

SUSTAINING EMPLOYEE PRODUCTIVITY DURING ECONOMIC TURBULENCE: THE EFFECT OF VIRTUAL OPERATIONS

Elikwu, Michael Ikechukwu

Centre for Foundation and Interdisciplinary Studies

Baze University, Abuja, Nigeria

elikwumichael@yahoo.com. +2347085524075

ORCID ID: <https://orcid.org/0000-0002-2393-3423>

Erimafa, Monica

Department of Organisational Psychology

Unicaf University, Zambia Campus

Johny, Friday Edet

School of Business and Economics

National University, San Diego, California

Abstract

This study investigated the moderating effect of virtual workplace operations on sustaining employee productivity during economic turbulence, with specific focus on sustainability of employee job involvement and productivity in private tertiary institutions in Abuja, FCT Nigeria. The cross-sectional survey design was adopted to support the collection of data with the aid of a structured 5-point Likert scale research instrument. The sample size of one hundred and seven (107) participants was adopted. In analysing the collated data, descriptive analytical methods, the Pearson Product Moment Correlation was employed to establish the relationship between the variables, while posited hypotheses were tested using the simple linear regression analysis. The findings revealed a positive and significant correlation between proxies of the independent variable and proxies of the dependent variable. This implies that, VOPS positively correlates to JBIN and positively correlates to PROD, both at 5% significant level respectively. This study therefore recommends that, management of these tertiary institutions should also put in place a system of periodic check on employees by heads of departments, to ensure optimal involvement of job roles within designated work periods and a review of policies supporting hours of virtual workplace operations, to help employees' focus on full participation to achieve and sustain productivity in virtual operations.

Keywords: Economic turbulence, Job Involvement, Employee Productivity, Sustainability, Virtual Operations

Introduction

The series of economic crises that has engulfed Nigeria in the last 8 years has continually resulted in the dwindling productivity of both employees and organisations alike. From the 2016 economic crises which resulted in the sharp devaluation of the naira against the dollar, to the restriction of access to the dollar, closure of the borders, advent of the global COVID-19 pandemic (Ozili, 2020) and the fuel subsidy removal (Adeniran, 2016). These stimulants of economic crises in Nigeria over the years have consistently destabilized economic activities in both the private and the public sector. Most devastating are the effects of the COVID-19, which triggered a complete shutdown of the economy and now the abrupt removal of fuel subsidy, which has almost crippled economic activities.

The ripple effect of the COVID-19 pandemic and the current fuel subsidy removal is that most highly productive economic agents (employees) were economically incapacitated and unable to optimally engage in economic activities due to fear of contracting the COVID-19 disease (Ozili, 2020); while currently the fuel subsidy removal has resulted in increased cost of transportation, which has directly and indirectly affected employees punctuality, frequency and general attendance at work, overall employee job involvement, morale, commitment and productivity (Elikwu *et al.*, 2017). This has necessitated measures by industry players in Nigeria to minimise the effect on the organisation's core functions of stabilising the economy, through the adoption of remote and virtual operations by some key employees.

This measure is to ensure among others the uninterrupted tracking of the firm's short-term pursuits towards realising its core mandate, without compromising the Covid-19 safety measures or inflicting more economic hardship on its employees. Being a situational and innovative approach during such period, operating remotely demands employees' job involvements with minimal supervision to assigned responsibilities shared organisational goals. Consequently, the sustainability of productivity realisable from employees working virtually during such economic turbulence forms the basis for this study.

A review of recent studies on remote workplace and virtual operations revealed that, studies exist on effect of remote virtual operations in sustaining employee engagement during the Covid-19 pandemic era (Kohntopp et al., 2020; Onyeukwu et al., 2021); working from home and employees' productivity (Thorstensson, 2020); efficiency and performance of virtual workplaces (Demirdjian, 2018); virtual management and employee performance in e-businesses (Okechukwu et al., 2017). However, there is dearth of empirical study on effect of virtual workplace operations on sustaining employee productivity in a period of economic turbulence, in Nigeria, which forms the gap being investigated

In order to solve the identified problems, the following research questions are raised;

- i. How did virtual workplace operations sustain employees' job involvement during the period of economic turbulence in Nigeria?
- ii. To what extent did virtual workplace operations sustain employees' job productivity during the period of economic turbulence in Nigeria?

