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REMOTE WORKING AND COVID-19: DETERMINANTS OF PRODUCTIVITY OUTPUT IN SERVICE FIRMS

Oluyemi Theophilus Adeosun; Department of Economics, University of Lagos, Nigeria

Waliu Mulero Adegbite ✉; Department of Industrial Psychology & People Management, University of Johannesburg, South Africa

Temitope J. Owolabi; Department of Sociology, University of Lagos, Nigeria

Abstract: The covid-19 pandemic has greatly impacted business operations, economic activities, working structures, and employee productivity globally. This has led to carefully thought out measures and panic-triggered guidelines to limit the virus's spread. This paper aims to examine key determinants of productivity in the service firms during the pandemic and how these factors could be sustained after the lockdown for optimal productivity. Using primary data collected from a questionnaire administered to 411 workers, a binary logistic regression was conducted to ascertain whether these determinants are of significance or not. The empirical results revealed that remote working would only be productive in service firms if working tools are available to workers; thus, productivity can be measured regularly irrespective of the worker's location. This paper responds to the need to evaluate the drivers of employee productivity during remote working, especially during the lockdown, and to understand better these drivers for organizations planning after the pandemic.

Keywords- COVID-19, Firms, Productivity, Remote working, Tools availability

✉ adegbitewaliu@gmail.com

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INTRODUCTION

The spread of Covid-19 has led to an unprecedented impact on business operations, economic activities, working structures, and employee productivity worldwide. This has led to carefully thought out measures and panic-triggered guidelines by governments and businesses trying to limit the virus's spread. Businesses' operations have been massively disrupted, with movement restrictions affecting logistics and human resources. Even organizations rendering essential services have not been spared and have had to adjust their working structure and methods to render services to clients and customers. While some organizations have shut down completely, others have made provisions for employees to stay on the company site or accommodations close by, and others have asked their employees to work from home. The literature has been inundated with findings on the effects of the office environment on workers' performances and productivity (Li, Ghash & Nachmias, 2020; Meenakshi & Neha, 2020; Williams et al., 2020). The office environment in physical terms is an office's layout and its occupants' comfort.

There appears to be a consensus or agreement that office environments impact workers' productivity (Clements-Croome, 2000; Leaman & Bordass, 2000; Oseland, 1999). There is no universally accepted theoretical framework that represents office productivity. Hence, it becomes imperative to measure productivity and determine the effects of these office environments on workers' productivity. Many robust organizational studies have been conducted; for example, Bloom et al. (2015) performed an analysis to compare the productivity and satisfactory outcomes of employees who had volunteered to participate in a randomized control trial of 994 call center operators. The remote working group significantly performed better than their office-bound colleagues since

they spent longer logged onto the system (working extensively) and answered more calls per minute (intensive work effort).

The outbreak of the novel coronavirus in the entire world brought unprecedented changes to the global economy and the world of work. On the 11th of March, 2020, the World Health Organization (WHO) called the novel coronavirus outbreak a pandemic and urged governments around the world to take it seriously and prepare for the first wave of the public health emergency with several drastic measures, one of which was the nationwide lockdowns in many countries (WHO, 2020). The practice of social distancing to lessen the impact of the virus was adopted; thus, remote working became a new reality. Working remotely has taken center stage during this period, ensuring that employees are safe and productive while transforming businesses by equipping them with resilient and adaptive ways to engage with their stakeholders and deliver economic value. However, remote working under these circumstances means adapting to a new environment, battling a new set of distractions, and experiencing an unprecedented fusion of work and private life. Also, team members cannot engage directly or physically with their colleagues and leaders and may feel disconnected, less creative, or productive. This is incredibly challenging as many organizations in this clime had not practiced remote working during normal conditions.

