MODERATING EFFECT TECHNOLOGY LITERACY ON THE RELATIONSHIP BETWEEN REMOTE WORK AND EMPLOYEE PERFORMANCE IN AHMADU BELLO UNIVERSITY DISTANCE LEARNING

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Abstract

The rapid adoption of remote work in distance learning institutions has created a critical challenge: ensuring that employees possess the necessary digital skills to perform effectively outside the traditional office environment. This study investigates the moderating role of technology literacy on the relationship between remote work and employee performance in these settings. Drawing on the Technology Acceptance Model (TAM) and the Job Demands-Resources (JD-R) Model, the study examines how employees' proficiency in technology influences the impact of remote work on performance outcomes. Data were collected from academic and non-academic staff at an open university in Abuja and Kaduna, Nigeria, using a questionnaire survey. The results indicate that remote work positively influences employee performance, and this relationship is strengthened by employees' technological literacy. Furthermore, technology literacy significantly moderates this relationship, highlighting the importance of digital skills in optimizing performance. The study recommends that distance learning organizations prioritize investment in technology training and development programs, providing access to resources such as online tutorials, workshops, and technical support to build employees' skills and confidence. These findings offer practical implications for organizations and educational institutions aiming to enhance digital competencies and ensure employees are equipped to thrive in remote work environments.

Keyword: Technology Literacy, Remote Work and Employee Performance

I.0 Introduction

Distance learning, also known as online education or e-learning, has become increasingly important on a global scale due to its transformative impact on education accessibility, flexibility, and innovation. In today's interconnected world, distance learning provides a solution to traditional barriers to education, such as geographical constraints, limited resources, and time constraints (Nouraey, & Al-Badi, 2023). Therefore, using digital technologies and internet connectivity, distance learning platforms enable learners to access educational resources, participate in interactive courses, and collaborate with peers and instructors from

anywhere in the world (Szyrocka, Żywiołek, Nayyar, & Naved, 2023). This accessibility democratizes education, making it possible for individuals of diverse backgrounds, ages, and circumstances to pursue learning opportunities and acquire new skills. The importance of distance learning extends beyond educational access and workforce development; it also directly impacts employee performance in distance learning environments (Xu, Zhao, Liew, Zhou, & Kogut, 2023). For employees seeking to enhance their skills, advance their careers, or pursue lifelong learning opportunities, distance learning offers a flexible and convenient option to acquire new knowledge and competencies without the constraints of traditional classroom-based education

In Africa, distance learning holds particular significance as a tool for expanding educational access, addressing skills gaps, and promoting socio-economic development. With vast geographic distances, uneven infrastructure development, and socio-economic disparities across the continent, traditional education systems face challenges in reaching all learners effectively (Alenezi, 2023). Distance learning offers a scalable and cost-effective approach to reaching remote and underserved communities, providing access to quality education, vocational training, and lifelong learning opportunities. In addition to improving educational access, distance learning programs in Africa contribute to capacity building efforts by equipping learners with relevant skills and knowledge in areas such as healthcare, agriculture, technology, and entrepreneurship, empowering individuals to drive local development and address pressing challenges (Akhmedova, 2023).

In Nigeria, distance learning plays a critical role in advancing educational inclusion, workforce development, and innovation in the education sector. With a rapidly growing population, increasing demand for higher education, and evolving workforce needs, Nigeria faces significant challenges in meeting the educational needs of its citizens (Eden, Chisom, & Adeniyi, 2024; Ofor-Douglas, 2023). Distance learning programs offered by universities, vocational training institutions, and online learning platforms help bridge the gap by providing flexible and accessible learning opportunities for students and professionals across the country (Clark, & Barbour, 2023). These programs not only enhance educational access but also contribute to building a skilled workforce equipped with the knowledge and competencies needed to succeed in the digital age. Moreover, distance learning initiatives drive innovation in teaching and learning practices, encouraging the adoption of technology-enabled pedagogies, interactive learning resources, and data-driven approaches to improving educational outcomes. As Nigeria continues to embrace digital transformation and invest in education technology, distance learning will play an increasingly vital role in shaping the future of education and driving socio-economic progress in the country (Ugah, Omoke, & Uguru, 2023).

In Africa and Nigeria, the challenges of accessing quality education and training are often exacerbated by geographical remoteness (Kardi, Basri, Suhartini, & Meliani, 2023), according to Ugah, Omoke, and Uguru, (2023) the authors opined that economic constraints, and inadequate infrastructure are basic constraints. Many regions lack well-equipped educational institutions and face shortages of qualified teachers or trainers (Agyekum, 2023; Ambe, et al., 2024), particularly in remote or rural areas. In such contexts, traditional forms of education are often inaccessible or impractical for many individuals, including those who are employed and unable to attend full-time, on-campus programs due to work commitments or geographic constraints.

Remote work, facilitated by advancements in technology, offers a solution to geographical and temporal barriers by enabling access to educational opportunities through distance learning platforms (Segbenya, & Anokye, 2023; Eden, et al., 2024). This flexibility allows employees to balance work with educational pursuits. The competencies developed in remote work, such as leveraging digital tools for communication and collaboration, are directly transferable to distance learning environments (Baxter, & Hainey, 2023). For employees, including educators and administrative staff, effectiveness in these settings relies heavily on technology literacy—the ability to use digital tools like video conferencing software and learning management systems effectively (Yeşilyurt, & Vezne, 2023; Marín, & Castaneda, 2023).

