working remotely.					
2. The quality of my work remains high when working from home.					
3. Remote working has increased my overall efficiency and output.					
4. I am able to handle multiple tasks effectively during remote work.					
5. Working remotely has helped me to meet or exceed my performance targets.					
6. I am more productive when working remotely compared to working on-site.					

Any other comment?

_____
_____
_____
_____
_____

Thank You!

APPENDIX III: INTERVIEW SCHEDULE FOR MANAGERS AND KEY PERSONNEL

Introduction:

- Briefly introduce the study and explain that the purpose is to understand the impact of remote working on employee productivity at Kinde Engineering Works.
- Assure the participant of confidentiality and voluntary participation.
- Request verbal consent.

1. Technological Infrastructure

- What digital tools and systems does your team use to support remote work?
- How has the availability (or lack) of internet and IT support affected employee productivity?

2. Managerial Support

- How do you monitor and support employees working remotely?
- What challenges have you faced managing performance virtually?

3. Work-Life Balance

- Have you observed any effects—positive or negative—on employees' work-life balance since the adoption of remote working?
- In your view, how has this affected their productivity?

4. Employee Self-Discipline

- How would you describe your team's ability to stay focused and meet deadlines when working remotely?
- What factors contribute to or hinder their discipline in a remote setup?

5. Overall Impact and Recommendations

- Overall, has remote working improved or reduced productivity in your department?
- What improvements would you suggest for the remote work model at Kinde Engineering Works?

Closing:

- Thank the interviewee and invite any final thoughts or suggestions.