Therefore, this study examines firms' productivity output determinants during the COVID-19 pandemic. Employees' perception and reception to this work pattern and how organizations can digitalize their work within a short time frame were also examined. During the lockdowns, compulsory stay-at-home measures were enforced, and many workforces worked remotely from home. Though, before the pandemic, the

number of employees working remotely has been gradually increasing over the years (Eurostat, 2018), the pandemic has certainly fast-tracked employers' adoption of remote working modalities. As employers embraced working remotely, determining workers' productivity was also a major concern of economists and policymakers. Employers must consider what changes they need to effect to enhance workers' productivity and motivation. According to Sander (2020), Organizations can increase or improve remote working by adhering to the following: Regular or prompt communication (mainly using video

conferencing can help ensure assigned tasks are well-coordinated, transfer of knowledge, and reduced professional isolation. Also, there is a need to establish a boundary between remote working as the ability to switch off after work is necessary for both mental health and physical health. However, this paper seeks to examine key determinants of productivity factors during the Covid-19 period and to see if these factors could be sustained even after the lockdown. The rest of the paper continues with the literature review, methodology, presentation and discussion of results, conclusion, and recommendation.

LITERATURE REVIEW

Extant and previous studies have documented and shown the implications of remote working on firms' productivity outputs, especially during pandemic situations like COVID-19. Remote working is carrying out core activities that are work-related away from the office premises or location. Across the literature, remote working has been used interchangeably with home office (Allen et al., 2015; Imperatori, 2017) or teleworking (Laba & Geldenhuys, 2016; Ramstad, 2014). Also, the United States Office of Personnel Management (2013) classified remote work as an arrangement where workers work from a location beyond the local commuting area. These and more have shown a wide range of understanding of remote working. The point of convergence across the literature is that it is done away from the workplace through technology. This shows that remote working is not a new phenomenon; organizations have engaged in it long before COVID-19. Its presence has grown with the greater strength and availability of information and communication technology. The reality is that even with social distancing and other restrictions, several tools and techniques are available to drive remote working.

Findings from (Wooldridge, 2019) identified work satisfaction as a determinant of productivity in a setting that promotes remote working. Remote working improves workers' performance, which is actualized by raising workers' satisfaction and, ultimately, their efficiency. This is consistent with (Schivardi & Romano, 2020), who identified that remote working promotes work-life balance and enhances employee performance. Gopinath, et al. (2017) also identified how job satisfaction would be engendered through fewer distractions on the job, less commuting, and less absenteeism. There are other contrasting views of the possibilities of remote working negatively affecting productivity. (Levinsohn & Amil, 2013) found that it leads to solitude and loneliness, as the workspace is a location that breeds social and communal ties among employees.

The study (Bresnahan & Daniel, 2017) revealed that remote working reduces overhead costs by reducing the office space and equipment required by the organization. Similarly, the labour cost is also reduced, giving such organizations the needed funds to expand and drive their business goals. As found in (Ye et al., 2020), remote working increases

workers' income because the cost of transportation and logistics is removed from the periodic budget of employees. (Shankar, 2020) also documented the impact of the general reduction of people interaction and communication. A clearing outcome from all studies shows that remote working results in a loss of physical contact, which reduces trust and can be more convincing during conversations, especially when deploying emails, phone calls, or virtual meetings. (Salmi et al., 2020), also discovered how knowledge flow is distorted because the inability to interact personally would decrease knowledge flow among workers.

Related studies discovered that organizational dynamics are also instrumental in determining firms' productivity output when remote working is applied. (Falola, 2020), identified a change or modification in pay structure, the turnover rate, or the number of task assignments as determinants of productive performance during virtual working. By implication, a modification in salary drives productivity. In a study conducted by (Bocher et al., 2017), which was further corroborated by (Carolan et al., 2020), it was discovered that assigning employees with more tasks increases productivity. (Aker & Basher (2014) revealed that an increase in turnover rate decreases firms' productivity outputs. Remote working goes with technological apparatus (Kadyrova et al. 2016), and access to these resources drives productivity. Software accessibility was identified by (Aditya & Elliot, 2020), and their findings show that access to some tools, majorly software, positively impacts firms' productivity. (Chan et al., 2018) identified the quality of internet connection; that is, a strong internet connection will improve job performance and, ultimately, the firm's product. On the flip side, (Dutta et al., 2020) argued that the strength of internet connectivity at home, compared to what is in the

office, determines how productive workers will be while working remotely.

