



IMPERATIVES OF APPROPRIATE TECHNOLOGY ON ORGANISATIONAL PRODUCTIVITY: EVIDENCE FROM THE STRATEGIC BUSINESS UNIT OF COVENANT UNIVERSITY.

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Abstract

Every organisation makes use of diverse types of technology for their various business that has a fundamental and essential impact on the nature, structure and work of the organisation. An organisation creates its structures in relation to the kind of business carried out, whether it is a manufacturing or service business. There is a vast variety of technology an organisation can adopt from, no matter how basic the technology is or how complex the technology is. The objective of this investigation is to show the effect of appropriate technology in entrepreneurial productivity using the strategic business unit of Covenant University. The researcher surveyed two hundred and fifty (250) respondents comprising of employees of the Strategic Business Unit of Covenant University, instrument used for raw data gathering was the designed questionnaire to a sample size of one hundred and fifty-three (153) employees and the bio-data was analyzed by means of manual and electronic based methods through Social Science Data Presentation and Statistical Package (SPSS). In order to establish the relationship between dependent and independent variables in each hypothesis, variance analysis (ANOVA) and regression analysis were used to test the hypotheses. The results of the analysis revealed that making use of the appropriate technology has a significant influence on the productivity of organisations as a whole. Based on these findings, the study recommends that entrepreneurial firms strengthen internet infrastructure, improve office lighting, deploy camera surveillance and adopt inventory control systems as strategic tools for improving cost-effectiveness, workforce engagement, compliance and loss prevention, thereby enhancing overall entrepreneurial productivity.

Keywords: *Appropriate Technology, Entrepreneurial Productivity, Strategic Business Unit, Technology*

Introduction

Technological developments bring massive prospects and problems for business managers in every field of human discipline. Organisations sometimes attach little or no priority to complex technology or techniques that **reduce** its business growth. This is as a result of the myopic knowledge base of the forerunners of such enterprises. Therefore organisations that do not upgrade to suit the trending technology in its industry might stand the risk of being obsolete and hence **lose its survival** due to low productivity (Ahmad, 2014).

Technology refers to the understanding and use of techniques and tools. It is a very important element that relates to how effective the operations and its management would be in any enterprise. Technology is a body of knowledge which is used in the creation of tools, development of skills and for the process of extracting and collecting of materials. Technology applies science in order to meet an objective or to solve a specific problem. (Molinero, 2012; Matloob, 2016) Technology has put up a standard for diverse businesses in many ways in a modern manner. Various organisations make use of different types of technology for their business procedures. This has influenced the design, structure nature of the business, and how these business procedures are carried out. The types of resources used in an organisation, whether it is for manufacturing, communication, service or control, determines how the offices, departments and divisions are developed. There is a vast variety of technology that an organisation can adopt for its nature of business this can range from the simple form of technology such as getting a personal computer to a complex form of technology. Technology has contributed to the fast changes seen in organisations, it also has an input in the increased competitiveness among organisations (Hussain, 2013). Therefore it is very important for organisations to adapt to these changes and also provide products and services of higher quality (Osabuohien & Efobi, 2012; Oluyinka *et al*, 2016).

Organisations cannot afford to take for granted these changes in all fields of management because it greatly influences the efficiency, progress and productivity of an organisation. Organisational units, be they small or large, should constantly improve their techniques and upgrade their tools and methods of working because these activities are very important to that unit as it is to the entire organisation. Every aspect of the organisation has a particular type of technology associated to it, and it has to be properly maintained and continuously improved. Furthermore, technology influences organisational needs this is because customers purchase the products and services offered by the organisation. Therefore the customer has the ultimate decision to in the choice to purchase end products of the organisation (Ahmad, 2014; Dada, Adegbuyi & Ogbari, 2023).

Despite the growing body of literature on technology and organisational performance, there remains limited empirical clarity on which specific dimensions of appropriate technology - namely internet usage, office lighting, camera surveillance and inventory control systems - translate into measurable productivity outcomes within Nigerian tertiary-institution-based enterprise units. Existing studies on technology and organisational performance (e.g., Ahmad, 2014; Hussain, 2013; Osabuohien & Efobi, 2012) tend to discuss the subject in broad, conceptual terms without empirically isolating these specific technology dimensions or linking them to concrete, measurable productivity indicators such as cost-effectiveness, workforce engagement, compliance and loss prevention. This creates a practical problem for managers of entrepreneurial and quasi-commercial units, such as university-based Strategic Business Units, who must decide where to prioritise limited technology investment without clear empirical guidance. It is this gap that the present study seeks to address by empirically examining the effect of four specific appropriate technology dimensions on entrepreneurial productivity within the Strategic Business Unit of Covenant University.

2.1 The Concept of Technology

Technology aids in the understanding of how tools are created, how to extract materials, and how to handle various activities. Technology as a concept is very wide. Different people have different views on the meaning of technology. Technology is used to in various aspects of our lives, therefore, technology can be seen as a product, service, or organisations (Ramey, 2013). Technology is used to expand our capabilities which makes individuals an essential piece of any technological framework. Technology is an application of science that is used to solve various problems (Melo *et al.*, 2015).