Premised on the raised research questions, this study therefore investigated the effect of virtual workplace operations on sustained employees' productivity, with specific focus on selected private universities in Abuja, Nigeria. The specific objectives are to:

- i. examine how virtual workplace operations sustained employees' job involvement during the period of economic turbulence in Nigeria.
- ii. determine the extent virtual workplace operations sustained employees' job productivity during the period of economic turbulence in Nigeria.

Based on the empirical studies reviewed, the following hypotheses are posited:

H₀₁: Virtual workplace operations did not significantly sustain employees' job involvement during the period of economic turbulence in Nigeria

H₀₂: Virtual workplace operations did not significantly sustain employees' job productivity during the period of economic turbulence in Nigeria

Literature Review

Concept of virtual workplace operations

The virtual workplace has been variously referred to as remote work, telework/telecommuting and work-from-home (Benjamin, 2020). Also, virtual work has been variously defined as, any type of work performed digitally by employees irrespective of the location and time (Brunelle, 2013); as work performed utilising technology from diverse locations to sustain business operations (Humala, 2017), while technologically connected to several workplaces (Demirdjian, 2018), organisations and stakeholders (Wolor, et al., 2020). Also, as the utilisation of technological devices to perform job schedules from outside the organisation's premises (International Labour Organization (ILO, 2017). Some dominant attributes of virtual workplaces comprise, operating from remote environments which involves consenting employees to work from outside the office environment (Greenbaum, 2019), to reduce possible hazards, interruptions, interferences and for cost efficiency (Thorstensson, 2020). Another attribute is the information communication technology (ICT) and associated devices, which support problem solving, information sharing (Benjamin, 2020) and effective communication across severally, connected workplaces (Bordia, 2017). Also, employee experiences and knowledge of ICT devices (Kohntopp, et al., 2020) as an attribute supports individual ability to operate remotely with minimal or no supervision (Kuscu & Hasan, 2016);

while flexible work hours as an attribute entail authorising employees to work for specified number of hours (Greenbaum, 2019), based on when deemed convenient to commence and close work, provided the specified work hours are covered and backed by periodic reports (Glaudemans, 2019).

Employee job involvement

A review of contemporary literature shows the existence of diverse dimensions of employee involvement, ranging from commitment, engagement (Kohntopp, et al., 2020), enthusiasm, passion, energy and focused effort among others (Chanana & Sangeeta, 2020). This indicates that employee involvement has both behavioural and attitudinal components (Shaik & Makhecha, 2019). As a workplace attitude, employee involvement ensues that all personnel are bound by shared organisational values and goals (Vance, 2006); hence, stimulating the behavioural components of job involvement and commitment towards individual and team productivity (Elikwu *et al.*, 2017; Thorstensson, 2020), for the realisation of organisational goals (Chanana & Sangeeta, 2020).

In a study on work roles, the extent individuals get involved in their jobs within organisations, using personal engagement and disengagement terms (Kahn, 1990) to depict the two ends of the involvement continuum. The personal engagement and disengagement refer to the extent employees fully occupy themselves or totally withdrawn while mentally and physically involved in their job roles (Wolor, et al., 2020); which implies the extent an individual is psychologically involved in his assigned work and the job performed. Also, employee work involvement (personal engagement) encourages individuals to broadly outline their work roles (Chandani, et al., 2016), which stimulates the enthusiasm to fully occupy the jobs while taking up occupational challenges associated with the assigned jobs (Kahn, 1990). These associated occupational challenges motivate employees to become innovative and proactive in proffering solutions to such challenges

Employee productivity

Employee productivity denotes the degree to which organisational predetermined quantity objectives and quality goals are achieved by employees (Khalil 2017). This implies that organisational investments in state-of-the-art equipment, technology, facilities and processes are inconsequential if employees do not engage these resources effectively and efficiently (Osborne & Hammoud, 2017). Basically, the productivity concept infers the correlation between the generated output based on the provided inputs. It is therefore defined as the optimal utilisation of resources such as human capital, finance, technology, information, energy and work materials in the production of variety of products and services (Manu, 2015). Employee work productivity in service delivery organisations is defined as the correlation between accomplished tasks and the time involved in achieving the set tasks. Thus, an employee is considered more productive if assigned tasks are achieved in effectively (at a lesser time). This is achieved when resources provided are efficiently and appropriately utilised, achieving set performance benchmarks within specified timeframe, based on shared organisational values and goals. Within work environments, employee productivity is largely dependent on the involvement and the extent an employee functions efficiently, while mentally and physically present at a job (Wolor, et al., 2020).