According to (Gossling et al., 2020), the work environment has been identified as a determinant of productivity in remote working. This implies that the work environment is significant for workers to work productively. Studies have shown that the workplace is needed to be tranquil and free from every form of distraction (Laurell & Sanstrom, 2016; Leidner, 2020; Savary et al., 2020). Lack of quiet or proper work environment distorts productivity because the home environment's nature and character are quite different from what obtains in the office. Several factors, like children, neighbors, and power supply, contend with the job holder working remotely. (Bartik et al., 2020), further identified that these factors are controlled within the office location because every member is working towards actualizing a common goal. Although organizations might provide adequate tools and resources to make remote working seamless, employees' emotional well-being is also significant in determining productivity.

Studies by (Carolan et al., 2020; Schivardi & Romano, 2020; Ye et al., 2020) have shown that an employee's emotional well-being is associated with productivity. By implication, an emotionally stable worker will perform tasks and duties more effectively than an employee who is not. Findings across literature have identified key variables to determine an emotionally stable employee. For instance, cheerfulness (Falola, 2020), waking up rested (Chan et al., 2018), pursuance of interest (Dutta et al., 2020), and activity level that shows being active and vigorous as well as calmness (Karia & Assri, 2016). Exposure and proximity to the COVID-19 virus can also affect productivity, as workers exposed to COVID-19 will find their productivity hampered. Findings from

(Laurell & Sandstrom, 2016) showed that employees or their family members who have contracted COVID-19 would be emotionally unstable, distorting their mental capability and well-being, consequently affecting their productivity. As discovered from literature, other determinants show that some habits like listening to music (Salmi et al., 2020) and oversleeping (Savary et al., 2020) affect productivity. (Almeida et al., 2014) also discovered that the frequency of short breaks, freedom of time management decisions, and the frequency of carrying out household chores impact positively or otherwise on productivity.

(Bartsch et al., 2020) studied leadership matters during the Covid-19 pandemic in service firms and concluded that a well-built relation-oriented leadership

During COVID-19, many organizations had to restructure and redesign the work process, leading to downsizing and trimming the workforce. This took a toll on the workers because those affected were thrown into the unemployed population. (Schivardi & Romano, 2020) discovered further that the fear of job loss could affect productivity. An organization that is stable and bent on sustaining its workforce despite the impact of COVID-19 would experience a high level of productivity because employees will be emotionally stable to carry out their tasks. Given the review above, the diagram in figure 1 represents the conceptual framework that shows the relationship between remote working during COVID-19 and the firm's productivity output.

character is needed to maintain or improve service employees' work performance during crises. Accordingly, a digitally savvy and mature organization always maintains high-performance levels among its employees during crises and emergencies. Another strategic work by (Bhattacharyya & Thakre, 2020) found that firms adopted a dual approach in responding to the issue of performance and productivity during the Covid-19 pandemic. They are focused on surviving the crisis while it lasts or remains by carefully considering existing resources and initiating long-term recovery through a change of business model. The work also considered remote working as an adjustment strategy to managing operations with minimal resources to optimize working capital and reap other benefits.