Technology is applied in almost all aspects of our lives; we make use of technology in the workplace and in our homes, and technology is also used to extract materials, gather data, communicate, transportation, manufacturing, and so on. Technology refers to human knowledge that uses tools, systems and materials for specific procedures. Products and services is made available as a result of the application of technology. Proper application of technology is beneficial to humans but when it is misapplied, it can be harmful to human beings (Ayodele *et al.*, 2016).

2.2. The Concept of Appropriate Technology

This study does not focus on the industrial revolution but still ensures that technological advancements have affected organisations. New technology refers to certain changes which have taken place since the 1970s. (Pearce, 2012; Walker, 2015). There is a subtle connection between technology and labour levels in non-manufacturing businesses this is because the output produced is minimal (Antonenko, Dawson & Sahay, 2017). Joan Woodward was the first person that linked technology and organisations. This was done in the mid 1960's. She conducted research focusing on manufacturing and production technology and looked at the organisational structure from a technologically designed perspective. Amid 1950s, Joan Woodward prioritized the manufacturing procedure of an organisation and its technical complexity, then she developed an estimation scale which recognizes firms. The outcomes suggested that high complexity means that a large portion of work is completed with machines, while low level complexity indicated that workers perform nearly all of the organisation's activities. The management levels to staff level expanded due to the increase in technical complexity. In 1965, Joan Woodward categorized organisational technology into three; small batch technology whereby units are designed specially and on request; large scale technology whereby goods are manufactured in large quantities; and process technology which is standardized, continuous and controlled. There is a connection between individuals and technology which has shown the influence of technology on organisational conduct. Fast and developing changes occur in all fields of management which is highly influential on the organisations dealings, method of work, progress, effectiveness and efficiency, no organisation can afford to ignore these changes. Each unit of an organisation whether it is substantial or little, manufactures in large or small quantities, regardless of the size has to constantly upgrade its manufacturing apparatuses, strategies and working procedures, this is because such activities are as important as any other segment in the organisation that is given high priority. The aspect of the organisational structure has a particular technology that suits it and as a continuous process, this must be supported, enhanced and sustained

Additionally, the requirements of the organisation are influenced by technology this is because customers purchase the goods and services of the organisation. Therefore the customer is the primary individual who has complete power on what the organisation produces also they make decisions whether to purchase the goods and services of the organisation (Blanchard, 2016).

2.3 What Is Appropriate Technology?

Technologies advance in accordance with prevailing social, cultural and economic conditions. Unless these conditions are considered, any effort to relocate an advanced technology from the setting where it has grown normally is relatively sure to fall flat. Reacting to the modernization scholars, Schumacher contended in *Small is Beautiful* that: 'certain new monetary undertakings... will be gainful and reasonable just in the event that they can be supported by the already existing educational level of relatively large groups of individuals'. In the end, if the public does not have the product, the abilities, information and methods of organisation to utilize a specific sort of equipment, at that point the technology must be seen as inappropriate. An appropriate technology is one, which advances or is created in light of a specific requirements and in line with prevailing conditions (Ram Das, 1981).

Various governments and development agencies have learnt that the misrepresentation of the assumption that rural electrification is an antecedent to financial improvement. Rural enterprises and craftsmen's do not change over to the utilization of cutting edge, exceedingly gainful devices basically on the grounds that a supply of power comes in handy. The utilization of power and its related equipment additionally requests the use of proper learning, aptitudes and patterns of work, which may vary essentially from those connected to customary technologies, and don't come as a part of an instant bundle. Need determines technology; technology does not determine need.

Normally, anything that is suitable for one division of society might be inappropriate for another, and what is appropriate for a society might be inappropriate for individuals (Evans & Ghosh, 2010). An appropriate technology is one which advances or is produced in light of a specific set of requirements and in line with prevailing circumstances. Need decides technology, technology does not decide need.

2.4. History of Technology in Business

In the history of man, technology and its use in business took an unexpected but significant increase. In the past, there has been a slow pace in business due to insufficient tools and infrastructures that would enable business transactions to be faster. Things were done with bare hands and the use of low standard mechanical tools. This made limited the rate at which business was done in respect to time (Ahmad, 2015).

In the 19th century, there was a rise in technological innovations which was quite easy to use, but then they transformed the world today. Various segments in the economy have gained a number of benefits due to the rise of patents that patent offices are issuing.

The camera and typewriter and so on were some innovative methods and products that aided in the shaping of the economy at large and business. This is because they affected the manner in which people accomplished specific activities and lived their daily lives. These advancements offered a path to the wide spread use of technology in business (Dasgupta, Gupta, & Sahay, 2011).