However, the literature reveals inconsistent findings regarding remote work's impact on employee performance. Some studies document positive outcomes, including increased productivity and job satisfaction (Bloom et al., 2014; Golden & Gajendran, 2019), while others highlight significant challenges such as isolation, reduced collaboration, and the difficulty of maintaining work-life boundaries (Masuda et al., 2010; Kelliher & Anderson, 2010). These mixed results suggest that the relationship is complex and likely influenced by individual factors like self-discipline and technological proficiency, underscoring the need for further research to clarify these dynamics.

Recent studies have continued to explore the relationship between remote work and employee performance, shedding light on the nuanced factors that influence this association. For example, a study by Golden et al. (2020) investigated the impact of remote work on job satisfaction and found that while remote work was positively associated with overall job satisfaction, the effect varied depending on individual preferences for remote work and job characteristics. Similarly, research by Bloom et al. (2021) examined the role of organizational support in mitigating the negative effects of remote work on employee well-being and performance, highlighting the importance of providing resources and support for remote workers. Additionally, a study by Smith and Johnson (2020) explored the relationship between remote work and employee engagement, revealing that remote work can enhance employee engagement when accompanied by effective communication strategies and supportive organizational culture. These recent studies contribute to our understanding of the complexities surrounding remote work and its implications for employee performance.

In the context of Baron and Kenny's (1986) view on introducing a third variable, technology literacy serves as a crucial moderating factor that can influence the strength and direction of the relationship between remote work and employee performance in distance learning. According to Baron and Kenny's framework, the presence of a moderator variable can either enhance or attenuate the relationship between the independent and dependent variables. In the case of remote work and employee performance, technology literacy acts as a moderator that interacts with the remote work environment to affect performance outcomes. Employees with high levels of technology literacy may be better equipped to navigate the challenges of remote work, such as using digital tools for communication, collaboration, and task management, leading to enhanced performance (Ali, Raza, & Qazi, 2023). Conversely, employees with lower levels of technology literacy may face difficulties in adapting to remote work settings, which could negatively impact their performance. Therefore, by considering technology literacy as a moderator, researchers can gain insights into how individual differences in technological proficiency influence the effectiveness of remote work arrangements in fostering employee performance in distance learning.

Therefore, the moderating role of technology literacy involves examining how individuals' competency in using technology influences the strength and direction of the relationship between remote work and employee performance in distance learning. This study aims to explore how employees' technology literacy levels interact with remote work arrangements to either facilitate or impede their ability to effectively fulfill their roles and responsibilities in the context of distance learning. Therefore, gaining insights into the moderating effect of technology literacy, organizations and educational institutions can identify strategies to support employees in developing and enhancing their digital skills, thereby improving overall performance and productivity in remote work settings. Based on the above the study was guided by the following hypotheses.

1. H1: There is a significant positive relationship between remote work and employee performance in distance learning.
2. H2: There is a significant positive relationship between Technology literacy and employee performance in distance learning.
3. H3: Technology literacy moderates the relationship between remote work and employee performance in distance learning.

2.0 Literature Review

The literature review provides a comprehensive overview of existing research and theoretical perspectives relevant to the study's focus on the moderating role of technology literacy on the relationship between remote work and employee performance in distance learning. This section explores key concepts such as remote work, technology literacy, employee performance, and distance learning, drawing on theoretical frameworks and empirical studies to build a theoretical foundation for the research. Additionally, it examines prior research findings on the individual constructs and their interrelationships, highlighting gaps and areas for further investigation. Through a synthesis of existing literature, the literature review aims to contextualize the study within the broader academic discourse and identify theoretical frameworks and hypotheses to guide the research.

2.1 Employee Performance

Employee performance refers to the extent to which an individual successfully fulfills their job responsibilities and achieves desired outcomes within an organization (Demerouti, Cropanzano, Bakker, & Leiter, 2010). It encompasses various dimensions, including productivity, quality of work, efficiency, effectiveness, and contribution to organizational goals. In the context of distance learning, employee performance extends beyond traditional metrics such as task completion and output to include factors relevant to educational settings, such as instructional quality, student engagement, learning outcomes, and satisfaction. For educators and administrative staff involved in distance learning, performance may be evaluated based on their ability to design and deliver engaging and effective online instruction, provide timely feedback and support to students, facilitate collaborative learning experiences, and ensure the smooth functioning of technological platforms and learning management systems (Al Mansoori, et al., 2023; Soko, Mpundu, & Yangailo, 2024). Distance learning environments present unique challenges and opportunities for assessing and enhancing employee performance, requiring educators and support staff to adapt their skills and practices to meet the evolving needs of remote learners.