Empirical Review

Owing to the challenges presented by the Covid-19 pandemic, which necessitated financial service delivery organisations to mandate employees to work from remote locations via virtual operations, to reduce the possible spread of the pandemic, Onyeukwu, Elikwu and Jekelle (2021) investigated the extent to which remote virtual operations influenced employees' engagement; to occupy their jobs roles and stayed committed to the assigned tasks. With a sample size of 119 respondents, the study adopted the descriptive statistical analytical tools comprising combined frequency tables, factor analysis, Pearson Product

Moment Correlation and simple regression analysis to test the posited hypotheses. The findings established a positive and significant relationship, which implies that employees that virtually operated from remote locations were influenced to occupy their job roles, and that remote virtual operations influenced employees' commitment.

Kohntopp, et al., (2020) reviewed extant literatures to examine influence of leadership in virtual organisations on workplace, using exploratory and content analysis, the study reviewed studies on engagements in workplace, while forecasts about the future of virtual workplace engagements were made. The study revealed that employees' given responsibilities that necessitated working virtually from remote locations often felt isolated when compared to opportunity of operating from actual organisational facility and among team members, which has the possibility of significantly affecting their level of commitments. Duque, et al., (2020) examined the correlation between new ways of working (virtual workplace) on employee engagement. The study used survey data from a sample size of 126 participants, while the structural equation modelling technique was used to analyse the data. The results revealed that, a significant and positive correlation exists between the new ways of working and work engagement.

Virtual workplace and employee productivity

Demirdjian (2018) evaluated virtual workplace efficiency and performance among SMEs in Lebanon, the study adopted quantitative research which relied on online sourced primary data. The study among other findings established that, for employees' operating within virtual workplaces, productivity is stimulated using incentives and rewards for efficient performance. Martinez-Amador (2016) investigated engagement and productivity of remote and on-site knowledge workers; and conducted a comparative study of the effect of virtual intensity and work location preference. The study adopted a three-part, sequential, mixed methods design. The findings among others established that, work location has a positive effect on productivity, while virtual intensity moderates the effect of work location tension and engagement. Manu (2015) investigated the effects of work environment, considering both physical and social work environments on employee's productivity. The study adopted a sample size of 100 respondents, while the data collected was analysed using descriptive statistical tools and the Analysis of Variance (ANOVA). The findings revealed that work environments (physical or social) are statistically significant to employees' productivity.

Methodology

The research design used in this study is the cross-sectional survey design (Creswell, 2014), which helped the depiction of participants' virtual operation views and remote workplace attitudes in numeric values, as it affects employees' level of job involvement and productivity. The population covered three hundred and thirty-seven (337) staff of two (2) private universities (Baze University and Veritas University) under review, within Abuja, FCT. This is premised on the operational methods adopted by these academic institutions, which relied on the use of technology to constantly ensure smooth and seamless administrative functions, and the teaching and learning of their students. The Taro Yamene (1967) sample size estimation formula was adopted, however, based on the responses received, this study relied on a sample size of one hundred and seven (107) participants.

In analysing the collated data, this study adopted the descriptive analytical methods, the Pearson Product Moment Correlation to establish the relationship between the variables, while developed hypotheses were tested using the simple linear regression analysis. In testing the developed hypotheses, the study adopted and modified the statistical model of Onyeukwu *et al.*, (2021), while the proxies measured were adopted and modified from the study of Kohntopp, et al., (2020), to empirically test the effect of virtual workplace operations on sustained employees' productivity during the period of economic turbulence in Nigeria. Virtual operations (VOPS) being the independent variable was proxied by Appropriate

Technological Devices (APTD), Technological Work Knowledge (TCWK) (Kohntopp, et al., (2020), Remote Operations (ROPS) and Flexible Work Hours (FXWH) (Onyeukwu *et al.*, (2021); Sustained Employees’ Productivity (SEPR) was proxied by Job Involvement (JBIN) and Productivity (PROD).

