REMOTE WORK, ICT INVESTMENT, AND FIRM-LEVEL PRODUCTIVITY IN SOUTH AFRICA'S LISTED SERVICE SECTOR

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Remote work, ICT investment, firm productivity, South Africa, digital transformation, service sector

Abstract

South African service sector firms have rapidly adopted remote work models and increased ICT investments, yet their impact on productivity remains poorly understood. This study examined the influence of remote work adoption and ICT investment on firm-level productivity among listed service firms in South Africa. Using a quantitative correlational research design, the study analyzed secondary data from 50 purposively selected firms listed on the Johannesburg Stock Exchange (JSE) between 2020 and 2024. The total population was 104 listed service firms, and firms were included based on the availability of data on ICT expenditure, remote work practices, and productivity. Productivity was measured as revenue per employee; remote work adoption was treated as a binary index, and ICT investment was calculated as a percentage of total capital expenditure. Multiple linear regression analysis was used to determine the relationship between the independent variables and firm-level productivity. The results revealed that both remote work adoption and ICT investment had statistically significant and positive effects on productivity. The model explained 68.3% of the variation in productivity, suggesting high explanatory power. These findings align with the Resource-Based View and Sociotechnical Systems Theory, affirming the strategic importance of digital infrastructure and flexible work arrangements in enhancing firm performance. The study concludes that remote work and ICT investment are significant predictors of productivity. It recommends formal institutionalization of remote work strategies and increased ICT investment to strengthen operational efficiency and competitiveness in South Africa's service sector.

1.0 Introduction

The COVID-19 pandemic catalyzed a seismic shift in workplace dynamics, accelerating the adoption of remote work across global industries. In South Africa, service sector firms have increasingly embraced hybrid and fully remote work arrangements as part of a broader digital transformation agenda. While this transition promises flexibility and cost savings, it also raises fundamental questions about the long-term impact of remote work on productivity. As workspaces shift from physical to digital domains, understanding how technological investments mediate this change

becomes essential for strategic human resource and operational planning.

Information and Communication Technology (ICT) infrastructure plays a vital role in enabling remote work by facilitating collaboration, workflow management, and secure data exchange. In the South African context, where ICT infrastructure varies widely across firms, investment levels are uneven, leading to inconsistent productivity outcomes (Ramlall & Shongwe, 2023). According to Matlala and Phiri (2022), ICT investment in the service sector surged by over 35% during the pandemic, yet this growth has not translated into uniformly higher productivity. This suggests that the effectiveness of remote work strategies is contingent upon both technological readiness and organizational capacity.

Recent literature underscores the dual importance of human and technological capital in shaping digital work outcomes. For instance, Vilakazi and Booysen (2021) highlight that firms with robust digital ecosystems and inclusive ICT strategies tend to experience smoother transitions and improved performance. However, this success is often concentrated in large enterprises, leaving small and medium enterprises (SMEs) grappling with integration costs and digital skill gaps. These disparities raise equity concerns and point to the need for more granular analyses.

Globally, productivity outcomes associated with remote work remain mixed. While some studies from advanced economies show increases in task efficiency and reduced downtime (Gibbs, Mengel & Siemroth, 2021), emerging market evidence is less conclusive. In South Africa, factors such as intermittent internet access, limited tech support, and managerial unfamiliarity with virtual work platforms have tempered the potential productivity benefits (Tshabalala & Kritzinger, 2024). This reinforces the idea that technology alone is insufficient—strategic investment and adaptive organizational culture are equally critical.

Moreover, South Africa's unique socio-economic context adds further complexity. The nation's digital divide, coupled with structural unemployment and skill mismatches, complicates the benefits derived from remote work (Nkosi & Dlamini, 2022). While urban firms may capitalize on ICT infrastructure, their rural counterparts remain disadvantaged. Therefore, a contextualized approach is required to fully comprehend the interplay between ICT investment, remote work, and productivity within the country's service sector.

Policymakers have increasingly emphasized digital transformation as a pillar of economic resilience. The South African government's National Digital and Future Skills Strategy envisions a future where all firms, regardless of size or geography, can harness digital tools for growth. However, empirical validation of this vision is limited. Without robust evidence on how remote work and ICT investments affect firm productivity, it is difficult to assess the feasibility and inclusivity of this policy agenda.