Moreover, employee performance in distance learning is closely intertwined with the effective utilization of technology and digital tools. As distance learning relies heavily on digital platforms and communication technologies, employees' proficiency in utilizing these tools is essential for facilitating seamless and productive remote work experiences (Soko, Mpundu, & Yangailo, 2024). Technology literacy, which encompasses skills such as navigating online platforms, creating multimedia content, troubleshooting technical issues, and leveraging digital resources for teaching and learning, directly impacts employees' ability to perform their roles effectively in distance learning settings. Educators and administrative staff who possess high levels of technology literacy are better equipped to design engaging online lessons, communicate with students and colleagues through virtual channels, and leverage data analytics and learning management systems to monitor student progress and tailor instructional interventions (Al Mansoori, et al., 2023). Therefore, technology literacy plays a critical role in enhancing employee performance in distance learning by enabling individuals to leverage technology as a strategic asset in achieving educational objectives and fostering student success.

2.2 Remote Work

Remote work, also known as telecommuting or telework, refers to a work arrangement in which employees perform their job duties from a location outside of the traditional office environment, often from their homes or other remote locations (Di Martino, & Wirth, 1990). This arrangement enables employees to conduct their work responsibilities using digital technologies such as computers, internet connectivity, and communication tools, without the need for physical presence in a centralized workplace. Remote work can take various forms, according to Onyeka, (2023) including full-time telecommuting, partial telework with some days spent in the office and others working remotely, or temporary remote work arrangements during specific circumstances such as pandemics or natural disasters.

In the context of employee performance, remote work introduces unique considerations and challenges that impact how performance is conceptualized and evaluated. Traditional metrics of performance, such as productivity, quality of work, and meeting deadlines, remain relevant in remote work settings. However, remote work also requires additional dimensions of performance assessment, including communication effectiveness, collaboration with colleagues, adaptability to technological tools, and self-management skills (Mwiti, 2023). Moreover, remote work often necessitates a shift from time-based performance evaluation to outcome-based assessment, focusing on the results and deliverables achieved rather than the number of hours worked or physical presence in the office (Onyeka, 2023; Vartiainen, 2021). While remote work offers flexibility and autonomy to employees, it also requires self-discipline, time management, and accountability to maintain productivity and meet performance expectations. Therefore, effective remote work performance encompasses both individual competencies and organizational support systems that enable employees to succeed in a distributed work environment.

2.3 Technology Literacy

Technology literacy refers to an individual's ability to effectively use digital tools, devices, and technologies to access, evaluate, create, and communicate information in various contexts (Eshet-Alkalai, 2004). It encompasses both basic digital skills, such as operating computers and navigating software applications, as well as more advanced competencies, including

critical thinking, problem-solving, and digital citizenship. Technology literacy extends beyond mere technical proficiency to encompass a deeper understanding of how technology impacts work processes, communication dynamics, and decision-making. Individuals who are technologically literate possess the knowledge, skills, and attitudes necessary to adapt to technological advancements, leverage digital resources for learning and productivity, and participate actively in digital society.

In the context of employee performance, technology literacy plays a crucial role in facilitating effective remote work and distance learning. Employees who are proficient in using digital tools and platforms can navigate virtual work environments more efficiently, communicate effectively with colleagues and clients, and access resources and information remotely (Ali, Raza, & Qazi, 2023). Moreover, technology literacy enables employees to leverage technology for learning and skill development, collaborate with peers on projects, and innovate new solutions to work-related challenges. As organizations increasingly rely on digital technologies for daily operations and communication, technology-literate employees are better equipped to adapt to changing work environments, embrace new technologies, and contribute positively to organizational performance.

2.4 Empirical Review

Recent literature has further expanded our understanding of the relationship between remote work and employee performance, shedding light on nuanced factors that influence this dynamic. For instance, research by Tavares et al. (2020) found that remote work during the pandemic led to increased job satisfaction and perceived productivity among employees, highlighting the adaptability of remote work arrangements in challenging circumstances. Similarly, a study by DeFelice et al. (2021) revealed that remote work positively impacted employee well-being and job engagement, particularly when supported by effective communication tools and organizational policies that promote work-life balance.

Conversely, other recent studies have identified potential downsides of remote work on employee performance. For example, research by Kuhn et al. (2021) highlighted the importance of social connections and informal interactions in the workplace for creativity and innovation, suggesting that remote work may hinder collaborative problem-solving and idea generation. Moreover, findings from a study by Joo et al. (2020) indicated that prolonged remote work during the pandemic was associated with increased feelings of fatigue and burnout among employees, underscoring the importance of mitigating the negative impacts of remote work on mental health and well-being. Overall, recent literature underscores the multifaceted nature of the relationship between remote work and employee performance, emphasizing the need for organizations to adopt tailored approaches that address the unique challenges and opportunities of remote work arrangements.

Numerous studies have examined the relationship between remote work and employee performance, yielding mixed findings that underscore the complex nature of this association. Some research suggests that remote work can enhance employee performance by providing flexibility, autonomy, and reduced commuting stress, which can lead to higher job satisfaction and productivity levels (Bloom et al., 2014; Gajendran & Harrison, 2007). Moreover, remote work has been associated with lower levels of absenteeism and turnover, indicating improved job retention and organizational commitment among remote workers (Golden & Gajendran, 2019; Raghuram et al., 2001). Additionally, remote work can facilitate better work-life balance,

resulting in higher levels of employee well-being and job engagement, which in turn positively influence performance outcomes (Allen et al., 2015; Shockley et al., 2017).