Dependent variable

Y = Sustained Employees’ Productivity (SEPR)

$$(SEPR) = f (JBIN, PROD)$$

Independent variable

X = Virtual Operations (VOPS)

$$(VOPS) = f (APTD, TCWK, ROPS, FXWH)$$

The functional form of the econometric model is therefore given as:

$$Y = f(X_1)$$

Where, Y is dependent variable

X₁ is independent variable or explanatory variable.

f = represents the functional notation.

The explicit forms of the models for the three hypotheses are stated thus:

Model for hypothesis one

$$JBIN = \beta_0 + \beta_1APTD_1 + \beta_2TCWK_2 + \beta_3ROPS_3 + \beta_4FXWH_4 + u_1 \dots\dots\dots (1)$$

Model for hypothesis two

$$PROD = \beta_0 + \beta_1APTD_1 + \beta_2TCWK_2 + \beta_3ROPS_3 + \beta_4FXWH_4 + u_1 \dots\dots\dots (2)$$

Where:

APTD = Appropriate Technological Devices

TCWK = Technological & Work Knowledge

ROPS = Remote Operations

FXWH = Flexible Work Hours

JBIN = Job Involvement

PROD = Productivity

β_0 = Unknown constant to be estimated

β_1 = Unknown coefficients to be estimated

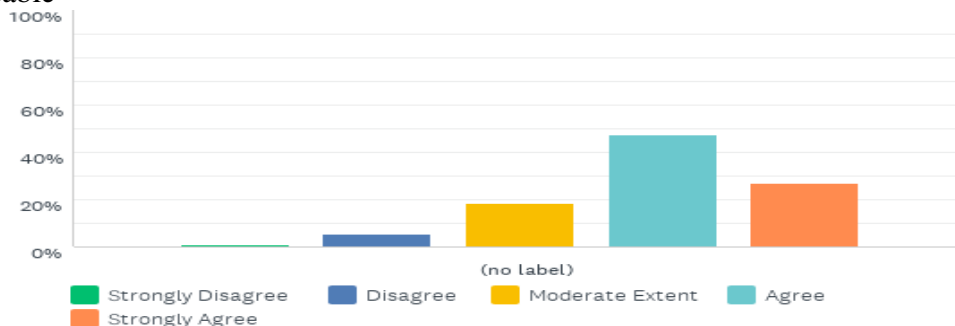
U₁ = Error Term

$\beta_1 > 0$

Results and Discussions

Data analysis for specific objective one

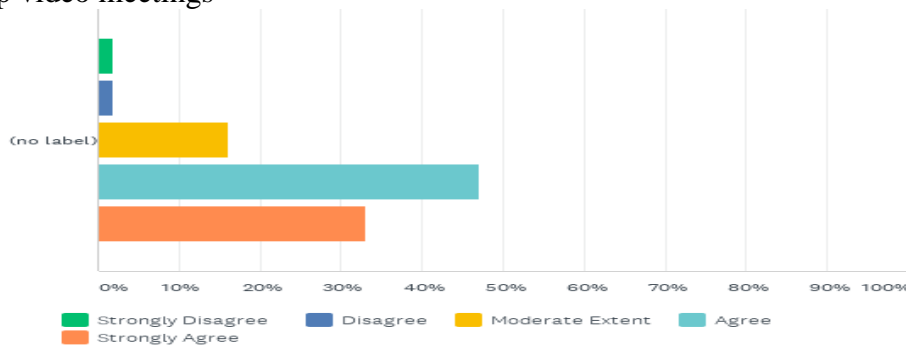
Figure 1: Availability of appropriate technological devices makes virtual operations inexcusable



Source: Field Survey, (2023)

Participants’ responses analysed in Figure 1 indicates that, 51 participants representing 48% and 29 participants representing 27% agree and strongly agree respectively that, availability of appropriate technological devices makes virtual operations inexcusable.

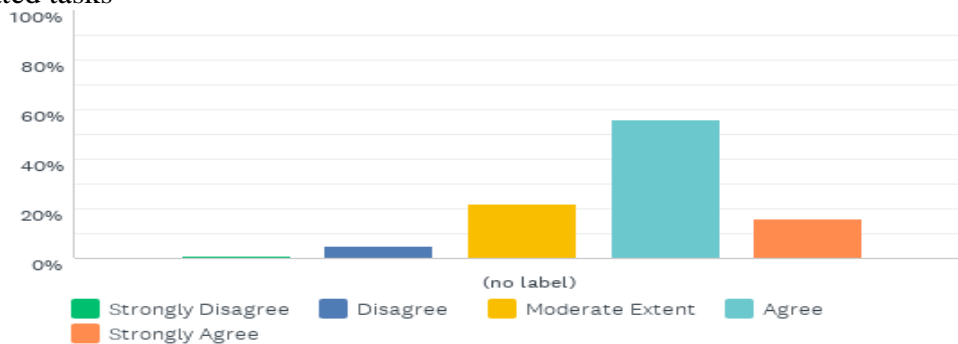
Figure 2: Functionality and steady connections of virtual devices enables me fully participate in group video meetings



