IJAAR PUBLISHING®

Research Journal of Management Practice | ISSN: 2782-7674
Vol. 6, Issue 2 (2026) | https://doi.org/10.46654/ynwerr66

ADVANCED DIGITAL STORAGE AND EMPLOYEE PRODUCTIVITY IN MANUFACTURING FIRMS IN PORT HARCOURT, RIVERS STATE, NIGERIA FOR ECONOMIC TRANSFORMATION AND SUSTAINABILITY

Happiness Nwanyi Elekwachi *Ph.D*[1]
Department of Office and Information and Management,
Rivers State University, Port Harcourt
email: happiness.elekwachi@ust.edu.ng
&
Dr. Sunday Horsfall[2]
ORCID No.: 0009-0009-5744-9857
Department of Business Administration, Faculty of Administration and Management
Rivers State University, Nkpolu-Oroworukwo, Port Harcourt, Nigeria
email: sunday.horsfall@ust.edu.ng, sunday_horsfall@uniport.edu.ng, sundayhorsfall@gmail.com

ABSTRACT
The study examined the relationship between Digital Storage and Employee Productivity in Manufacturing Firms in Port Harcourt. Rivers State, Nigeria. The objectives of the study were to examine the relationship between the advanced digital storage and Employee Productivity measures, efficiency, timeless and task Accomplishment. The cross-sectional explanatory survey research design was adopted for this study. The population of the study was Eight Hundred and Thirty-Two (832) employees of thirty (30) registered manufacturing firms currently operating in Port Harcourt. Taro Yamene formula was used to determine the sample size techniques. Bowley's (1960) Population Appropriation Formula was applied to determine the sample unit for each of the firm. The Primary data were collected using questionnaire. The data were analyzed using tables, simple percentages, mean score ration, standard deviation, while the hypotheses were tested using Spearman's Ranking Order Correlation with the aid of Statistical Package for Social Science (SPSS). The study concluded that there is a significant positive relationship between advanced digital storage and employee productivity in manufacturing firms in Port Harcourt. It was recommended amongst others that: Management of manufacturing firms should regularly assess current infrastructure, identify area of improvement and evaluate emerging technologies that will benefit their organization.

Keynote: *Digital Storage, Employee Productivity, Manufacturing firms, Economic Transformation, Sustainability*

Introduction

Employee productivity in manufacturing firms is a critical factor that directly influences the efficiency, competitiveness, and profitability of the organization (Cooper *et al.,* 2018). As the manufacturing sector continually evolves with technological advancements and market dynamics, the ability of employees to perform tasks efficiently and effectively remains paramount. Productivity in this context encompasses the speed, quality, and consistency with which workers carry out their responsibilities, impacting everything from production timelines to product quality and operational costs. The manufacturing industry, characterized by its complex processes and interdependent workflows, requires a concerted effort to optimize employee performance. According to Foroux (2019), factors such as skill levels, technological integration, workflow management, and workplace environment play significant roles in determining productivity outcome. Thus, efficiency, timeliness, and task accomplishment are considered as measures of employee productivity.

Employee efficiency in manufacturing firms is a pivotal element that determines the overall productivity, quality, and profitability of the organization (Ghemawat & Ricart, 2014). Efficiency refers to the ability of employees to perform their tasks with minimal waste of time, resources, and effort while maintaining high standards of quality. In the manufacturing industry, where processes are often complex and interdependent, enhancing employee efficiency is essential to meet production targets, reduce costs, and stay competitive in a demanding market (Park, 2018). Moreso, timeliness represents the speed**,** ability or extent to which employees of manufacturing firms achieves production results before deadline. According to Michelle (2017), timeliness is a provided parameter for how often, or within what time frame, outputs will be delivered. It also means to provide support to customers in an opportune manner. Responding to customer requests on time as well as resolving customer issues in a timely fashion is an extremely part of customer service. As technology advances and competition increases, companies are offering different types of services to stay current and attract customers. Manufacturing firms provide their customers with a number of services through responding to them promptly so as to save their time as well.