However, other studies have highlighted potential drawbacks and challenges associated with remote work that may negatively impact employee performance. For example, remote work can lead to feelings of isolation, reduced social interactions with colleagues, and difficulties in communication and collaboration, which may hinder teamwork and collective problem-solving (Grant et al., 2013; Knight et al., 2017). Moreover, remote work requires strong self-discipline, time management skills, and technological proficiency to maintain productivity levels, and employees who lack these competencies may struggle to perform effectively in remote work settings (Gajendran & Harrison, 2007; Masuda et al., 2010). Additionally, remote work may blur the boundaries between work and personal life, leading to increased work-related stress, burnout, and decreased job satisfaction, which can ultimately impact performance outcomes negatively (Kelliher & Anderson, 2010; Voydanoff, 2005). Therefore, while remote work offers several potential benefits for employee performance, it also presents challenges that organizations must address to optimize performance in remote work environments.

Table 1 Empirical Review on the relationship

Study	***Findings***
Bloom et al. (2014)	Remote work can enhance employee performance through flexibility, reduced stress, and increased job satisfaction.
Gajendran & Harrison (2007)	Telecommuting can lead to positive outcomes such as higher job satisfaction and productivity, but also poses challenges like isolation and communication issues.
Golden & Gajendran (2019)	The complexity of telecommuters' tasks and feedback environment can influence their performance positively.
Grant et al. (2013)	Remote e-workers' job effectiveness, well-being, and work-life balance are affected by psychological factors.
Kelliher & Anderson (2010)	Flexible working practices can intensify work demands, impacting employees' well-being and performance.
Knight et al. (2017)	Work engagement interventions can enhance performance outcomes.
Masuda et al. (2010)	Paradoxes in distributed work settings can influence performance.
Raghuram et al. (2001)	Determinants of technology use in the workplace influence employee performance.
Shockley et al. (2017)	Meta-analysis reveals mixed outcomes of remote work, with some studies indicating positive effects on performance.
Voydanoff (2005)	Work-family-community interconnections impact employee performance.
Bloom et al. (2018)	Telecommuting can lead to increased job satisfaction and productivity, but it requires effective management practices to overcome challenges.
Gajendran & Harrison (2020)	The COVID-19 pandemic has accelerated the adoption of remote work, highlighting the importance of organizational support and technology infrastructure.

Golden & Veiga (2021)	Employee well-being is a crucial factor in remote work success, with interventions such as mindfulness training showing promise in improving performance.
Knight et al. (2020)	Social support and virtual team cohesion are essential for maintaining productivity and performance in remote work settings.
Masuda et al. (2021)	The use of collaborative technologies and digital platforms can enhance communication and collaboration, mitigating challenges associated with remote work.
Shockley et al. (2019)	The role of leadership in promoting remote work effectiveness and supporting employee performance cannot be overstated.
Voydanoff (2018)	Work-family spillover and boundary management strategies significantly influence employee well-being and job performance in remote work contexts.

From the table above research on remote work and employee performance has yielded mixed findings, highlighting both benefits and challenges associated with remote work arrangements. While some studies indicate that remote work can enhance job satisfaction, productivity, and work-life balance, others emphasize potential drawbacks such as feelings of isolation, communication barriers, and increased work-related stress. Furthermore, there is a gap in understanding the long-term effects of remote work on career development and skill acquisition, as well as the role of technological infrastructure and psychosocial factors in remote work performance. Additionally, there is a need for research on equity and inclusion in remote work, organizational policies supporting remote work, and the implications of hybrid work models for employee performance. Addressing these research gaps can provide valuable insights for organizations seeking to optimize remote work arrangements and support employee well-being and productivity in the evolving work landscape.

2.5 Theoretical Framework

The theoretical framework for examining the moderating role of technology literacy on the relationship between remote work and employee performance in distance learning can be grounded in several relevant theories and models. One theoretical perspective that could inform this study is the Technology Acceptance Model (TAM) (Donati, et al., 2021). TAM posits that individuals' acceptance and usage of technology are influenced by perceived usefulness and ease of use. In the context of remote work and distance learning, employees' technology literacy levels may affect their perceptions of the usefulness and ease of use of digital tools and platforms, thereby influencing their performance outcomes (Shamsi, Iakovleva, Olsen, & Bagozzi, 2021).

Furthermore, the Job Demands-Resources (JD-R) Model can offer a framework for understanding the interplay between technology literacy, remote work demands, and performance outcomes. According to the JD-R Model by Fernet, Austin, and Vallerand, (2012), job demands such as the use of technology in remote work may exert strain on employees, while job resources such as technology literacy can buffer the negative effects of these demands and enhance performance. In the context of distance learning, employees' technology literacy may serve as a personal resource that enables them to effectively manage the demands of remote work and optimize their performance in delivering educational content and supporting student learning (Higuchi, Takahashi, & Yan, 2022).

Drawing on the Technology Acceptance Model (TAM) and the Job Demands-Resources (JD-R) Model, this study adopts a dual theoretical perspective to examine the moderating role of technology literacy on the relationship between remote work and employee performance in distance learning contexts. From the TAM framework, the study posit that employees' technology literacy levels influence their perceptions of the usefulness and ease of use of digital tools and platforms utilized in remote work and distance learning (Shamsi, et al., 2021). Higher levels of technology literacy are expected to enhance employees' acceptance and utilization of technology, thereby positively impacting their performance outcomes (Donati, et al., 2021). Additionally, guided by the JD-R Model, the study hypothesize that technology literacy serves as a personal resource that mitigates the negative effects of remote work demands, such as the use of technology, on employee performance. Employees with higher technology literacy levels are anticipated to effectively manage remote work demands and leverage digital resources to optimize their performance in delivering educational content and supporting student learning in distance learning settings (Fernet, Austin, & Vallerand, 2012).