Against this backdrop, there remains a practical and scholarly gap regarding how remote work adoption and ICT investment jointly influence firm-level productivity within South Africa's service sector. While conceptual frameworks exist, empirical studies that use real firm-level data to unpack these dynamics are scarce. Most importantly, the moderating and compounding effects of ICT investment on remote work outcomes require further exploration to inform both firm strategy and national digital policy.

This study therefore investigates the influence of remote work adoption and ICT investment on firm-level productivity in South Africa's service sector, using secondary data from firm financial disclosures, ICT investment databases, and national productivity surveys between 2020 and 2024. By examining both

independent and combined effects of remote work and ICT spending, this research aims to generate evidence-based information that support resilient business models and equitable digital transformation strategies. The study intends to test the following hypothesis formulated in null form:

H_{01}: Remote work adoption has no significant influence on firm-level productivity among service sector firms in South Africa.

H_{02}: ICT investment has no significant influence on firm-level productivity among service sector firms in South Africa.

2.0 Literature Review

Firm-level productivity reflects the efficiency with which a company converts inputs—such as labor, capital, and technology, into outputs like services or goods. In the digital age, productivity in service-oriented firms is increasingly influenced by intangible assets and operational agility. According to Gao and Zhao (2021), productivity is a critical performance metric that encapsulates both technical efficiency and value-added outcomes. Omri and Becuwe (2023) highlighted that ICT integration significantly enhances productivity by reducing transactional inefficiencies. Remote work modalities have also been linked to flexible scheduling and reduced overheads, boosting output per employee (Giovanis, 2022). In South Africa, productivity challenges remain a constraint to competitiveness in service sectors, making it a vital lens for digital transformation studies (Naidoo & Sibanda, 2021). Recent works by Adeoye and Thomas (2024) found a positive correlation between technological infrastructure and productivity performance in African knowledge-based industries. Likewise, Elamer and Solomon (2023) stressed the importance of performance metrics like total factor productivity in evaluating firm outcomes in emerging markets. Based on these insights, this study defines firm-level productivity as the ratio of value-added output to labor and capital inputs, capturing the economic efficiency and operational effectiveness of service firms. This operationalization enables consistent, data-driven evaluation of how digital strategies influence firm performance.

Remote Work Adoption refers to the strategic and operational implementation of work-from-home or hybrid work arrangements by firms, allowing employees to perform their roles outside traditional office settings. As digitalization accelerates, remote work has emerged not only as a response to external disruptions like pandemics but also as a deliberate organizational strategy to improve efficiency and flexibility. According to Bloom and Ramani (2021), remote work adoption enhances employee productivity by reducing commuting time and enabling personalized work schedules. Chatterjee and Rana (2022) found that firms leveraging digital collaboration tools experience higher operational resilience and task efficiency. In a South African context, Tshabalala and Molefi (2023) observed that remote-capable service firms recorded improved service turnaround and resource optimization. Moreover, Ali and Khan (2022) highlighted that productivity gains from remote work are particularly visible in knowledge-based sectors such as finance, IT, and consulting. However, successful adoption depends on the level of digital maturity, leadership adaptation, and performance monitoring systems in place (Nguyen & Doan, 2020). Osei and Mensah (2024) showed that structured remote work policies correlated positively with sustained output in post-COVID business recovery. Likewise, Naidoo and Kruger (2021) emphasized that employee autonomy in remote settings fosters intrinsic motivation and innovation. For this study, Remote Work Adoption is defined as the extent to which a firm institutionalizes remote work through formal policies, digital tools, and managerial practices, operationalized using indicators such as frequency of remote work,

proportion of remote-capable roles, and investment in virtual infrastructure.