Task accomplishment is one of the most important aspects of employee performance in restaurants. It refers to the extent to which employees are able to complete the tasks assigned to them, such as preparing food, serving customers, and maintaining cleanliness standards. Nayyar (2015) assert that this can manifest through a variety of metrics, such as the number of orders fulfilled per hour, the number of customer complaints received, and the overall cleanliness of the restaurant. By tracking and measuring task accomplishment, managers can identify areas of improvement and take steps to ensure that employees are performing their duties effectively (Motowidlo, 2013).

Digital storage refers to the method of storing data in a digital format on electronic devices, making it accessible for retrieval and use, this can include various types of media and technologies designed to hold and preserve digital information. It is essential for computers, smartphones and many electronic devices, enabling the saving and management of files, applications and operating systems (Elekwachi2022)

Common forms of Digital storage includes, Hard Disk Drives (HDDs) – mechanical devices that use spinning disks to read and write data., Solid State Drives (SSDs) Faster storage devices that use flash memory to store data with no moving parts, USB Flash Drives- Portable storage devices that connect via USB ports and use flash devices, Memory Cards –

Small storage devices commonly used in cameras, Smartphone's and portable electronics and finally Cloud Storage online services that allow users to store data on remote servers accessible via the internet (e.g Google drives and Dropbox) (Elekwachi 2022)

Digital storage is gradually gaining popularity at both in the individual and organizational level of operation. Digital storage simply refers to the adoption of online storage facility in creating, storing, and retrieving records of an organization rather than storing them in physical (manual) files and physical computer systems. Employees subscribe to Google drive facility via Google account with an initial free storage capacity of 15 gigabyte (Microsoft, 2020). Letters, memos, forms, and other correspondences of the establishment are uploaded and accessible by designated officers anywhere and anytime (online) with the use of password (Joseph, 2018). This makes it possible for employee in such manufacturing firm to manage records securely and seamlessly. This background necessitated this study.

It appears that one of the greatest problem facing manufacturing firms is low productivity. This could arise due to little or inability of managers in manufacturing firms to properly identify employees who interact fairly with workplace technologies. However, workplace technologies are very vital in manufacturing firms since their daily operation revolves around operating machines for effective production. Supporting this view, Odu (2021) posited that organization that adopts innovation on time stand a better chance of gaining competitive advantage over others.

It equally seems that due to inadequate training, employee in manufacturing firms finds it difficult to produce quality product efficiently. This could be predicted on the ground that they posses little or no digital skill. More so, the delay in production and less quantity are assumed to be attributed to organizational incompetent of having innovative employees who can assist in achieving their set goals and organizational objectives timely (Foroux, 2019; Ghemawat & Ricart, 2014; Nayyar, 2015; Michelle, 2017). To this end, the level at which manufacturing firms digitalize their workplace is not yet ascertained yet.

Another issue that necessitated this study is the dearth of documented empirical studies on workplace digitalization and employee productivity specifically in manufacturing firms in Port Harcourt. Though, there have been several research efforts investigating the relationship of dimensions and measures under study. For instance, Tom-West (2023) examined the relationship between digital storage workplace technological adoption and organizational productivity of construction companies in Rivers State; Amirize (2021) examined the influence of office digitalization on work-life balance of employees in broadcast stations in South-South, Nigeria; Jenic and Lamovsek (2019) examined how digitalization affects the workplace; Youngki and Nilesh (2016) investigated the complexity of organizational digitization and firm Performance: A Set-Theoretic Configurational Approach; Odu (2021) examined the influence of workplace virtual environment on organizational health of tertiary institutions in South-South, Nigeria. But none of the study adapted same dimensions and measures as presented in the conceptual framework overleaf. Therefore, there is need to close this knowledge gap.