In order to be completely functional, various processes concerning industrial activities were dependent majorly on sources of energy. Water and coal were formerly used before the introduction of electricity, which is a very unpredictable method for energizing up production lines in light of the fact that these sources of energy are not quickly accessible to be used for industrial purposes. Thomas Edison was the one who innovated the light bulb which is a progression of various innovations and discoveries paved a way for the sources of energy. In the late 1800's electrical utilities were introduced and though they had

a very low transmission range, they were made available for residential purposes. George Westinghouse created these electric utilities and configured them in a way that energy could be supplied to power enterprises and private homes in order for them to carry out daily business activities and function properly.

Alexander Graham Bell transformed communications through innovation by inventing the telephone. This was a massive shift for communication. This influenced businesses in various ways. It is very vital in any organisation, this is because it has unquestionably conquered any hindrance between numerous individuals, the phone brought about better connections and openings from customers (Oliveira, & Martins, 2011).

Though the past brought a lot of advantages for businesses that was not the end. This is because there has been a lot of advancements for example a shift from the use of typewriters to word processors, the telephone is now portable and business exchange is computerized through programming and with the use of applications. Technology and its use in business is immense as well as across the board. Indeed, even a short history of this would get the job done for one to see how progressive the progressions have been.

Technology is continually developing not just for business only, also for development as well as for use in different fields. Change therefore is basic in order to benefit from making use of technology in business.

2.5. Concept of the Internet

The Internet has transformed the manner in which business procedures are carried out worldwide. There are various ways organisations makes use of the internet, from gathering information on its competitors to hiring employees. Organisations can also derive many benefits from the use of internet for business activities. In past times, if an individual began a business, he or she may put a couple of promotions locally in the hopes of creating a name for him or herself in that particular aspect of business. The Internet has changed that practice totally. An Internet presence immediately gives the organisation a worldwide crowd. Clients from around the globe can find out about the business and purchase their goods and services. The internet is always functioning, therefore organisations can use the internet to derive great benefits. For instance, an organisation can create an online store and offer readily available goods. This virtual store never closes, which is a very big advantage because there is a possibility of gaining more profit for the business owner. An advantage of using the Internet for business is its cost effectiveness. Creating a virtual store is costs very little compared to getting a physical store. Publicizing on the web is more affordable compared to advertising on television for instance, this enables entrepreneurs reach a more focused target market. Businesses can now be performed without the need to travel through the use of the internet.

2.6. Concept of Office Lighting

Light has a great effect on productivity, this is the reason office lighting quality is so imperative. Office lighting can influence our productivity. Appropriate office lighting is a working environment need. Poor lighting straightforwardly influences work execution as it strains the worker's eyes. This can likewise prompt further issues like cerebral pains and eye ailments. Aside from the need factor, proper lighting conveys focal points to the working environment. There are numerous ways to enhance office lighting. These were the different advantages of having legitimate lighting in your office. Not only will costs on power bills be diminished, the workers will turn out to be more productive as well.

Studies demonstrate the nature of light influences individuals in a wide range of ways. For instance, office worker fulfilment and efficiency can be emphatically influenced by well-designed illumination. People are fascinated by well-lighted public facilities, business shopping locale and so on. Business owners, managers and supervisors can possibly add value, decrease expenses and improve execution through the utilisation and application of good lighting.

Lighting is basic to attentiveness and productivity in the office or business building. It can even impact client shopping habits. It's additionally a health and safety issue.

2.7. Concept of Camera Surveillance

Productivity can be greatly improved in the workplace through the use of camera surveillance. Concerning the employees' behaviors and how they carry out their activities, surveillance in the workplace can aid the employer or the organisation gather relevant data. For example, the manner in which employees make use of the computer and time spent on emailing and non-work browsing can be changed productively with proper supervision. Policies can be developed from the knowledge gained by the employers based on surveillance. Management can specifically limit unproductive activities during work time by monitoring the employees.

1.8. Concept of Inventory Control System

In recent times, both small and medium businesses depend on automated inventory management. Definitely a number of retail businesses with minimal turnover of raw materials and resources still makes use of manual form of taking inventory such as supermarkets, shoe stores, butteries and so on. So therefore, buying and making use of an inventory tracking system can be unnecessary and uneconomical. But then for firms that have a high turnover of raw materials, finished products and resources, purchasing and making use of electronic inventory control systems is essential as it is a key strategy for businesses which is aimed at sustaining competitiveness and enhancing productivity(Mongare & Nasidai, 2014).

2.9. Implications of Technology on Business

The implications of technology on businesses is expansive. Technological developments enhances productivity in any business it also subsequently increases efficiency. As cited by Bill Gates, “a primary rule of technology that is used for any business is that efficiency is magnified by the automation applied to an efficient operation. Another rule is that inefficiency would be magnified by automation when applied to an inefficient operation.” The execution of different activities is enhanced through the use of technology for example, deals, bookkeeping and client self-service. Productivity gains is driven by production currently, however different organisations presently are wrongly using to enhance productivity.

Customers nowadays connect with organisations while making use of refined specialized gadgets and mediums, for example, Internet-empowered cell phones. This forces businesses to support these technologies and adjust their business procedures. An organisation that uses technology in the right way could react agilely to changes on the market. An organisation that still relies on rigid technological decisions may find it hard to quickly adjust to change in business situations.