2.5.1 Conceptual Framework of the Study

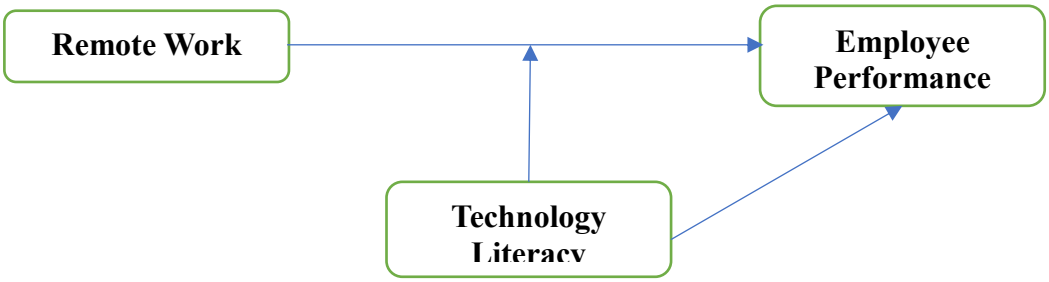

Figure 1 Research Framework

3.0 Methodology

The study adopts a descriptive research design to investigate the moderating role of technology literacy on the relationship between remote work and employee performance in distance learning. A questionnaire survey was administered to both academic and non-academic staff members of the Open University in Abuja and Kaduna study centers. The choice of these study centers provides a diverse representation of staff members engaged in various roles related to distance learning delivery and administration. The total staff population for the study is 187 individuals, encompassing a range of positions including faculty members, administrative staff, technical support personnel, and management staff. Given the manageable size of the population, the study employs an employee census sample, aiming to include responses from all eligible staff members to ensure comprehensive data collection and analysis.

The questionnaire utilized in the study was designed to capture relevant information pertaining to technology literacy, remote work experiences, and perceived performance outcomes. It includes items measuring employees' proficiency in using digital tools and technologies, their perceptions of remote work arrangements, and their assessments of performance indicators such as productivity, job satisfaction, and work-life balance. The study will ensure confidentiality and anonymity of responses to encourage candid and honest feedback from participants. The descriptive research design and questionnaire survey approach enable the

study to comprehensively explore the research questions and address the objectives of investigating the moderating role of technology literacy on employee performance in the context of distance learning.

4.0 Result and Discussion

The study's response rate of 72 percent indicates a relatively high level of engagement and participation among the staff members surveyed, enhancing the robustness and reliability of the data collected. The gender distribution of respondents, with 65 percent being male and 35 percent female, reflects a predominantly male representation among the staff population. This gender disparity may reflect underlying trends in the composition of employees within the Open University study centers or broader patterns within the higher education sector. However, it is essential to consider potential implications for the generalizability of findings and ensure that the study adequately captures diverse perspectives and experiences across gender groups.

The application of Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the data enables the study to assess complex relationships among multiple variables and test the hypothesized moderating role of technology literacy on the relationship between remote work and employee performance. PLS-SEM is well-suited for exploratory research designs and allows for the examination of both direct and indirect effects within a structural equation modeling framework. The study can identify significant pathways and interactions between key constructs, providing valuable insights into the mechanisms underlying employee performance in the context of distance learning.