Conceptual Framework

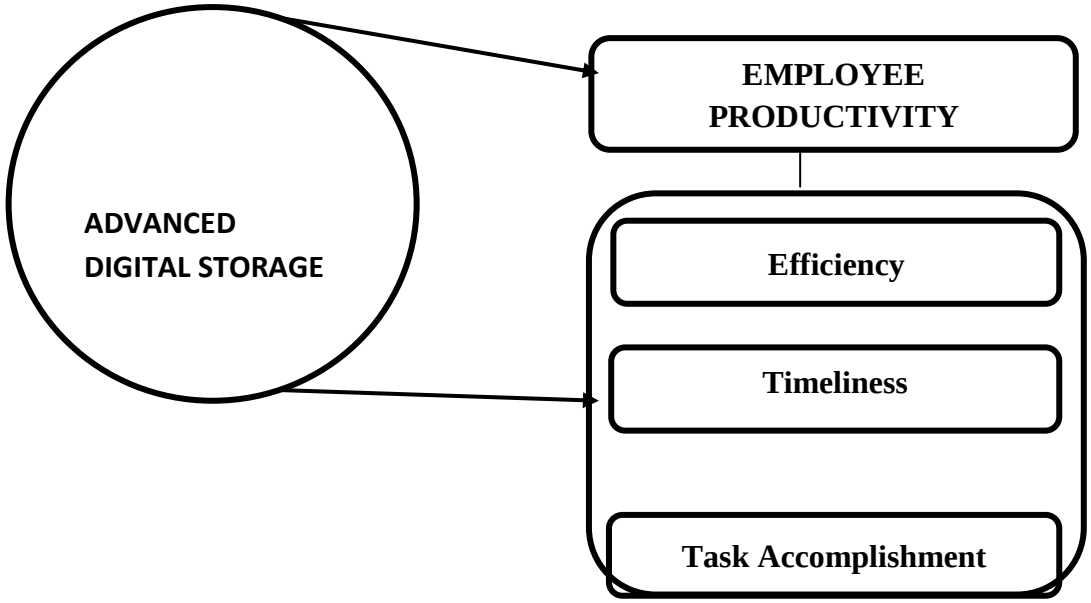


Fig. 1.1:Conceptual Framework Showing Relationship between Digital Storage and Employee Productivity

Source: Odu (2021), Tom-West (2023); and Foroux (2019)

Purpose of the Study

The purpose of the study was to examine the relationship between workplace digitalization and employee productivity in Manufacturing Firms in Port Harcourt. Specifically, the study objectives were:

1. To determine the relationship between digital Storage and employees' efficiency in Manufacturing Firms in Port Harcourt.
2. To ascertain the relationship between digital Storage and employees' timeliness in Manufacturing Firms in Port Harcourt.
3. To investigate the relationship between digital storage and employees' task accomplishment in Manufacturing Firms in Port Harcourt.

Research Questions

Following the objectives of the study, these research questions were posed:

1. What is the relationship between advanced digital storage and employees' efficiency in manufacturing firms in Port Harcourt?
2. What is the relationship between advanced digital Storage and employees' timeliness in manufacturing firms in Port Harcourt?
3. What is the relationship between advanced digital storage and employees' task accomplishment in manufacturing firms in Port Harcourt?

Research Hypotheses

Based on the research questions posed above, the following null hypotheses were tested at 0.05 level of significance.

Ho_1: There is no significant relationship between digit Storage and employees' efficiency in Manufacturing Firms in Port Harcourt.

Ho_2: There is no significant relationship between digital storage and employees' timeliness in Manufacturing Firms in Port Harcourt.

Ho_3: There is no significant relationship between digital storage and employees' task accomplishment in Manufacturing Firms in Port Harcourt.

Theoretical Review

This work is anchored on Roger's (1962) Diffusion of Innovation Theory. Roger's Diffusion of Innovation Theory explains the processes involved in the adoption of innovations such as new technologies, techniques, and procedures and well as the resultant effects of such steps on organizational processes. The diffusion of innovation theory assumes that:

i) In a social system, there will always be a disparity in the level and time at which individuals within a given social system adopt new ideas, techniques, and technology.

ii) Individuals and arms of institutions that adopt innovations early will naturally outperform late adopters and the laggards.

The implication of this theory is that as individuals advance in the use of sophisticated devices, there will naturally be a disparity on how productivity is enhanced by both category of people in the society. While some individual are digitally compliant and digitally literate enough to carry out online operations, there are still those who still find it difficult to operate simple smart phones. The fact is that while those with digital skills interface with better productivity, others are bedeviled with low productivity while those who embrace and adopt emerging digital work environment enjoy speed, efficiency and high level effectiveness in coping with socio-personal functions others are battling with job stress.