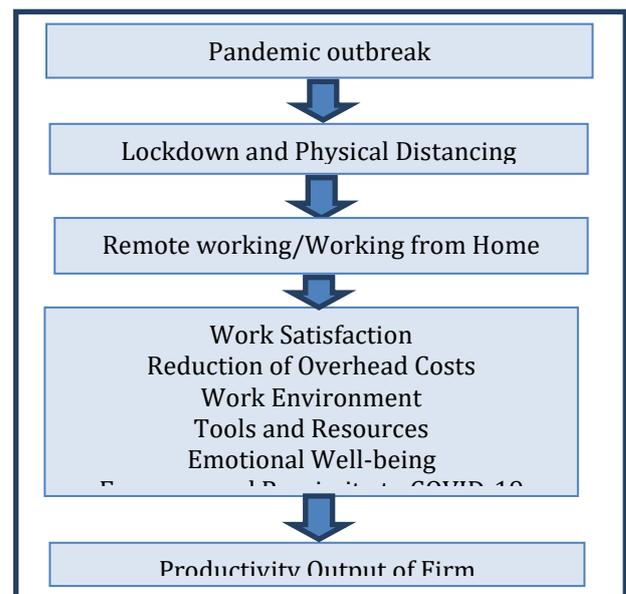


Figure 1. Conceptual Framework on the Relationship between Remote Working and Productivity

It has been suggested that paid employment is no longer confined to designated hours in a specified place, especially for professionals, managers, and other white-collar workers. Improved technological connectivity helps this process by assigning tasks to be done wherever workers happen to be and whatever the time (Messenger &

Gschwind, 2016). Considering the costs related to building, purchasing, and maintaining sites as workplaces could be expensive and are difficult to account for when usage levels are low to working remotely. This is so for official work, which can be carried out using electronic technologies that make it possible to communicate in words, and images and speak with those who are geographically remote (Bain & Taylor, 2000; Felstead et

This study is based on two economic theories. Firstly, in the 'knowledge economy, where more emphasis is placed on educated professionals who access bodies of theoretical, specialized, and abstract knowledge, adding value with their heads but with their hands (Drucker, 1998; Thompson et al., 1995). Altering the balance between the metaphysical and the physical nature of work weakens work's fixity since knowledge creation is less spatially bounded. Then, the knowledge economy theory would suggest that this economic shift can partly explain the growth in remote work. The second theoretical theory is that employers engage labor more responsive to when and where work is needed. This uses the 'flexible firm' model in which employers treat parts of the workforce differently to increase numerical and functional flexibility (Atkinson & Meager, 1986). The former is secured through 'flexibility working arrangement,' a type of working arrangement that gives a degree of flexibility on how long, where, when, and at what times employees work (CIPD, 2016). The widespread Covid-19 pandemic is a global shock that led to supply and demand disruptions in an interconnected global economy. On the supply side, it has reduced labor supply and productivity. While compulsory lockdown is introduced, business closures and social distancing cause supply disruptions. On the demand side, the loss of income and layoffs (from morbidity, quarantines, and unemployment) and worsened economic

al., 2005). Remote working is a form of work in which assigned work or responsibilities are completely or partially carried out outside the conventional workplace with the aid of ICT devices. Remote working was defined by (Mokhtarian, 1991a) as the use of telecommunications or digital devices to completely or partially substitute the normal conventional mode of working.

prospects reduce household consumption and firms' investment. (Alexander et al., 2020). (Robert et al., n.d.) used some key scenarios to explain how a flexible strategic framework could guide us in thinking through or operating as we plan our post-COVID-19 strategic actions, which are changes in work definition.

Teleworking has been a necessary practice for many firms and workers before and during the lockdown period of the COVID-19 crisis. During this period, everyone had undergone a large-scale forced experiment where sectors, firms, and workers continued to operate while physically separated, provided they had the necessary technological, legal, and digital security conditions. This has largely impacted businesses of all kinds, whether they had embraced remote working in the past or not (OECD, 2020). Remote working has been important to maintain work continuity during this crisis, but its impacts on productivity are unclear. In the short term, compared to the pre-crisis period, the exceptional conditions in which remote working was structured may well have managed productivity for those who could work from home. A study conducted by (Aislinn & Vladimir, 2020) revealed that employees' engagement in working remotely during this period of pandemic and team interactions was positively and significantly linked to overall productivity, and isolation had a negative impact on productivity. Studies by (Bloom et al., 2015; Gorlick, 2020)

stressed that working remotely in an unfavorable or unsuitable environment where necessary tools are not provided will create a productivity disaster for firms. Public health surveillance and field investigations also revealed that certain

workers might be at increased risk of coronavirus infection due to their work. Social workers, food production workers, health care practitioners, and broadcasters fall into this category.