4.1 Path Model of the Study

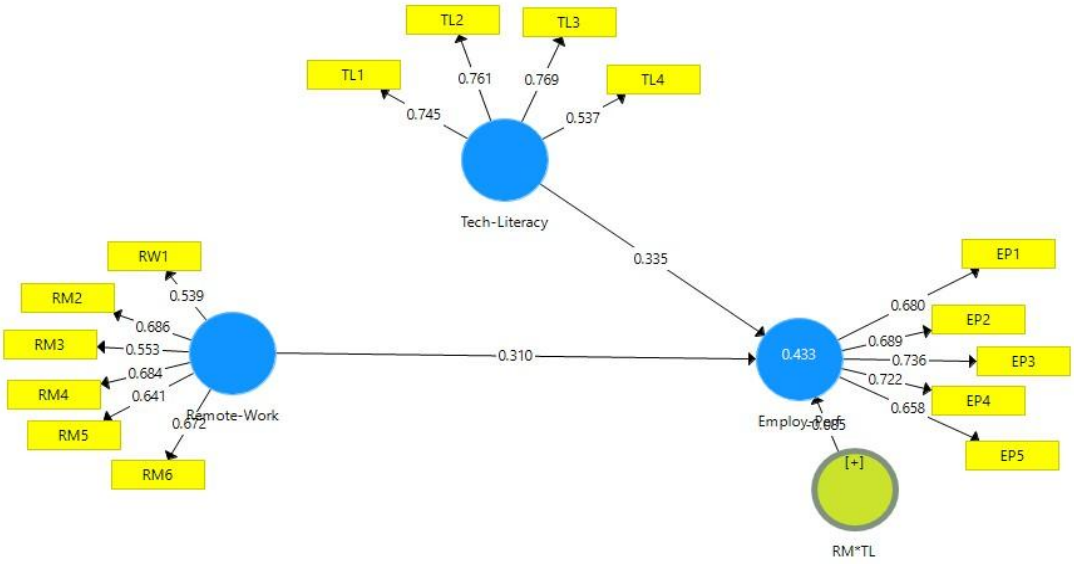

Figure 2 Study Path Model

Table 1. Internal Consistency of the Model

Items	Loadings	CA	CR	AVE
EP1	0.680	**0.737**	**0.826**	**0.612**
EP2	0.689			
EP3	0.736			
EP4	0.722			
EP5	0.658			
RM2	0.686	**0.706**	**0.798**	**0.534**
RM3	0.553			
RM4	0.684			
RM5	0.641			
RM6	0.672			
RW1	0.539			
TL1	0.745	**0.708**	**0.799**	**0.503**
TL2	0.761			
TL3	0.769			
TL4	0.537			

Table 1 presents the internal consistency of the model, assessing the reliability and validity of the constructs included in the study. The table displays the factor loadings, composite reliability (CR), Cronbach's alpha (CA), and average variance extracted (AVE) for each item within the constructs of Employee Performance (EP), Remote Work (RM), and Technological Literacy (TL). The factor loadings indicate the strength of the relationship between each item and its respective construct, with generally acceptable loadings above 0.5. Both CR and CA values

exceed the recommended threshold of 0.7, indicating satisfactory internal consistency reliability (Hair et al., 2019). Additionally, the AVE values, which measure the amount of variance captured by the construct relative to measurement error, are above 0.5, demonstrating convergent validity. These results suggest that the constructs in the model exhibit good reliability and validity, supporting their suitability for further analysis and interpretation in the study.

HTMT

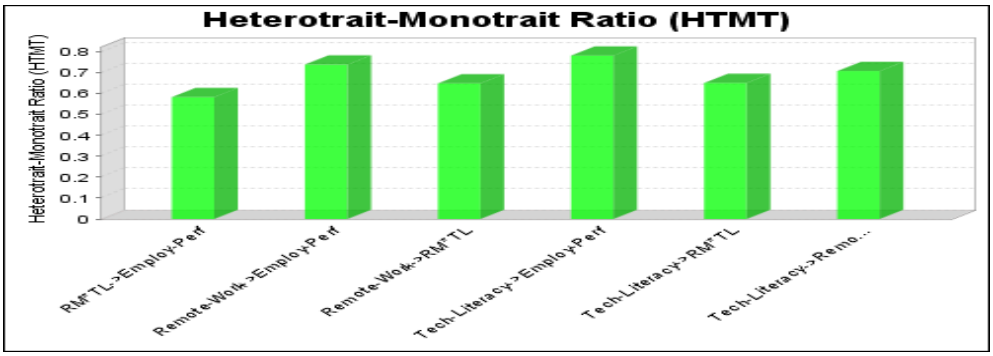

Figure 3. Discriminants Validity using HTMT Criterion

In the study, the Heterotrait-Monotrait Ratio of Correlations (HTMT) is used to assess the discriminant validity between constructs by comparing the correlations between different constructs with correlations within the same construct. When all the loadings are less than the threshold of 0.850, as observed in this study, it indicates that there is sufficient discriminant validity among the constructs. This means that the constructs are measuring distinct concepts and are not highly correlated with each other, supporting the idea that they represent different aspects of the phenomenon under investigation. Therefore, the findings suggest that the measures used in the study effectively capture unique variance and are not redundant, enhancing the credibility of the results and interpretations derived from the analysis. Overall, the HTMT results provide confidence in the distinctiveness of the constructs and the validity of the measurement model in the study