Conceptual Review

Concept of Digital Storage

Due to the rapid change in technology and organizations' consistency in shaping its business operations, digitalization is unbecomingly creeping into the base of all industries as it tries to intimate the business with its environment, thus providing premises for management to make and implement digital policies that would strengthen its communication process while contributing to organizations' goal effectively and efficiently (Loredana, 2016). Generally, the concept of digitization is a broad term spanning the media industry including the prints and the electronic media. It is the representation of an object, image, sound, document, or a signal usually an analog signal by a discreet set of its points or sample. The results of these processes are digital representation, digital image for an object and digital form for a signal (Akinreti *et al.*, 2018).

Collins English Dictionary defines digitalization as the process of converting information into a digital (i.e. computer-readable) format, in which the information is organized into bits. Digitalization most often refers to enabling, improving and/or transforming business operations and/or business functions and/or business models/processes and/or activities, by leveraging digital technologies and a broader use and context of digitized data, turned into actionable knowledge with a specific benefit in mind (Amancio, 2018). Sandeep (2019) averred that digitalization means turning interactions, communications, business functions and business models into (more) digital ones which often boils down to a mix of digital and physical as in customer service, integrated marketing or smart manufacturing with a mix of autonomous, semi-autonomous and manual.

Thus, this study defines workplace digitalization as the automation of administrative processes and arrangement of operations in such a way that employees can access files and work beyond the physical office premises. Pranjali (2017) asserted that workplace digitalization has deepened the reliance on data analytics, social networks and mobile technologies, and has dramatically reformed the role of communications in businesses. In order to utilize technological advances towards the engagement of stakeholders, as well as adapting to the digital transformation, several organizations have taken essential steps to develop a strategic framework for organizational priorities. Edward (2018) defined workplace digitalization as the collaboration of workforce and technologies (both the ones in operation and the ones yet to be implemented) to get work done in today's workplace. It ranges from the human resource (HR) applications and core business applications to e-mail, instant messaging and enterprise social media tools and virtual meeting tools. Because most organizations already use many of these components, an organization such as a broadcast station generally does not have to digitalize the office (i.e the workplace) from the ground up. In fact, if the staff respond to e-mails from smartphones, check their pay stubs online or digitally enter a sales opportunity, an organization may be closer to operating a digital workplace than it thinks (Odu, 2021).

According to Tom-West (2023), workplace digitalization can help improve communication, collaboration, content management, access to analytics data and social networking as well as staff and customer experience. Successful enterprises are embracing technology to create digital workplaces that improve business cohesion. The concept of digitalizing workplace is an interesting proposition that aims to limit these short comings and develop innovativeness of small and medium enterprises (Amirize, 2021). As part of the concept, research and potential of scientific, research and development institutions are transformed (through the engagement of commercial entities and institutions of business environment) into products and services distributed on market principles and providing new values and desired benefits to clients (Garud; Bailetti in Cerere, 2013). Within the context of this study, digital communication, digital collaboration and storage are used as dimensions of workplace digitalization.

Digital Storage

Digital storage refers to the creating and storing administrative files in web-based networks rather having them stored on premised based computer devices or file cabinets. Electronic storage has advanced beyond the physical computer system. Digitally conscious administrative systems today, leverage on online computing infrastructure in managing their records rather than keeping them in file cabinets or location-based data storage facilities such as hard disk, flash drive, memory card, memory stick, CD ROM, etc. Joseph (2018) defined digital storage usage as an advanced computing practice where documents and all data of an organization are stored in internet-based computer networks rather than location-based devices.

Conceptually, digital storage refers to the saving and accessing official data and information contents in an online platform rather than a physical computer device. In work systems that adopt digital storage, administrative files can be accessed from any computer anytime and anywhere with an internet connection and a web browser. Digital storage is also known as virtual storage. Virtual storage (virtual computing) services run on subscription basis. The organization or unit of an organization subscribes to a cloud computing service provider to enjoy this form of electronic storage facility. It is also important to note that virtual storage services also enable businesses to access and conveniently use Microsoft Office Packages

such as Word, Spreadsheet, PowerPoint, etc. (Jacobson, 2016; Microsoft, 2020). By expansive subscription, organizations or units of an organization can enjoy additional office data processing and storage packages through its facility.