Organisations are now under the radar of new compliance policies and guidelines basically because of the money related scams and emergencies of the 1900's and 2000's. This was intended to help uncover malpractices. Due to this, businesses are required to adopt processes that will enable them comply

better with stricter reporting rules. A key role is held by technology in order to smoothen out such reporting requirements without it affecting business activities.

2.10. Advantages of Appropriate Technology

Appropriate technology offers many advantages for the socioeconomic development, particularly the developing countries can take full advantage of them. Appropriate technology offers a means of tackling unemployment in an effective manner. Through the application of appropriate technology, capital costs are cut down and employment opportunities are increased. The equipment, tools and machinery utilized are fairly cheap. The resources of man, money and material can be appropriately harnessed and utilized for the introduction of appropriate models in the organisation. Thus people can be assured of having a better quality of life and their earning capacity can be improved. It is through such methods which an element of self-reliance is created, which ultimately improves the personalities of the leaders of the organisation. In due time, they gradually develop confidence in themselves. They can raise the income of the employees through their own efforts and can bring about improvements in their living standards. Through the appropriate models of technology, the dependence of the organisation on outside assistance for handling equipment and machinery is reduced to a minimum and they attain better skills.

Appropriate technology is designed to satisfy the felt needs of the organisation. Through this process, the entire life of the organisation and its employees is upgraded. Through the satisfaction of such needs, many socioeconomic development activities are encouraged. People working either on traditional technologies or on big machines experience a sense of boredom, drudgery and monotony. Introduction of appropriate technological models eliminate such deficiencies to a considerable extent. Due to the process of decentralization, equipment and tools require little energy for their operation. In many cases, conventional sources of energy are not at all needed and if needed, only a minimal quantity is required.

2.11. The Usefulness of Technology for Entrepreneurial Productivity

Using technology to increase the productivity of a business helps in recognizing true business accomplishments. There are a couple of alternatives accessible and business productivity software can guarantee your organisation has the tools to overcome the difficulties of executing according to plan consistently. Increased efficiency in a business can be linked with automation of business processes and better communication of strategy which takes into consideration the amount of time spent taking care of needs and finishing projects for instance, and more customers served in less time. Additionally, with the correct programming frameworks, an open and informative environment can be made. Managers would be able to deliver business strategy and make measurable goals and objectives for the employees which will in turn sustain the overall organisational targets by tracing performance appraisal information and data in a proper online structure. Groups can be linked virtually inside the organisation, this is awesome if the organisation is outsourcing para-planning or different assignments. Employee portals and group sites can be made so that the employees would work productively in the organisation irrespective of what group or area they are in. "Corporate silos" that adequately cut off communication would be wiped out in light of the fact that employees can use technology to connect with others working on comparable tasks (Ogbari, Folorunso, Simon-Ilogho, Adebayo, Olanrewaju, Efegbudu & Omoregbe, 2024).

There is likewise the ability to continuously investigate performance. The present technology gives better reporting and business analysis ability to enable entrepreneurs to gain an in-depth knowledge of the performance of a business, patterns in the market and the preferences of customers. Managers and

business experts can assess and make use of these performance measurements and the analytical reports and data to redesign or set procedure.

Employees should continually feel like they are accomplishing. This will bridge the gap in communication as well as pass it on to every individual from the group that they are well-regarded. With individuals working at their most astounding abilities and the business adjusted from top-to-bottom, a workforce that is engaged, productive and steadfast would be made.

Technology has a direct influence on the productivity of innovating organisations. According to Comin, (2017), the pervasiveness of technology causes the productivity gains of an organisation to shift the high tech engineering to the economy at large. Policies can aid in the realization of these productivity gains which could encourage the development of these technologies and the diffusion. This could remove the obstacles to some activities that arise from systemic failure and markets. They consist of policies that enables domestic firms enjoy the benefits of global sources of technology, regulatory reforms in factor markets and products and also it should cover direct policies and initiatives that provides services to firms in order to increase their ability to engage new technologies as well as to involve themselves in collaborative research with other firms.

2.12. Theoretical Framework

This study is anchored on three complementary theoretical perspectives. The Technology Acceptance Model (Davis, 1989) posits that the perceived usefulness and perceived ease of use of a technology determine the extent to which individuals and organisations adopt and benefit from it; this underpins the expectation that internet usage, office lighting, camera surveillance and inventory control systems will only translate into productivity gains to the degree that employees find them useful and easy to engage with. Diffusion of Innovation Theory (Rogers, 2003) explains how and why technological innovations are adopted at varying rates within a social system such as an organisation, and provides a lens for understanding differences in the extent to which the Strategic Business Unit has embraced each of the four technology dimensions examined. The Resource-Based View (Barney, 1991) further argues that valuable, rare and difficult-to-imitate resources - which can include appropriately deployed technology - are a source of sustained competitive advantage and improved organisational performance. Taken together, these theories provide the conceptual basis for expecting appropriate technology to exert a measurable, positive effect on entrepreneurial productivity in the context of this study. Recent empirical work reinforces this framework: using a Technology-Organisation-Environment and Diffusion of Innovation lens, Shahadat, Nekmahmud, Ebrahimi and Fekete-Farkas (2023) confirm that technological, organisational and environmental factors jointly and significantly shape the extent to which enterprises in developing economies benefit from digital and appropriate technologies.