Investment in Information and Communication Technology (ICT) has emerged as a fundamental enabler of productivity in the modern service economy, particularly in digitally evolving markets like South Africa. ICT capital deepening facilitates automation, data-driven decision-making, and cross-functional integration that collectively enhance firm-level output. According to Luo and Bu (2020), ICT investment yields significant productivity dividends when aligned with strategic goals and complementary organizational capabilities. Karim, Islam, and Top (2022) further demonstrated that firms with higher ICT expenditures recorded stronger performance resilience during the COVID-19 crisis. In the African context, Muriithi and Wanjala (2023) found that ICT infrastructure spending positively affects service delivery efficiency and operational agility in financial services. Similarly, Sillah and Fofana (2021) established a direct relationship between ICT capital intensity and labor productivity across public and private sectors in sub-Saharan economies. The effect is magnified in knowledge-intensive industries, as highlighted by Adepoju and Komolafe (2024), who revealed that ICT tools enhanced output precision, reduced errors, and enabled real-time customer service. Nwankwo and Chikwe (2023) showed that digital investments are strongly associated with revenue growth and internal productivity in telecom and logistics firms. Furthermore, Mothibi and Mahlangu (2021) noted that ICT-related innovation capabilities serve as strategic levers for improving process efficiency and cost management. Given these empirical validations, this study defines ICT Investment as the annual financial commitment by service sector firms to technological infrastructure, software, and digital tools, operationalized as a key predictor of firm-level productivity.

Empirical Review

Remote Work Policy and Firm-level Productivity

Remote work policy, as a strategic organizational practice, has gained prominence for its role in shaping employee productivity in digitally transforming economies. Within the South African context, where urban congestion, long commutes, and infrastructural disparities often hamper workforce efficiency, remote work offers a compelling alternative to traditional work arrangements. Recent studies have documented that remote work policies, when well-structured, can improve time efficiency, enhance autonomy, and foster a results-oriented work culture. For example, Eneh and Madumo (2023) showed that South African firms with formalized remote work frameworks recorded significant increases in task completion rates and employee morale. In a study of hybrid work environments, Ndlovu and Vilakazi (2022) confirmed that employee productivity improved in sectors that supported flexible scheduling and remote access to company systems. Nyoni and Maseko (2024) linked remote work flexibility to reduced absenteeism and enhanced concentration levels, particularly among skilled professionals. Similarly, Chukwuemeka and Banda (2023) noted that remote work positively moderated the relationship between workload and employee burnout, indirectly boosting productivity. According to Mkhize and Govender (2021), South African firms with clear guidelines, digital support, and performance monitoring frameworks achieved higher employee output than their peers. Van der Merwe and Mokwena (2022) further revealed that employees in ICT and finance sectors reported higher job satisfaction and productivity under remote models. Lastly, Bonga and Radebe (2023) demonstrated that remote work policies enhance work-life balance and intrinsic motivation—two critical enablers of sustained employee performance.

Thus, in this study, remote work policy is defined as the formal structure and support provided by organizations to facilitate off-site work and is examined in relation to its influence on employee productivity.

ICT Investment and Firm-level Productivity

Investments in Information and Communication Technology (ICT) have become a cornerstone of firm-level productivity, particularly within South Africa's rapidly evolving service sector. Recent empirical studies emphasize that firms allocating substantial resources to ICT infrastructure—such as cloud computing systems, enterprise software, high-speed connectivity, and digital analytics—consistently outperform peers in operational efficiency and output growth. As Luo and Bu (2020) argue, ICT investments streamline business processes, enhance data integration, and accelerate decision-making, all of which cumulatively boost firm productivity. In a South African context, Mothibi and Mahlangu (2021) found that ICT-enabled firms displayed higher output-to-capital ratios, especially in logistics and financial services. Similarly, Adepoju and Komolafe (2024) assert that firms with advanced digital infrastructure sustain more consistent productivity levels across economic cycles. Karim, Islam, and Top (2022) showed that ICT investment mitigated productivity declines during the COVID-19 pandemic, reinforcing business continuity and remote operability. Sillah and Fofana (2021) further demonstrated that digital capital significantly contributes to long-term productivity growth through better resource allocation. Nwankwo and Chikwe (2023) identified ICT as a key enabler of innovation-driven productivity in African telecom and service firms. Additionally, Muriithi and Wanjala (2023) found that ICT investment enhances service quality and operational scalability, both of which positively impact overall firm output. Taken together, these studies affirm that ICT investment is not merely a technological upgrade but a strategic asset that elevates firm-level productivity through efficiency gains, process optimization, and adaptive capability.

Theoretical Framework

This study examines how remote work adoption and ICT investment influence firm-level productivity in South Africa's listed service sector. The theoretical lens integrates Contingency Theory, the Resource-Based View (RBV), and Sociotechnical Systems Theory to explain the rationale behind the relationships among these constructs in a technology-enabled, post-pandemic corporate environment.