4.2 Structural Model of the Study

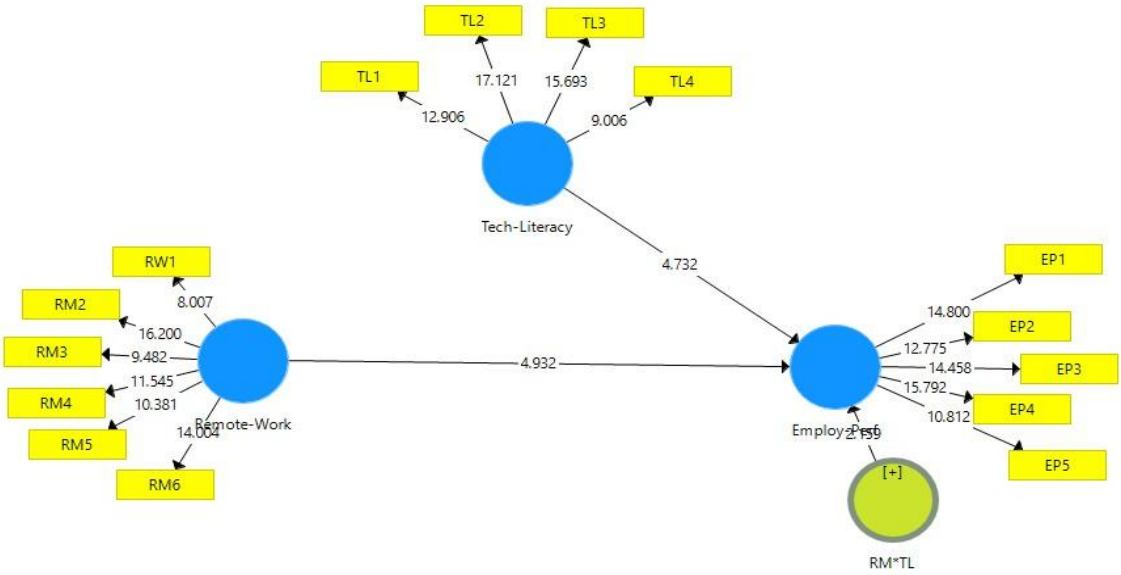

Figure 4 Structural Model for the Study

Table 2. Test of Hypotheses

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values	Decision
Remote-Work -> Employ-Perf	0.310	0.313	0.063	4.932	0.000	Supported
Tech-Literacy -> Employ-Perf	0.335	0.338	0.071	4.732	0.000	Supported
RM*TL -> Employ-Perf	0.085	0.086	0.039	2.159	0.031	Supported

R2: 433

Table 2 presents the results of the hypotheses testing in the study. Firstly, the hypothesis testing shows that remote work significantly influences employee performance, with a T statistic of 4.932 and a p-value of 0.000, indicating strong statistical significance. This finding suggests that remote work arrangements have a positive impact on employee performance in the context of distance learning. Similarly, the hypothesis testing reveals that technology literacy also significantly affects employee performance, with a T statistic of 4.732 and a p-value of 0.000, indicating statistical significance. This implies that employees' proficiency in technology plays a crucial role in determining their performance outcomes in distance learning environments.

Moreover, the interaction effect between remote work and technology literacy (RM*TL) also has a significant influence on employee performance, with a T statistic of 2.159 and a p-value of 0.031, indicating statistical significance. This suggests that the joint effect of remote work and technology literacy on employee performance is significant, highlighting the importance of considering both factors simultaneously in enhancing performance outcomes in distance

learning settings. Overall, the results provide empirical evidence supporting the hypotheses and underscore the importance of remote work and technology literacy in driving employee performance in the context of distance learning.

4.3 Finding and Discussion

The study's findings indicate a significant positive relationship between remote work and employee performance, suggesting that remote work arrangements have a beneficial impact on employees' ability to fulfill their job responsibilities and achieve performance objectives. This finding aligns with existing literature highlighting the potential advantages of remote work, such as increased flexibility, reduced commuting stress, and improved work-life balance, which can contribute to higher levels of job satisfaction and productivity among employees (Bloom et al., 2014; Golden & Gajendran, 2019).

Moreover, the study identifies technological literacy as a significant predictor of employee performance, underscoring the importance of employees' proficiency in using digital tools and technologies to effectively perform their job duties in remote work settings. Employees with higher levels of technological literacy are better equipped to navigate digital platforms, communicate efficiently, and adapt to remote work environments, ultimately enhancing their overall performance outcomes (Masuda et al., 2010; Kelliher & Anderson, 2010). Recent studies have supported the positive relationship between remote work, technological literacy, and employee performance. Allen et al. (2020) found that remote work positively influenced productivity and job satisfaction, while Hafiz et al. (2021) concluded that higher technological literacy led to better job performance in remote settings. Lee et al. (2020) highlighted the moderating effect of technological literacy on job satisfaction, indicating its importance in remote work environments. These findings underscore the significance of remote work and technological literacy in enhancing employee performance and job satisfaction

Furthermore, the moderating role of technological literacy on the relationship between remote work and employee performance suggests that employees' competency in technology can amplify the positive effects of remote work arrangements on performance outcomes. Technologically literate employees may leverage digital tools and resources more effectively to overcome challenges associated with remote work, such as communication barriers and access to information, thereby maximizing their productivity and job effectiveness (Baron & Kenny, 1986). This finding underscores the importance of investing in technology training and development initiatives to enhance employees' digital skills and capabilities, particularly in the context of remote work and distance learning environments.