2.13. Hypotheses of the Study

Building on the theoretical framework and the reviewed literature, the following hypotheses, already tested in Section 3.1, guided the study:

- H1 - Internet usage has no significant effect on cost-effectiveness in organisations;
- H2 - Office lighting has no significant effect on workforce engagement;
- H3 - Camera surveillance has no significant effect on compliance in the workplace;
- H4 - Inventory control systems have no significant effect on the prevention of loss of goods or resources in the workplace.

3.0. Materials and Methods

The presented data was based on a quantitative analysis. Descriptive research design to investigate the influence of appropriate technology in entrepreneurial productivity has been adopted. As a method of collecting data, the survey method was considered appropriate. The population of this study was derived based on the information gotten on the number of employees sourced from the director of the Strategic Business Unit of Covenant University (Okeniyi *et al.*, 2018). The total staff (both tenure and casual staff) under the Strategic Business Unit is 250 employees, as at February 2018. Data was collected from the staff of the SBU. The collected data was coded and entered in SPSS version 22. Data analysis was performed; using the Statistical Package for Social Sciences-22. Data were analyzed using inferential statistical tests involving regression analysis. Although the Statistical Package for Social Sciences can be limited in terms of complex statistical modeling, data analysis is easier, faster and more accurate. More significantly, the Statistical Package for Social Sciences is designed to certify that the output is separated from the data itself, especially because it stores all results in a separate file that is different from the data. This makes further analysis easier, if necessary. The researchers determined that the respondents were adequately informed about the purpose of this research and were kept informed of the process and administration of participation. Participants were offered the chance to remain anonymous and their answers were treated with confidence. Before the copies of the questionnaire were distributed, permission was obtained from the relevant authorities in the organisations. Coefficients of Cronbach alpha reliability test is 0.822 and the value is above 0.7 indicating that the research instrument is reliable (See table 3.1 below). The sample size of 153 was determined from the population of 250 using Taro Yamane's (1967) formula, $n = N / (1 + N(e)^2)$, at a 5% margin of error: $n = 250 / (1 + 250(0.05)^2) = 153.8$, truncated to 153, which is consistent with standard practice in Nigerian social-science research. [Author input required: (i) the updated 2024 Strategic Business Unit staff population and its source, since the current figure and citation (Okeniyi *et al.*, 2018) predate the 2024 study period; and (ii) the source(s) of the questionnaire items for each construct and the content/construct validity procedures undertaken, as these were not specified in the original text and cannot be supplied without your confirmation.]

Table 3.1 Reliability Statistics

Cronbach's Alpha	N of Items
.822	27

3.1. Analysis and Results

3.1.1. Data

The data contained raw statistical inferential data on the strategic imperatives of appropriate technology on entrepreneurial productivity. In particular, regression analysis has been used to test the effect of the independent variable on the variable dependent. Table 1 shows the analytical model summary based on the tested hypothesis. It shows how much variation of the dependent variable (entrepreneurial productivity) the independent variable (appropriate technology) explains

H_{01} : the internet does not improve cost effectiveness in organisations

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.238 ^a	.057	.050	.60561

a. Predictors: (Constant), INTERNET

Source: Result of Field Survey (2024)

This study revealed that the Internet is related to cost efficiency with $r=0.238$, R-Square is the proportion of variance in the dependent variable that can be predicted from the independent variable. This value shows that there is a 5.7 percent difference between the internet and cost efficiency. Although statistically significant, this effect size is modest in practical terms: internet usage accounts for less than six percent of the variation in cost-effectiveness, implying that a functional internet infrastructure supports cost savings but should be combined with complementary strategies, such as staff digital-skills training and process redesign, to meaningfully improve cost outcomes.

Table 2: Analysis of Variance (ANOVA^a)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.966	1	2.966	8.088	.005 ^b
	Residual	49.514	135	.367		
	Total	52.480	136			

a. Dependent Variable: COSTEFF

b. Predictors: (Constant), INTERNET

Source: Result of Field Survey (2024)

The F-value is the mean square regression (2.966) divided by the residual mean square (0.367), resulting in $F=8.088$. The model in this table is statistically significant from the results ($\text{Sig}=0.005$) and should therefore be rejected. The Internet therefore improves the cost efficiency of organisations in $F(1,136)=8.088$. The alternative hypothesis is therefore accepted.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.113	.398		7.818	.000
	INTERNET	.279	.098	.238	2.844	.005

a. Dependent Variable: COSTEFF

Source: Result of Field Survey (2024)

The table above showed the contribution and cost-effectiveness of the Internet and its significance. $\beta=0.279$; $t=2.844$; $p<0.05$). Decision Since the meaning level for the item is less than 0.05, it was further justified to reject the null hypothesis while accepting the alternative hypothesis. It can therefore be concluded that the internet improves cost effectiveness in organisations.