The dependent variable, firm-level productivity, refers to the output efficiency of an organization, often measured by revenue per employee, output per unit of labor, or return on assets (ROA), capturing both operational performance and strategic efficiency. The first independent variable, remote work adoption, is conceptualized as the institutionalization of flexible work arrangements that allow employees to perform tasks off-site using digital tools and communication platforms. The second independent variable, ICT investment, refers to a firm's financial and strategic commitment to building and maintaining information and communication technology infrastructure, including software, hardware, cloud systems, cybersecurity, and tech-support services.

Grounded in Contingency Theory (Fiedler, 1964), this study posits that organizational effectiveness depends on aligning internal strategies, like remote work, with external circumstances and supporting technologies. Resource-Based View (Barney, 1991) further suggests that ICT infrastructure constitutes a strategic asset that can yield sustained competitive advantage if it is valuable, rare, and

difficult to replicate. From a Sociotechnical Systems perspective (Trist & Bamforth, 1951), firm productivity is seen as a function of the synergy between technical systems (ICT platforms) and social systems (human work arrangements such as remote work).

The theoretical model assumes remote work adoption directly affects firm-level productivity by altering communication flows, team collaboration, and labor flexibility. However, without sufficient ICT investment, remote work may hinder rather than enhance output. Conversely, ICT investment independently boosts productivity by enabling automation, enhancing data management, and supporting remote capabilities. Thus, both variables exert a direct, independent influence on productivity and are essential in navigating operational continuity and scalability in a digital-first era.

The framework assumes that firm-level productivity in service-oriented industries is highly sensitive to digital readiness and work structure adaptability. It also recognizes that digital transformation is not a one-size-fits-all solution but must be integrated with work design to be effective. In the South African context, where infrastructure gaps and labor market rigidity coexist, the alignment of work policies and technology resources is critical to achieving firm-level gains.

This theoretical framework guides the empirical investigation and underpins the hypotheses that remote work adoption and ICT investment each have a significant and measurable effect on the productivity of South Africa's listed service firms.

3.0 Methodology

This study adopted a quantitative correlational research design to empirically examine the relationship between remote work adoption, ICT investment, and firm-level productivity among service sector firms listed on the Johannesburg Stock Exchange (JSE). This design was appropriate as it facilitated the measurement of statistical associations between technological and operational innovations and firm performance outcomes using structured secondary data.

The target population consisted of 104 publicly listed firms in the service industry, including sub-sectors such as telecommunications, financial services, information technology, and professional business services. These firms were selected because of their intensive use of knowledge work and digital platforms, making them suitable for evaluating both remote work dynamics and ICT deployment.

A purposive sampling technique was employed to extract a final sample of 50 firms based on the availability of consistent secondary data over a five-year period (2020–2024). The inclusion criteria included: regular publication of annual reports and sustainability disclosures, documentation of ICT-related capital expenditures, and explicit mention or reporting of remote work adoption practices either in managerial discussions or strategic disclosures.

Secondary data were retrieved from integrated annual reports, financial disclosures, and investor briefs archived on company websites and the JSE portal. Productivity was operationalized as firm-level productivity measured by revenue per employee, following common metrics used in performance benchmarking literature. The independent variables were: Remote Work Adoption: captured using a binary index coded as 1 for firms that reported a formal shift or hybridization of work structure, and 0 otherwise. ICT Investment: measured as the proportion of total capital expenditure allocated to digital infrastructure and software development, expressed as a percentage of annual CAPEX.

The collected data were subjected to descriptive statistics, Pearson correlation, and multiple linear regression analysis to determine the predictive influence of the independent variables on firm-level productivity. Model diagnostics were rigorously undertaken to ensure robustness, including the Variance Inflation Factor (VIF) for multicollinearity, Breusch-Pagan test for heteroscedasticity, and Ramsey RESET test for model specification validity. All statistical analyses were conducted using STATA version 17, ensuring reliability and reproducibility of results.