Cloud storage usage facility refers to a free online service that enables subscribers to store and access files in secure Google Account. Every Gmail account owner has access to a 15 gigabyte Google drive facility that can be used to upload and download relevant files. (2018) pointed out that Google drive is a digital storage service which expands users' ability to store files beyond the limits of hard drive or computer system in an office. Digital storage usage is simply the online replication of the popular tangible flash drive device used in offices. Offices can expand the storage service by subscribing for more on a pay-as-you-go basis. Employees today, subscribe to Google drive and other services in order upload, save, retrieve and share administrative files stored online for easy access anytime. This makes it possible for office workers and committee members to access and even upload documents to a platform that can be accessed by designated members anywhere and anytime. Files created and edited through the office suite are saved in the online storage platform. Digital storage usage houses any kind of file such as photos, videos, PDFs, Microsoft Office files, etc.

Cloud computing are those special abilities and capabilities that enable one to manipulate cloud computing technological devices, software and infrastructures to enhance ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g networks, services, storage, applications, and services) that can be rapidly provided with minimal management input or service provider interface (Elekwachi, 2022)

Concept of Employee Productivity

Productivity is an overall measure of the ability to produce a goods or service (Farrell, 2016). Specifically, Foroux (2019) defines productivity as the measure of how specified resources are managed to accomplish timely objectives as stated in terms of quantity and quality. Productivity may also be defined as an index that measures output (goods and services) relative to the input (labor, materials, energy, etc., used to produce the output). Polaris bank will be termed productive if the outputs it get from its investments as well as its employees and executives are good enough when compared to the input made, and vice versa. It then implies that productivity in the banking industry, especially in Polaris banks, is the measure of how well they manage their resources in order to achieve the envisaged output.

Conceptually, employee productivity is a measure of the quantity and quality of work done, considering the cost of the resources used. Employee productivity could also mean the measure of the quantity of total employees' output per unit of inputs in their respective firm. Employee productivity may be hard to measure, but it has a direct effect on a company's profits. An employee is productive if it produces either a given quantity of output with less inputs or a higher output quantity with given inputs. Productivity can also be defined as the relationship between results and the time it takes to accomplish them (Parkins & Hudgins, 2014). Time is often a good denominator since it is a universal measurement, and it is beyond human control. The less time taken to achieve the desired result, the more productive the system. Regardless of the type of production, economic or political system, the definition of productivity remains the same. Thus, though productivity may mean different things to different people, the basic concept is always the relationship between the quantity and quality of goods or services produced and the quantity of resources used to produce them (Parkins & Hudgins, 2014).

Hence, there are two major ways to increase productivity: increase the output or decrease the input. Of course, a similar effect would be seen if both input and output increased, but output increased faster than input; or if input and output decreased, but input decreased faster than output. Organizations have many options for use of this formula, labor productivity, machine productivity, capital productivity, energy productivity, and so on. A productivity ratio may be computed for a single operation, a department, a facility, an organization, or even an entire country. Conversely, employee productivity is an objective concept (Cooper *et al.,* 2018). As an objective concept it can be measured, ideally against a universal standard. As such, organizations can monitor productivity for strategic reasons such as corporate planning, organization improvement, or comparison to competitors. It can also be used for tactical reasons such as project control or controlling performance to budget. Employee productivity is also a scientific concept, and hence can be logically defined and empirically observed (Cooper *et al.,* 2018). This study measures employee productivity in terms of efficiency, timeliness and task accomplishment.

Measures of Employee Productivity

Efficiency

Efficiency means doing things in the right way (Drucker in Ghemawat & Ricart, 2014). Merriam-Webster Dictionary (2019) defines efficiency as the capability to producing desired results with little or no waste (as of time or material). But what does it mean to actually be efficient in how you spend your days? Efficiency means negotiating each day's circumstances while ensuring there is enough time for non-negotiable like sleep and self-care. This nuance is especially important for working professionals. Efficiency does not always mean sitting down at a desk in the morning, whittling down a to-do list, and leaving the office by 5 p.m. It's all about doing your best despite internal and external factors, leaving ample time to take care of yourself (Ghemawat & Ricart, 2014).