H_{02} : Office lighting does not enhance work force engagement

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.448 ^a	.201	.195	.53945

a. Predictors: (Constant), OL

Source: Result of Field Survey (2024)

This study showed that the relationship between office lighting and workforce engagement with $r=0.448$ is the proportion of variance in the dependent variable that can be predicted from the independent variable. This value indicated that the difference between office lighting and workforce engagement is 20.1 percent. With an R-Square of .201, office lighting explains a practically meaningful one-fifth of the variation in workforce engagement, indicating that it is one of the more impactful technology-related interventions available to managers seeking to boost staff engagement at comparatively low cost.

Table 5: Analysis of Variance (ANOVA)^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.860	1	9.860	33.884	.000 ^b
	Residual	39.286	135	.291		
	Total	49.147	136			

a. Dependent Variable: EWE

b. Predictors: (Constant), OL

Source: Result of Field Survey (2024)

The F-value is the mean square regression (9,860) divided by the residual mean square (0,291), resulting in $F=33,884$. The model in this table is statistically significant from the results ($\text{Sig}=0,000$) and the zero hypothesis should therefore be rejected. Office lighting therefore enhances workforce engagement at $F(1,136)=33,884$. The alternative hypothesis is therefore accepted.

Table 6: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.251	.344		6.541	.000
	OL	.473	.081	.448	5.821	.000

a. Dependent Variable: EWE

Source: Result of Field Survey (2024)

Table 6 shows the effects and significance of office lighting and workforce engagement. OL; β = 0.05; $t=5.821$; $p<0.05$). Since the meaning level for the item is less than 0.05, it was further justified to reject the null hypothesis while accepting the alternative hypothesis. It can therefore be concluded that office lighting enhances work force engagement.

H_{03} : Camera surveillance does not improve compliance in the work place

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.174 ^a	.030	.023	.71762

a. Predictors: (Constant), CAMSURV

Source: Result of Field Survey (2024)

This study showed that there is a relationship between camera surveillance and better compliance with $r=0.174$ in the workplace. R-Square is the proportion of variance in the dependent variable that can be predicted from the independent variable. This value showed that there is a 3.0 percent difference between camera surveillance and improved work compliance. The effect size here is small (R-Square = .030), indicating that camera surveillance alone contributes only marginally to compliance; managers should therefore treat it as a complementary control mechanism rather than a stand-alone compliance strategy.

Table 8: Analysis of Variance (ANOVA^a)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.159	1	2.159	4.193	.043 ^b
	Residual	69.521	135	.515		
	Total	71.680	136			

a. Dependent Variable: IC

b. Predictors: (Constant), CAMSURV

Source: Result of Field Survey (2024)

The F value is the mean square regression (2,159) divided by the residual square (0,515), which results in $F=4,193$. The model in this table is statistically significant from the results ($Sig=0,043$) and the zero hypothesis should therefore be rejected. Camera surveillance therefore improves compliance at $F(1,136)=4,193$ in the workplace. Hence the alternative hypothesis is accepted.

Table 9: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t
	B	Std. Error	Beta	
1 (Constant)	3.399	.349		9.748
CAMSURV	.171	.083	.174	2.048

a. Dependent Variable: IC

Source: Result of Field Survey (2024)

The discovered (Table 9) contributions of camera surveillance and improved compliance and their significance. CAMSURV; $\beta = 0.171$; $t = 2.048$; $p < 0.05$). Explicitly it explains the justification for rejecting the zero hypothesis and ultimate acceptance of the alternative hypothesis; thus concludes that camera surveillance improves workplace compliance.

H_{04} : inventory control system does not prevent loss of goods or resources in the work place

Table 10: Model Summary

Model	R	R Square	Adjusted R Square
1	.352 ^a	.124	.118

a. Predictors: (Constant), INCONSY

Source: Result of Field Survey (2024)

The study predicts a significant nexus between the loss of goods or resources coupled with the attendant level of inventory control with ($r = 0.352$, R-Square = .124).with an adjusted R Square of 11.8 percent, it specifically gives insight to the height of affiliation between the system of inventory control and the loss of goods or resources at work. An R-Square of .124 indicates a moderate practical contribution, suggesting that inventory control systems meaningfully, though not exclusively, account for reductions in the loss of goods and resources, and should be paired with other loss-prevention measures for fuller effect.

Table 11: Analysis of Variance (ANOVA^a)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.234	1	6.234	19.125	.000 ^b
	Residual	44.003	135	.326		
	Total	50.237	136			

a. Dependent Variable: LP

b. Predictors: (Constant), INCONSY

Source: Result of Field Survey (2024)

The F- value is the mean regression of the square (6,234) divided by the mean residual square (0.326) which results in $F=19,125$. The result is statistically significant for the model in this table(Sig=.000) and therefore a null hypothesis is to be rejected. Thus inventory control system prevents loss of goods or resources in the work place at $F(1,136)=19125$.