Source: Field Survey, (2023)

Participants’ responses analysed in Figure 2 indicates that, 50 participants representing 47% and 35 participants representing 23% agree and strongly agree respectively that, functionality and steady connections of virtual devices enables me fully participate in group video meetings.

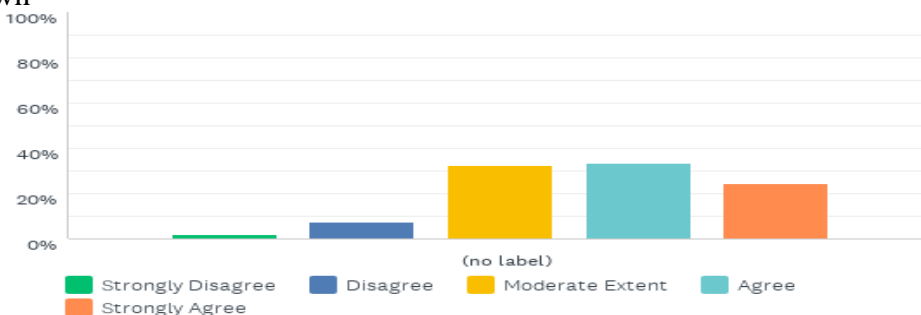
Figure 3: Flexibility of assigned job schedule enables personal engagement in achieving designated tasks



Source: Field Survey, (2023)

Participants’ responses analysed in Figure 3 indicates that, 59 participants representing 56% and 17 participants representing 16% agree and strongly agree respectively that, flexibility of assigned job schedule enables personal engagement in achieving designated tasks.

Figure 4: Nature of my job schedule requires me to work virtually during and post Covid-19 lockdown

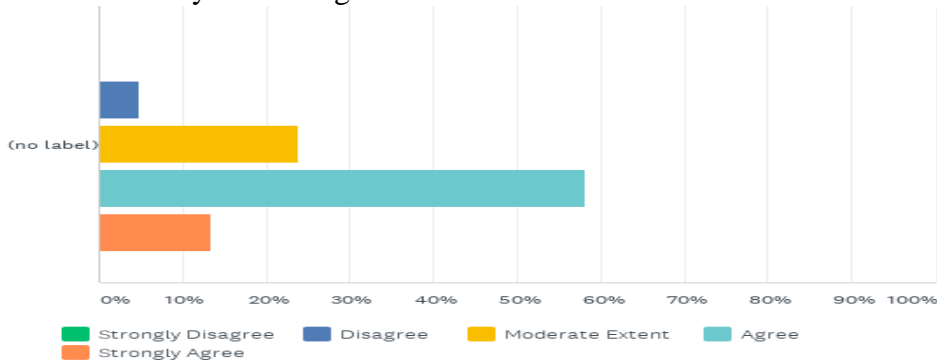


Source: Field Survey, (2023)

Participants’ responses analysed in Figure 4 indicates that, 36 participants representing 34% and 26 participants representing 24% agree and strongly agree respectively that, their

departments and nature of job schedule required working virtually during and post the Covid-19 lockdown, while 35 participants representing 33% agree to a moderate extent.