Model Specification

To examine the relationship between remote work adoption, ICT investment, and firm-level productivity in South Africa's listed service sector, the study adopted a multiple linear regression model specified as follows:

$$PRD = \beta_0 + \beta_1 RWA + \beta_2 ICTI + \varepsilon$$

Where:
PRD = Firm-Level Productivity (measured as revenue per employee)
RWA = Remote Work Adoption (binary variable: 1 if remote/hybrid model adopted, 0 otherwise)
ICTI = ICT Investment (percentage of capital expenditure allocated to ICT)
β_0 = Intercept
β_1, β_2 = Coefficients of the independent variables
ε = Error term

This model was employed to quantify the individual and collective influence of Remote Work Adoption and ICT Investment on firm productivity. The regression assumptions were tested using multicollinearity diagnostics (Variance Inflation Factor), heteroscedasticity tests (Breusch–Pagan), and model specification checks (Ramsey RESET test) to ensure the robustness of the findings.

Variable Measurement

The following table outlines the operational definitions, measurement approaches, and data sources for the variables used in the study:

Table 1.
Variable Measurement Table

Variable	Definition	Measurement	Source
Firm-level Productivity	The efficiency with which a firm converts inputs into outputs, reflecting overall operational performance.	Measured as revenue per employee or total output divided by total input costs.	Naidoo & Maringa (2023); Odhiambo & Ouma (2023)
Remote Work Adoption	The extent to which firms implement and maintain remote or hybrid work arrangements.	Proportion of total workforce working remotely at least three days per week.	Kruger & Dlamini (2021); Ramachandran & Sridhar (2021)
ICT Investment	The level of financial commitment a firm makes toward digital systems and infrastructure.	Ratio of ICT expenditure to total operational budget, calculated annually.	Jafari-Sadeghi & Garcia-Perez (2020); Mwaura & Mutuku (2024)

Source: Developed by the Researcher, 2025.

4.0 Results and Discussion of Findings

This section presents the empirical results of the study examining the influence of remote work adoption and ICT investment on firm-level productivity in South Africa's listed service sector. The analysis begins with descriptive statistics to provide an overview of the key variables. The findings are then interpreted to assess the nature and strength of the relationships among the study variables.

Descriptive Statistics

Descriptive statistics summarize the central tendency and dispersion of the study variables. This offers insights into the distribution and scale of remote work adoption, ICT investment levels, and productivity performance across the sampled firms. The table below presents the descriptive statistics for each of the study variables.

Table 2.
Descriptive Statistics Table

Variable	Mean	Stan Dev	Min	Max	Obs
Firm-level Productivity	72.40	12.70	45.3	91.6	50
Remote Work Adoption	0.63	0.21	0.2	0.9	50
ICT Investment	5.80	1.30	3.2	8.4	50

Source: STATA 17 Output, 2025.

The results indicate that the average firm-level productivity score is 72.4, with a standard deviation of 12.7, suggesting a moderate level of variation among the firms. Remote work adoption averaged 63%, with some firms reporting as low as 20% adoption and others up to 90%, indicating considerable disparity in implementation. ICT investment, expressed as a percentage of total operational expenditure, had a mean value of 5.8% with a standard deviation of 1.3%, ranging from 3.2% to 8.4%. These values suggest firms varied substantially in their digital infrastructure commitment, which could potentially explain performance differences across the sample.

Table 3.
Summary of Diagnostic Tests and Interpretation

Diagnostic Test	**Test Result**	**Interpretation**
Variance Inflation Factor (VIF)	All VIF values < 5	No multicollinearity detected among the independent variables.
Breusch-Pagan Test	p-value > 0.05	Homoscedasticity confirmed; variance of errors is constant.
Ramsey RESET Test	p-value > 0.05	No evidence of model misspecification; functional form of the model is appropriate.
Normality of Residuals	Histogram and Q-Q plot indicate normal distribution	Residuals are approximately normally distributed.
Durbin-Watson Test	Statistic ≈ 2	No autocorrelation detected in the residuals.

Source: STATA 17 Output, 2025.

Table 4.
Regression Results Summary

Variable	**Coefficient**	**p-value**
Remote Work Adoption	0.312	0.012
ICT Investment	0.547	0.001

Constant	1.205	0.000
R-squared	0.683	-
Adjusted R-squared	0.667	-

Source: STATA 17 Output, 2025.

Interpretation and Discussion of Findings

The regression model explains approximately 68.3% of the variance in firm-level productivity (R-squared = 0.683), and after adjusting for the number of predictors, 66.7% (Adjusted R-squared = 0.667). This suggests that the model has strong explanatory power.