Table 12: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.691	.370		7.276	.000
INCONSY	.366	.084	.352	4.373	.000

a. Dependent Variable: LP

Source: Result of Field Survey (2018)

Contributions of inventory control system and loss of goods or resources and their level of significance. (INCONSY; $\beta=.366$; $t=4.373$; $p<0.05$). is obvious from the above table.

Decision

Since the meaning level of the item is less than 0.05, it was further justified to reject the null hypothesis while accepting the alternative hypothesis. It can therefore be concluded that inventory control system prevents loss of goods or resources in the work place.

4.0. Discussion

This descriptive analysis conducted in this study depicted the following: The use of the Internet facilitates job routines positively, and Internet service has been discovered as a competitive tool for the sustainable performance of entrepreneurial firms. The finding of the study as regards to office lighting further corroborate the findings of Hawthorne's experiment. In other word, office lighting enhances the effectiveness and efficiency of workers. The respondents attested to the fact that camera surveillance enhances improved compliance, thereby leading to higher entrepreneurial productivity, and the Inventory control system prevents losses, thereby facilitating cost-effectiveness.

The first hypothesis is which states that the internet improves cost effectiveness in organisations and the business operations / procedures of Avlonitis and Karayanni (2000) are consistent. They claimed that for numerous studies and reports in the past decade the internet was a favorite topic. However, the marketing activities that are affected by Internet use and their consequent results are lacking systematic empirical evidence. In their work, they emphasized the multiplier effects of the Internet as a major transformer in e- business-to-business, e- marketing and identify market-oriented activities that are affected by the intensity of Internet use. The use of the Internet in sales management, market-oriented product management activities and sales performance and efficiency has had a significant positive effect.

This study is also consistent with Lu and Julian's views (2008). Their study examined the Internet's impact on export marketing performance, company- specific characteristics, market characteristics and export marketing strategy. Their findings showed that it had a significant impact on export marketing performance when the Internet was used for communication purposes and to give the company a competitive advantage. Company specific features and export marketing strategy also had a major impact on export marketing and its performance.

In the second hypothesis; "Office lighting enhances work force engagement" was found to have a substantial effect on work force engagement. Their finding in their study is consistent with the views of Werff, Essen and Eggen (2017). Their study dealt on the impact of the Internet of lighting on the Office Lighting Value Network, as well as the impact of IoL on the European Office Lighting Value Chain was also investigated. A qualitative study by stakeholders with the relevant drivers of transformation indicates four perspectives: IP to the end node, data sharing, standardization, and lighting as a service. The work concluded with an insight into IoL's impact on the stakeholders and a recommendation on users of the new stakeholder network synthesis model. The study also coincides with a study of Evening office lighting, visual comfort vs. energy efficiency vs. performance with Linhart and Scartezzini (2010). The study compared the "Reference Scenario and the Test Scenario "with two highly energy-efficient light scenarios for evening office lighting. To this end, objective testing of visual performance (computer, paper) and subjective assessments of visual comfort were performed on 20 people. The study's main hypothesis was that the participants in the study would not perform worse under the more energy- efficient "test" scenario than under the "reference" scenario (which is extremely well accepted by the occupants of the building). The study concluded that in today's office buildings, energy efficient lighting with lighting power densities of below 5 W / m² is already possible without compromising visual comfort and its performance (Ogbari *et al*, 2018).

The third hypothesis; "Camera surveillance improves compliance in the work place" it was discovered that camera surveillance have a significant effect on improved compliance. This study agrees with the findings of Akomolafe and Adesua (2016). The paper examines the importance of physical facilities

for improving the motivation of secondary students in South Western Nigeria and their academic performance (Adeniji *et al*, 2018). In their work, they adopted ex-post facto design. The results showed that physical facilities have a significant relationship with student motivation and academic performance. The results of the studies should be used to motivate students to learn, with more physical, human and material resources of high quality in public schools. The allocation of funds to facilitate the teaching and learning of public schools should be given priority; this will improve the academic standards of public schools. The study is also consistent with view of Bakari, Likoko and Ndinyo (2012). The study argued that proper use of physical resources for internal efficiency improvement leads to better academic performance is required. The study aimed at determining the effects of physical construction facilities in Bungoma South District in Kenya on KCSE performance in secondary schools. Aftermath of it showed that adequate availability and utilization of the Physical facilities were enough motivation to the students resulting in high academic performance in KCSE exams (Olokundun *et al*, 2018).

The fourth hypothesis; “inventory control system prevents loss of goods or resources in the work place is consistent with the view of Onekanma and Ukpere (2014). In their study, they considered the relationship between organisational performances with the Seven- Up bottling company effective inventory management system at Nile Mile, Enugu. In order to show the relative effect of inventory management system on organisational performance in the establishment. The outcome initiated that elasticity in inventory control management is pragmatic in determining organisational efficiency. Also, it was discovered that improved sales, easy storage, reduced operational costs and easy retrieval of materials were benefits organisations could derive from making use of inventory control system. According to the study, it was discovered that there is a significant connection between cost effectiveness technique, operational feasibility and utility of inventory control management basically on issues concerning the customer in an organisation and how all these are implemented in order to improve the return on investment for the organisation. Capability should be acquired for effective inventory control management. Organisations are therefore recommended to adopt a particular type of inventory control system that suits their operations. The study is also in agreement with view of Balcik, Bozkir and Kundakcioglu (2016). The work analyzed the importance of the planning and management of humanitarian inventories with a focus on the development of paper policies and techniques to determine and set standards for stock quantity and when to stock throughout the humanitarian supply chain.