4.4 Importance-Performance Matrix

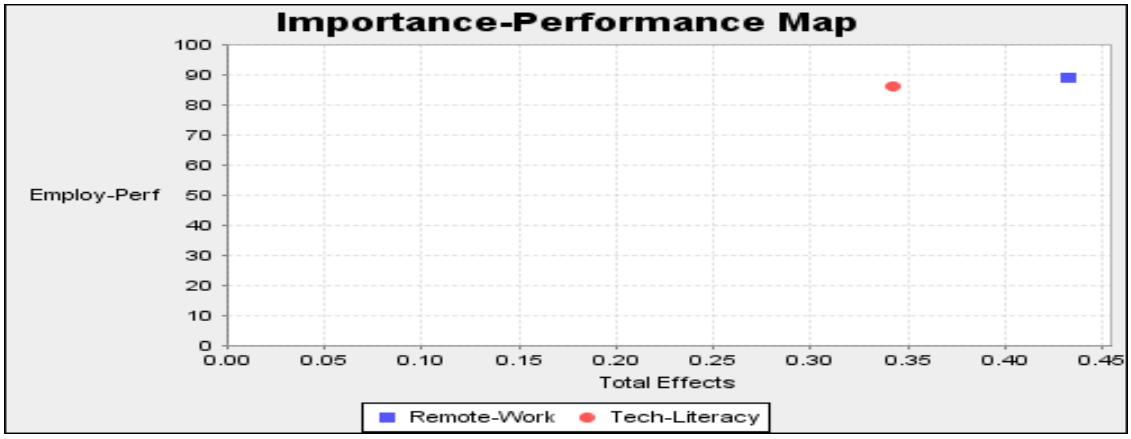

Figure 5

The findings from Figure 5 indicate that both technology literacy and remote work are perceived as highly important factors in the context of the study, with relatively high performance levels as well. Technology literacy is rated at 0.344 in terms of importance, indicating that employees recognize the significance of being proficient in using technology to perform their tasks effectively in a remote work environment. The high performance level of 86% suggests that employees generally perceive themselves as proficient in technology use, which aligns with the increasing reliance on digital tools and platforms in distance learning settings. Similarly, remote work is rated even higher in terms of importance, at 0.438, indicating that employees value the flexibility and autonomy provided by remote work arrangements. The high performance level of 89% suggests that employees perceive remote work as contributing positively to their performance in distance learning.

These findings have several practical implications for the context of the study. Firstly, they highlight the importance of investing in technology literacy training and development programs for employees in distance learning institutions. By enhancing employees' skills and competencies in using technology, institutions can ensure that their workforce is equipped to leverage digital tools effectively to deliver high-quality educational experiences to students. Again, the findings show the value of implementing remote work policies and practices that support employee flexibility and autonomy. This may include providing employees with the necessary resources and support to work remotely, establishing clear communication channels, and fostering a culture of trust and accountability. Thus, prioritizing technology literacy and remote work in the organizational context can lead to improved employee performance and productivity in distance learning environments.

4.5 Theoretical and Practical Contributions

The study makes a significant theoretical contribution by exploring the moderating role of technological literacy in the relationship between remote work and employee performance within the context of distance learning. The study's theoretical contribution aligns with the Technology Acceptance Model (TAM) and the Job Demands-Resources (JD-R) Model by incorporating elements from both theories to examine the moderating role of technological literacy. TAM posits that individuals' acceptance and usage of technology are influenced by

perceived usefulness and ease of use. In this study, technological literacy serves as a personal resource that influences employees' perceptions of the usefulness and ease of use of digital tools in remote work settings, thereby shaping their performance outcomes. This aligns with the JD-R Model, which emphasizes the role of job resources in buffering the negative effects of job demands and enhancing performance. In the context of remote work and distance learning, technological literacy acts as a resource that enables employees to effectively manage the demands of remote work and optimize their performance, thereby supporting the tenets of both TAM and the JD-R Model. The study's theoretical contribution lies in its ability to integrate multiple theoretical perspectives and provide a comprehensive framework for understanding the dynamics of remote work and employee performance in the digital age.

The practical contributions of the study lie in its implications for organizations, particularly those operating in the education sector or implementing remote work arrangements. Highlighting the importance of technological literacy in enhancing employee performance in distance learning settings, the study underscores the need for organizations to invest in training and development programs aimed at improving employees' digital skills. Furthermore, the findings emphasize the importance of providing adequate technological support and resources to remote workers to ensure they can effectively utilize digital tools and platforms in their work. This can include access to training workshops, online tutorials, and technical assistance to help employees navigate remote work challenges and maximize their productivity. Therefore, distance learning organizations may benefit from implementing strategies to promote a culture of continuous learning and adaptation to technological advancements, fostering an environment where employees feel empowered to embrace new technologies and improve their digital competencies. The study's practical contributions provide valuable insights for organizations seeking to optimize employee performance in distance learning contexts through targeted interventions and support mechanisms focused on enhancing technological literacy.

5.0 Conclusion and Recommendations

This study has shed light on the moderating role of technology literacy in the relationship between remote work and employee performance in distance learning settings. The findings indicate that remote work positively influences employee performance, and this relationship is strengthened by employees' proficiency in technology. Additionally, technology literacy acts as a significant moderator, enhancing the impact of remote work on employee performance. These findings underscore the importance of equipping employees with the necessary digital skills to thrive in remote work environments, particularly in the context of distance learning where technology plays a crucial role.

Based on the study's findings, several recommendations can be made for organizations and educational institutions implementing remote work arrangements in distance learning settings. Firstly, organizations should prioritize investment in technology training and development programs to enhance employees' digital competencies. Providing access to resources such as online tutorials, workshops, and technical support can help employees build their skills and confidence in utilizing digital tools effectively. Additionally, organizations should foster a supportive work environment that encourages continuous learning and adaptation to technological advancements, ensuring employees feel empowered to embrace new technologies and innovate in their roles. Furthermore, organizations should consider the implementation of flexible work policies and practices that accommodate remote work

arrangements while also promoting work-life balance and employee well-being. This could include offering flexible scheduling options, providing ergonomic workspaces, and encouraging regular breaks to prevent burnout and fatigue. Additionally, organizations should leverage technology to facilitate seamless communication and collaboration among remote teams, fostering a sense of connection and community despite physical distance.

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