Figure 5: Application of the organisation’s MIS knowledge to my job makes virtual operations intellectually interesting

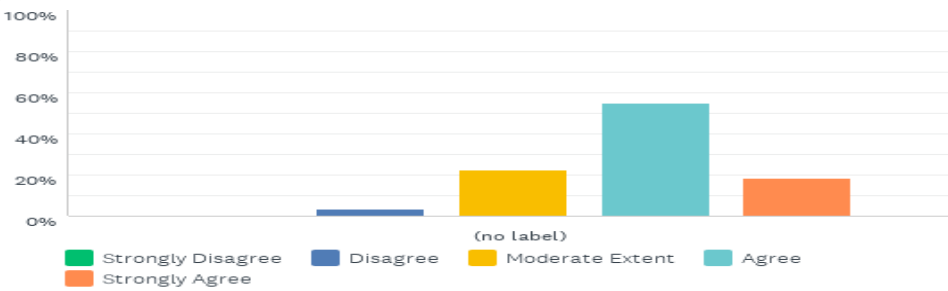


Source: Field Survey, (2023)

Participants’ responses analysed in Figure 5 indicates that, 61 participants representing 58% and 14 participants representing 13% agree and strongly agree respectively that, application of the organisation’s MIS knowledge makes virtual operations intellectually interesting.

Data analysis for specific objective two

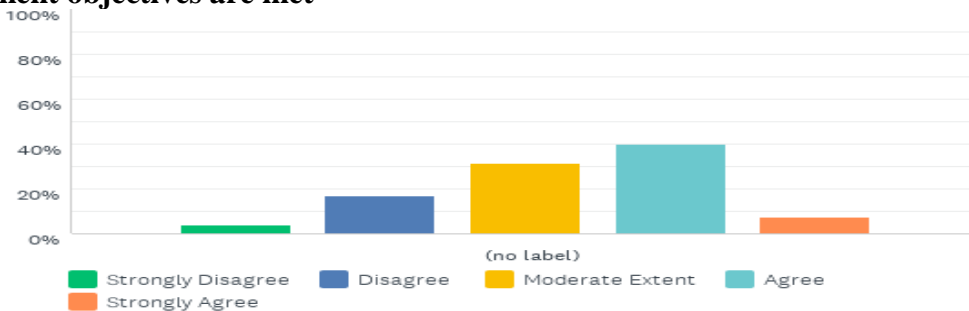
Figure 6: Participating in the organisation’s virtual operations develops employees’ personal capacity



Source: Field Survey, (2023)

Participants’ responses analysed in Figure 6 indicates that, 59 participants representing 55% and 20 participants representing 19% agree and strongly agree respectively that, participating in the organisation’s virtual operations develops employees’ personal capacity, while 24 participants representing 22% agree to a moderate extent.

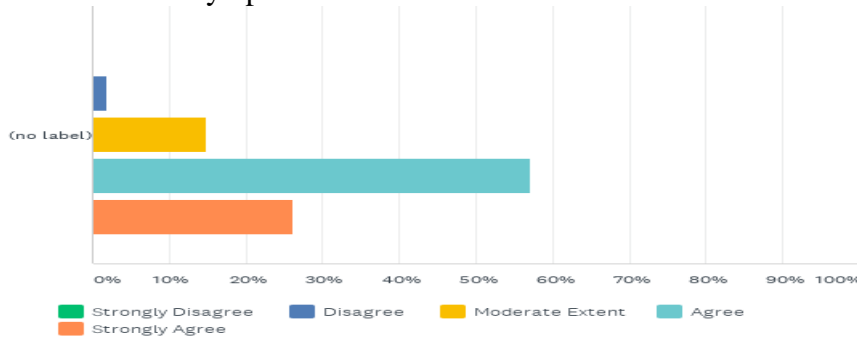
Figure 7: My directorate provided minimum work performance benchmarks to ensure department objectives are met



Source: Field Survey, (2023)

Participants’ responses analysed in Figure 7 indicates that, 42 participants representing 40% and 8 participants representing 7% agree and strongly agree respectively that, their various directorates provided minimum work performance benchmarks to ensure departmental objectives are met, while 33 participants representing 31% agree to a moderate extent.

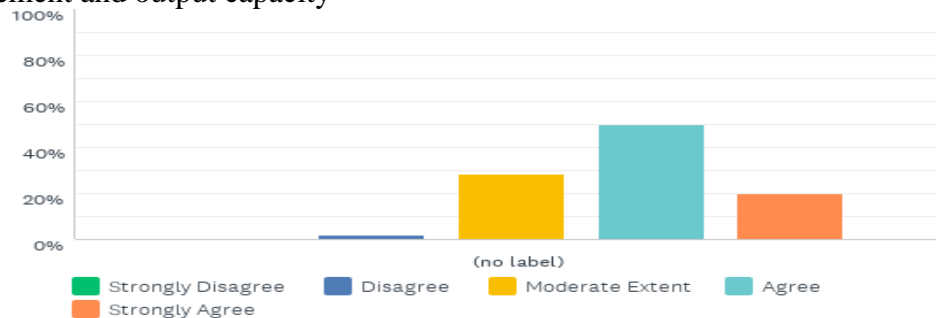
Figure 8: Functionality and steady connections of virtual devices helps the timely achievement of virtually operated tasks



Source: Field Survey, (2023)

Participants’ responses analysed in Figure 8 indicates that, 61 participants representing 57% and 28 participants representing 26% agree and strongly agree respectively that, functionality and steady connections of virtual devices helped the timely achievement of virtually operated tasks.