METHODOLOGY

Design and study setting

The study employed a cross-sectional research design as the survey method; a quantitative technique was used to analyze the data collected. The survey attempted to raise concerns about remote working during COVID -19 and how productivity is determined. The population of the study comprised employees across different sectors in Nigeria.

Sampling

The non-probability sampling method was used for the study because there was no sampling frame to capture the country's entire employee base. As a result of the restrictions and lockdown due to COVID-19, the questionnaire was administered online through a link shared through different social media platforms; 410 respondents were captured from the fieldwork. Apart from the fact that online was used due to the lockdown, administering questionnaires with the platforms is less costly than the face-to-face method. It also enables quickly covering a wider number of respondents, which can be easily quantified using software packages. According to (Pealerand (2004; Wright, 2006), an online survey provides easy access to samples that are difficult to reach and also creates an avenue for respondents to be anonymous in answering questions.

Research Instrument and data collection

A structured and closed-ended questionnaire was used for the study. It was divided into two sections, the first

being the socio-demographic characteristics of respondents, while the other section captured remote working and COVID-19, its determinants for productivity.

Ethical issues

The study complied with ethical issues relating to the research. The questionnaire was designed to seek respondents' consent before having access to the main items. Respondents who declined consent were denied access to the main instrument of the research. They were not forced to participate in the study, and the principle of non-disclosure of identities was upheld.

Data analysis and model specification

Inferential statistics were employed for the study; the study used logistics regression to analyze the data collected. Based on the theoretical framework of the knowledge economy stated above, this paper seeks to evaluate the determinants of productivity output in firms of remote working during covid-19. In this study, convenience, tools availability, and performance measurement are binary independent variables, while remote working, a binary response variable, is the dependent variable. This study's data were obtained through a questionnaire survey administered to respondents online, and responses were strictly monitored and collated. Logistic regression is a statistical technique used in research designs that analyzes an outcome or dependent variable's relationship to one or more predictors or independent variables when the dependent variable is either (a)

dichotomous, having only two categories. It is a special case of the generalized linear model (GLM), similar to linear regression.

Fitting a binary Logit model

The binary logistic regression extends the general linear model to binary categorical data. The logistics regression model that is commonly used is written as:

$$Y_i = X_i\beta + e_i \tag{1}$$

Equation 1 looks like a typical linear regression model, but because the regression is dichotomous, it is called the linear probability model (LPM). The expected response $E(Y_i/X_i)$ or $E(Y_i)$ has a special meaning in this case

$$\text{Since } E(u_i) = 0 \tag{2}$$

$$\text{we have } E(Y_i) = \beta_0 + \beta_1 X_i \tag{3}$$

However, since the dependent variable is categorized, we use

$$p_i = \ln \left[\frac{p_i(x)}{1 - p_i(x)} \right] \tag{4}$$

Where

$$\ln \left[\frac{p_i(x)}{1 - p_i(x)} \right] = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_n \tag{5}$$

Where β_0 is called the intercept, β_i is called the parameter and X_i are set of predictors.

The quantity to the left is called logit. It is the log of odds that an event occurs. The odd that an event occurs is the ratio of people who experience the event to the number of people who do not. The linear equation and the coefficients in the logistic regression model show how much the logit changes based on the values of the predictor variables.

The binary logistic regression models the relationship of y as

$$\ln \left[\frac{p_i(x)}{1 - p_i(x)} \right] = \ln \left[\frac{(p_0 + p)}{1 - (p_0 + p_i)} \right] \tag{6}$$

Logistic Regression Assumptions

- I. Logistic regression does not assume a linear relationship between the dependent and independent variables.
- II. The dependent variable must be a dichotomy (2 categories).
- III. The independent variables need not be interval, no normally distributed, no linearly related, no of equal variance within each group.
- IV. The categories (groups) must be mutually exclusive and exhaustive; a case can only be in one group, and every case must be a member of one of the groups.