It is worth noting that not all studies in the literature affirm a uniformly positive technology-productivity relationship. Oliveira and Martins (2011), for instance, caution that technology adoption yields performance gains only when matched by adequate organisational readiness, user acceptance and complementary managerial support - consistent with the Technology Acceptance Model and Resource-Based View adopted in this study's theoretical framework. This implies that the positive effects recorded for internet usage, office lighting, camera surveillance and inventory control systems in the present study cannot be assumed to hold automatically in organisations that lack similar structural, cultural and infrastructural readiness.

Beyond statistical significance, these findings carry direct managerial implications for the Strategic Business Unit and comparable entrepreneurial units. Because office lighting and inventory control systems produced the largest effect sizes among the four technology dimensions, managers with constrained budgets should prioritise investment in these two areas first, while treating internet infrastructure and camera surveillance as complementary rather than primary levers for cost-effectiveness and compliance respectively. More broadly, the results suggest that appropriate

technology should be deployed as part of an integrated productivity strategy rather than as isolated interventions, since each dimension examined explains only a portion of the variance in its corresponding productivity indicator.

5.0 Recommendations

This study has not only given better understanding of technology but also gives us an idea of what the effect of appropriate technology on entrepreneurial productivity in entrepreneurial firms in Nigeria. The following recommendations would be useful in improving entrepreneurial productivity in entrepreneurial firms; Entrepreneurs are encouraged to improve on their internet facilities in order to influence job routines positively and Entrepreneurial firms should employ Internet services as competitive tools for sustainable performance. Moreso, Strategic efforts should be made by entrepreneurial firms to improve on their office lighting in order to enhance the effectiveness and efficiency of their workers. Furthermore Camera surveillance should be deployed as a strategic tool for improved compliance of the workers thereby, leading to higher entrepreneurial productivity and Inventory control system should be seen as an integral part of strategic process for prevention of losses thereby facilitating cost effectiveness.

6.0. Conclusion

Following the findings of this study, it is therefore imperative to conclude that the adoption of appropriate technology play significant role in enhancing entrepreneurial productivity. Specifically, this study concludes that internet services, office lighting, camera surveillance as well as inventory control system are significant predictors of entrepreneurial firms in Nigeria.

It is therefore important for organisations to improve on their internet services, office lighting, camera surveillance and inventory control system thereby leading to improved entrepreneurial productivity. The study revealed that it is safe to presume that technology has a key role in improved productivity in organisations. Organisations are therefore obliged to develop an open communication strategy which should be focused on the technological changes that are expected. All data concerning possible changes intended by any organisation and attendant skills adoption should be disclosed in a timely manner to the employees. This will enable them to organize and anticipate the change, also it will help them know where they stand in the new structure. They will have sufficient time for planning and how they should develop to remain relevant in the organisation. Individual employees who could acquire more abilities and skills should be encouraged by the organisation. From a philanthropic perspective, employees should be given the privilege to know how they will be influenced and equally handle changes and specific challenges. Management should be able to retain the surpluses beyond what many would consider possible by captivating the talented, natural wastage or deliberate redundancies. Also, more consideration ought to be paid to employees who are knowledgeable about their technical duties in order to motivate employees to think of new ways of performing their jobs innovatively as this is needed for any long term organisational achievement of goals and objectives. The results suggested that firms should adopt the right technology for their various business operations and must also be technically predisposed, because this will increase productivity, to work systems.

7.0. Limitations and Suggestions for Further Studies

This study is not without limitations. First, its cross-sectional design captures relationships at a single point in time and therefore cannot establish causality between appropriate technology and entrepreneurial productivity. Second, the study was restricted to a single Strategic Business Unit within one Nigerian university, which limits the generalisability of the findings to other entrepreneurial or

organisational contexts. Third, data were obtained through self-reported questionnaires, which may be subject to common-method bias and social desirability effects. Fourth, each hypothesis was tested using simple linear regression with a single predictor, which does not capture the combined or interactive effects of internet usage, office lighting, camera surveillance and inventory control systems on productivity outcomes; a multiple regression or structural equation modelling approach would offer a more robust assessment. Fifth, instrument validity in this study relied on Cronbach's alpha reliability testing alone, without a full assessment of content and construct validity. Future studies are therefore encouraged to adopt multi-organisation samples, longitudinal designs, multiple regression or PLS-SEM techniques, and more rigorous validity testing, in order to build on and extend the findings of this study.

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Conflict of Interest

Authors declare that there is no conflict of interest.

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