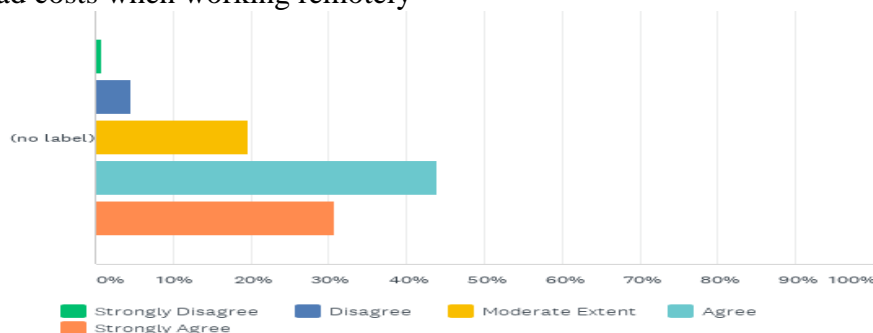
Figure 9: Participating in the organisation’s virtual operation improves employees’ time management and output capacity



Source: Field Survey, (2023)

Participants’ responses analysed in Figure 9 indicates that, 53 participants representing 50% agree, 21 participants representing 20% strongly agree, while 30 participants representing 28% agree to a moderate extent that, participating in the organisation’s virtual operation improves employees’ time management and output capacity.

Figure 10: Availability of appropriate technological devices reduces related organisational overhead costs when working remotely



Source: Field Survey, (2023)

Participants' responses analysed in Figure 10 indicates that, 47 participants representing 44% agree, 33 participants representing 31% strongly agree, while 21 participants representing 20% agree to a moderate extent that, availability of appropriate technological devices reduces related organisational overhead costs when working remotely.

Pre-Data Analysis**Table 1: Test of Reliability**

S/N	Questionnaire Constructs	Cronbach Alpha	Items
1	Virtual operations (VOPS)	0.923	4
2	Employees job involvement (JBIN)	0.933	4
3	Employees' job productivity (PROD)	0.921	4
4.	Overall	0.923	12

Source: SPSS 25.0 Output

Analysis in Table 1 shows the reliability test conducted for each latent variable premised aggregate of items measured. The analysis shows proxies of the independent variable and two dependent variables are reliable (VOPS 0.923, JBIN 0.933 & PROD 0.921). Thus, considering that the aggregate Cronbach Alpha value is 0.923, which is above the 0.7 Cronbach Alpha reliability benchmark; this implies that the research instrument is reliable.

Table 2: Correlation Matrix

		JBIN	PROD	VOPS
JBIN	Pearson Correlation	1.00	.960**	.896**
	Sig. (2-tailed)		.000	.000
	N	105	105	105
PROD	Pearson Correlation	.960**	1.00	.922**
	Sig. (2-tailed)	.000		.000
	N	105	105	105
VOPS	Pearson Correlation	.896**	.922**	1.00
	Sig. (2-tailed)	.000	.000	
	N	105	105	105

Analysis in Table 2 showing correlation result for the independent and dependent variables indicates that, a positive and significant relationship exists between proxies of the independent variable and proxies of the dependent variable. This implies that, VOPS positively correlates to JBIN with a coefficient value of 89.6% at 5% significant level, given a P-value of 0.000; and VOPS positively correlates to PROD with a coefficient value of 92.2% at 5% significant level, with p-value of 0.000.