Maximum Likelihood Estimation

The maximum likelihood estimation is used to estimate the model parameter.

The maximum likelihood estimator is easily found by working with the equation's logarithm of the joint probability function.

$$\begin{aligned} \log_e g(Y_0, \dots, Y_n) &= \log \left[\prod p_i^{y_i} (1 - p_i)^{(1 - y_i)} \right] \\ &= \log [p_i^{\sum y_i} (1 - p_i)^{\sum (1 - y_i)}] \\ &\quad \text{let the logarithmic function enters into the br} \\ &= \log(p_i^{\sum y_i}) + \log(1 - p_i)^{\sum (1 - y_i)} \\ &= \sum y_i \log p_i + \sum (1 - y_i) \log (1 - p_i) \\ &= \sum y_i \log p_i + \sum \log (1 - p_i) - \sum y_i \log (1 - p_i) \\ &\quad \text{which can be re arranged as} \\ &= \sum y_i \log p_i - \sum y_i \log (1 - p_i) + \sum \log (1 - p_i) \\ &= \sum y_i [\log p_i - \log (1 - p_i)] + \sum \log (1 - p_i) \end{aligned}$$

$$= \sum y_i [\log \frac{p_i}{1-p_i}] + \sum \log (1-p_i) \tag{9}$$

now since $E(Y_i) = p_i = \frac{\exp(\beta_0 + \beta_1 X_i)}{1 + \exp(\beta_0 + \beta_1 X_i)}$ for dichotomus variables

$$E(Y_i) = [1 + \exp(\beta_0 + \beta_1 X_i)]$$

$$1 - p = [1 + \exp(\beta_0 + \beta_1 X_i)]$$

(10)

Using transformation $F^{-1}(p_i)$

$$= \log \frac{p_i}{1-p_i} \text{ called the logit transformation of } p_i$$

We therefore obtain $\log \frac{p_i}{1-p_i} = \beta_0 + \beta_1 X_i$
(11)

Hence, this equation can be expressed as

$$\log L(\beta_0, \beta_1) = \sum Y_i(\beta_0 + \beta_1 X_i) - \log [1 + \dots \exp(\beta_0 + \beta_1 X_i)] \tag{12}$$

Where $\log L(\beta_0, \beta_1)$ replaces $g(Y_1, \dots, Y_n)$ which shows explicitly that this function can be viewed as the likelihood function of the parameter to be estimated, given sample observations.

DISCUSSION OF RESULTS

Table 1: Respondents' Characteristic

Demographic Factor	Count	% Contribution
Gender		
Female	191	46%
Male	220	54%
Grand Total	411	100%
Age		
20 and Below	38	32%
21-40	222	34%
41 and Above	151	34%
Grand Total	411	100%
Educational Qualification		
Lower Degree	123	30%

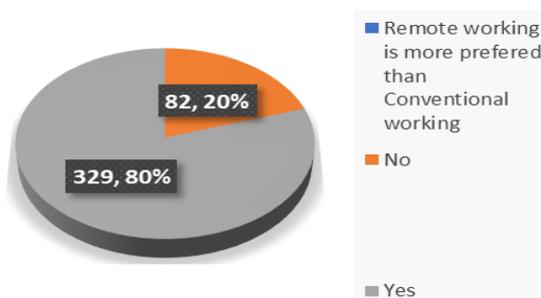
Degree	198	48%
Higher Degree	90	22%
Grand Total	411	100%

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Table1 shows the demographic attributes of respondents that filled the online survey. A higher percentage of male employees (54%) responded to the survey, while 46% of females responded. The major age groups that responded are from 21 years and above, while the educational qualification with the highest percentage of the respondents is 48%, with higher degrees being the least (22%).

Figure 2 shows that most of the respondents (80%) preferred remote working to conventional working, while Tables 2 and 3 are the result of the intercept model. That is the Maximum Likelihood model if only the intercept is included without any independent variables in the analysis. This is only to calculate the Pseudo R² that describes the goodness of fit for the logistic model.