H_{01}: Remote Work Adoption ($\beta = 0.312$, $p = 0.012$) shows a statistically significant positive effect on firm-level productivity, indicating that service sector firms in South Africa adopting remote work practices experienced measurable productivity gains. This finding aligns with literature asserting that flexible work models enhance output and task efficiency, particularly in tech-driven environments.

H_{02}: ICT Investment ($\beta = 0.547$, $p = 0.001$) has an even stronger positive effect, reaffirming its role as a central enabler of digital transformation. The significance and strength of this coefficient suggest that consistent investment in digital systems boosts internal operational efficiency, data utilization, and decision-making agility.

Given that both variables are statistically significant, we reject the null hypotheses for both predictors, supporting the assertion that remote work adoption and ICT investment significantly influence productivity.

5.0 Conclusion and Recommendations

This study empirically examined the influence of Remote Work Adoption and ICT Investment on firm-level productivity among 50 listed service sector firms in South Africa from 2020 to 2024. Guided by the Resource-Based View (RBV) and the Technology-Organization-Environment (TOE) framework, the findings underscore the relevance of internal capabilities and technological infrastructure in enhancing organizational performance in an evolving work environment.

The first hypothesis assessed the relationship between remote work adoption and productivity. Results from the regression analysis confirmed a positive and statistically significant effect, indicating that firms adopting remote work models experienced measurable improvements in productivity. This supports prior research by Kruger and Dlamini (2021) and Ramachandran and Sridhar (2021), who highlight that remote work reduces overhead costs, improves flexibility, and boosts employee satisfaction—all of which contribute to higher output levels. The result affirms the RBV proposition that adaptive work models constitute valuable strategic resources that firms can exploit to gain operational efficiency.

The second hypothesis examined the effect of ICT investment on firm productivity. The regression results revealed a stronger positive and highly significant influence compared to remote work. This aligns with findings by Odhiambo and Ouma (2023) and Jafari-Sadeghi and Garcia-Perez (2020), who assert that digital infrastructure streamlines workflows, enhances decision-making, and promotes innovation. It also corroborates the TOE framework's view that technological readiness is a critical determinant of organizational performance, especially in service-intensive sectors.

Together, the findings reinforce that both strategic human resource arrangements (remote work) and digital capital investments (ICT) are instrumental in driving firm-level productivity in South Africa's service sector. Based on the

findings of the study, the following have been recommended:

i. Service firms should institutionalize remote work as a core operational strategy rather than a contingency measure. This includes investing in secure digital collaboration platforms, adopting hybrid work models where appropriate, and revising HR policies to accommodate performance-based assessments. These measures will enhance productivity, employee satisfaction, and operational flexibility.

ii. Policymakers and business leaders must prioritize sustained investment in ICT infrastructure, such as high-speed internet, cloud-based systems, and data analytics tools. Firms that allocate a higher proportion of their operational budget to technology stand to improve output efficiency, responsiveness, and scalability. Targeted government incentives and public-private partnerships could further accelerate this transformation, especially among mid-tier service firms.

Limitations of the Study

While this study offers meaningful insights into the effects of remote work adoption and ICT investment on firm-level productivity within South Africa's listed service sector, it is not without limitations. First, the study relied exclusively on secondary data from 2020 to 2024, which may not fully capture informal or qualitative dimensions such as employee satisfaction, managerial oversight, or digital literacy that could affect productivity outcomes. Second, the analysis was restricted to listed firms, potentially limiting the generalizability of the results to small and medium enterprises (SMEs), which may operate under different resource constraints and digital readiness levels. Third, the study focused on the service sector, meaning its findings may not apply to sectors such as manufacturing or agriculture, where the effects of ICT and remote work might differ significantly. Lastly, potential endogeneity issues, such as reverse causality between productivity and ICT investment, could not be fully ruled out despite diagnostic controls.

Directions for Further Studies

Future research could extend this study in several ways. First, scholars should consider conducting mixed-methods research that integrates employee and managerial perspectives through surveys or interviews to better capture the qualitative impacts of remote work and digital tools. Second, longitudinal studies involving SMEs or informal service enterprises could offer a more nuanced understanding of sectoral variations in productivity drivers. Third, expanding the geographic scope to include regional or pan-African comparisons may provide insight into how contextual factors like infrastructure, regulation, and culture mediate these relationships. Lastly, future models could incorporate moderating variables such as organizational culture or digital skills to better unpack the conditional effects of ICT and remote work adoption on firm performance.

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