Test of Hypotheses

H₀₁: Virtual workplace operations did not significantly sustain employees' job involvement during the period of economic turbulence in Nigeria

Table 3: Regression result: JBIN and VOPS

Model		Unstandardized Coef.		Standardized Coef.	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Toleranc e	VIF
1	Constant	.987	.167		5.822	.000		
	JBIN	.754	.045	.896	15.979	.000	1.000	1.000

a. Dependent Variable: JBIN

Source: SPSS 25.0

As indicated in regression analysis of Table 3, the result for VOPS on JBIN shows 0.754, which implies that virtual workplace operations (VOPS) positively and significantly influence on employees' Job involvement (JBIN). This indicates that, increase in virtual operations (VOPS) will invariably lead to sustained employees' job involvement (JBIN). So, an increase by 1% in virtual operations (VOPS) will sustain employees' job involvement (JBIN) by 75.4%. Considering that the t-statistics value of 15.979 is greater, while the p-value (0.000) is less than the level of significance of 0.05, the null hypothesis (H_{01}) is rejected. Therefore, we accept the alternate hypothesis; hence, we establish that, virtual workplace operations significantly sustained employees' job involvement during the period of economic turbulence in Nigeria.

Hypothesis Two

H₀₂: Virtual workplace operations did not significantly sustain employees' job productivity during the period of economic turbulence in Nigeria

Table 4: Regression result: PROD and VOPS

Model		Unstandardized		Standardized	t	Sig.	Collinearity	
		Coef.	Std. Error	Coef.			Toleranc e	VIF
1	Constant	.775	.113		6.487	.000		
	PROD	.738	.030	.922	25.049	.000	1.000	1.000

a. Dependent Variable: PROD

Source: SPSS 25.0

As indicated in regression analysis of Table 4, the result for VOPS on PROD shows 0.738, which implies that virtual workplace operations (VOPS) positively and significantly sustain employees' job productivity (PROD). This indicates that, increase in virtual workplace operations (VOPS) will invariably lead to sustained employees' job productivity (PROD). So, an increase by 1% in virtual workplace operations (VOPS) will sustain employees' job productivity (PROD) by 73.8%. Also, considering that the t-statistic value of 25.049 is greater, while the p-value (0.000) is less than the level of significance of 0.05, the null hypothesis (H_{01}) is rejected. Therefore, we accept the alternate hypothesis; hence, we establish that, virtual workplace operations significantly sustained employees' job productivity during the period of economic turbulence in Nigeria

Discussion of Findings

As indicated in regression analysis for hypothesis one in Table 3, the result for VOPS on JBIN shows 0.754, which implies that virtual workplace operations (VOPS) positively and significantly influence on employees' occupying their job roles (JBIN). This necessitated the acceptance of alternate hypothesis one, while we conclude that, virtual workplace operations have significantly sustained employees job involvement. This finding agrees with the results of Duque, et al., (2020) and Onyeukwu et al., (2021) which established that, a significant and positive correlation exists between the present ways of working and occupying job roles.

Also, as indicated in regression analysis for hypothesis two in Table 4, the result for VOPS on PROD shows 0.738, which implies that virtual workplace operations (VOPS) positively and significantly sustain employees' job productivity (PROD). This necessitated the acceptance of alternate hypothesis two, while we conclude that, virtual workplace operations have significantly sustained employees' job productivity. This finding aligns with the results of Glaudemans (2019) that, telecommuting and flex-time, impacts positive employee outcomes and thereafter, organisational performance.

Conclusion and Recommendations

The study established that, virtual workplace operations have significantly sustained employees' job involvement, which confirms opinion of respondents that, virtual operations related flex-time makes performing assigned tasks challenging. This is in spite of employees' knowledge of the firm's management information system, availability of functional and appropriate technological devices which gives psychological readiness for virtual operations. This implies that, the employees fully got involved in their job roles during the period under review. It also implies that, they always relied on the functional and available technological support to cover the laxity in performing their assigned tasks. Premised on the findings of this study, this study recommends that:

In adopting virtual operations, the management of Baze University Abuja, Veritas University Abuja and other ICT reliant organisations should encourage teams to delegate jointly developed tasks, premised on Specific, Measurable, Achievable Relevant and Time-Bound goals. The management should also put in place a system of periodic check on employees by team leaders, to ensure optimal involvement of job roles within designate work periods.

Similarly, the study recommends that, management of Baze University Abuja, Veritas University Abuja and other ICT reliant organisations should review policies supporting hours of virtual workplace operations, this will help employees' focus on full participation to achieve designated tasks within the specified work period, to improve and sustain productivity of employees engaged in virtual workplace operations.

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