Remote working is more preferred to Conventional working



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Table 4: Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step		36.075	3	.000
Step 1	Block Model	36.075	3	.000

Table 2: Variables in the Equation

Step		B	S.E.	Wald	df	Sig.	Exp (B)
0	Constants	1.386	.123	126.071	1	.000	4.000

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Table 3: Variables not in the Equation

Step	Variable	Score	Df	Sig.
0	continent	1.977	1	.160
0	Productivity	8.086	1	.004
0	Tools	31.061	1	.000
	Overall Statistics	36.644	3	.000

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Table 4 includes the Chi-square goodness of fit test. It has a null hypothesis that intercepts, with all coefficients being zero. This implies that the null hypothesis can be rejected.

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Table 5 includes the Pseudo R², and the 2-log likelihood is the minimization criteria. Nagelkerke's R² is 0.133, which indicates that

CONCLUSION AND RECOMMENDATION

The paper sought to explore remote

Table 6: Variables in the Equation

Step		B	S.E.	Wald	df	Sig.	Exp(B)
1 ^a	continent	16.716	8766.274	.000	1	.998	18175295.5
1 ^a	Productivity	.374	.163	5.255	1	.022	1.453
1 ^a	Tools	1.287	.263	24.045	1	.000	3.623
1 ^a	Constant	-16.561	8766.274	.000	1	.998	.000

working in the context of Covid-19, focusing on the determinants of productivity outputs in firms. It is apparent from the empirical analysis in this study that fitting a logistic regression model is appropriate in deducing productivity factors during the pandemic. From the model test table, variables, productivity measurement,

the model is weak. Cox & Snell's R² is the nth root, which is 0.084; thus, the logistic model explains this as 8.4% probability of the variables.

Table 6 shows the logistic regression function: $-16.561 + 16.716(\text{Continent}) + 0.374 (\text{Productivity Measurement}) + 1.287(\text{Tools Availability})$. The table also includes the test of significance for each of the coefficients in the logistic regression model. According to the results, both productivity measurement and tools availability are significant, which shows working remotely is effective since tools were made available; thus, there were indicators to measure people's productivity. Table 6 also contains the classification results; 80% of correct classification shows the model is not too weak. Generally, discriminant analysis is better in classifying data correctly.

Table 5: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	374.255 ^a	.084	.133

and tools availability are significant, while the location is not significant. This implies that irrespective of worker's location, provided that tools are made available to work, employees' productivity can be measured periodically, then working remotely can be productive and sustainable. This explains the theory of knowledge economy (Drucker, 1959; Thompson et al., 2001), which is always secured through flexible arrangements and agreement on how long, where, when, and at what times employees work' (CIPD, 2020). The recent pandemic and lockdown have been a major shock for companies that haven't previously implemented or invested in remote working. It is believed that in congested

cities where it takes workers hours to get to their conventional offices like Lagos, companies need to embrace remote working to further aid productivity and reduce costs in the long run. On this note, to fully make remote working sustainable even after the pandemic, companies and stakeholders must make available working tools for people to work effectively. Tasks and expectations should be communicated well from the top hierarchy to the least person in the company, and timelines for every given deliverable. Workers should equally be trained and enable supportive

LIMITATION OF THE STUDY

A major constraint of this study is the inability to determine the percentage of employees who would prefer to continue working remotely even after the pandemic or ease of lockdown or agree to do a post-lock down remote work.

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- interactions among employees using technology like Zoom, Microsoft meetings, Google meet, etc. Re-define and regularly measure everyone's performance on a daily or weekly basis to ascertain whether they are meeting their targets or not. Also, employees should escalate or communicate any obstacle that can hinder them from performing efficiently on time and not when it is time to examine their performances that they will start giving excuses.
- Future studies can test post lockdown effectiveness of remote working and see if the lockdown's necessity drove the productivity or otherwise and also measure the outcome over a dynamic time period.
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