In within the context of this study, efficiency is the ability to act or produce effectively with a minimum of waste, expenditure or unnecessary effort. Efficiency focuses more on resources and speed with which organizational goals are achieved. The efficiency of an employee in an organization is determined by how successfully they assign resources in order to achieve goals in the right way. In other words, how well employee of an organization converts input into output, such as products, programmes and services contributes to the success of organization (Love, 2016). Efficiency as a measure of employee productivity is an employee characteristic and relates to the speed and accuracy of an employee at the job task. It closely relates to employee productivity, the more efficient they are the more productive they will be if managed correctly. Employee efficiency is therefore a complex measurable parameter which characterizes an output produced by efforts and by achievements of an employee.

There is no single understanding of this quite wide term, but usually sense of employee efficiency refers to the following conceptions which intersect with each other in certain aspects and usually are used in a mixture as identified by (Park, 2018). 1. Productivity-oriented approach: it stands for objective appraising of the value produced by efforts and talents of the employee and comparing this value against the worth of inputs and resources provided to this employee by the organization. In other words this attitude means determining the level of employee profitability: his or her ability to convert investments into direct profits or some long-term benefits; 2. Objectives-oriented approach: it stands for determining an ability of employee to accomplish certain amount of work (or to achieve some other required objectives) within a given period of time or/and other business resources. This attitude

identifies an employee as efficient one if he or she properly fulfills certain working plans or matches certain productive norms. These plans usually imply certain inbuilt level of profitability; 3. Performance-oriented approach: this attitude means giving an appraisal to a manner which an employee adheres to while carrying out his or her job. In this case the employee efficiency is analyzed by measuring compliance of his/her activities with certain standards or requirements. This attitude states that employee is 100% efficient when he or she strictly follows a predefined procedure or workflow which is considered as efficient (Park, 2018).

Timeliness

Timeliness refers to the speed of dissemination of the products to be produce i.e., the lapse of time between the end of a reference period (or a reference deadline) and dissemination of the product. Timeliness is a provide parameters for how often, or within what time frame, outputs will be delivered. It also measured by turnaround times, waiting or response time either deliver services or production yearly or quarterly.

Timeliness reflects the ability of employee to produce a response within an allotted time determined by the task requirements. Michelle (2017) posits that timeliness and Punctuality is a single entity. For instance, if your employees have differing levels of productivity and timeliness, you'll need to know how to phrase your employee appraisals. In order for the written feedback on your evaluations to have a long-lasting impact, you need to focus on the individual performance factors that determine the quality and quantity of your employees' work. Given that requests can arrive from both data sources and workers, the request scheduler must very carefully balance the requirements of staff requests and their deadlines against the need to keep the standards reflects the source up-to-date. Missing deadlines might mean missing opportunities to be productive operating on stale data might mean making wrong decisions. The scheduler must therefore determine the order in which the incoming source and staff requests are handled so as to maximize the possibility of meeting both timeliness and deadline constraints. Solutions to address the conflict between user request timeliness and data freshness have been developed in the context of real-time databases.

Furthermore, both source and staff requests may specify timeliness requirements and a uniform mechanism for assigning scheduling ordering to both types of requests is needed. Michelle (2017) opined that timeliness of output is the length of time between data availability and the event or phenomenon they describe. Timeliness refers to the speed of numbers availability, whether for dissemination or for further processing, and it is measured with respect to the time lag between the end of the reference period and the release of numbers. The researcher also views timeliness as a key element of figures quality: adequate timeliness corresponds to a situation where policy-makers can take informed decisions in time for achieving the targeted results. In quality assessment, timeliness is often associated with punctuality, which refers to the time lag between the release date of data and the target date announced in some official release chart. Timeliness can be further broken down into timeliness-output and timeliness - source material.

Operationally, Timeliness of output refers to the speed, ability or extent to which employees achieves production results before deadline**.** Johnny (1993) averred that productivity measurement systems should be able to determine changes in the ratio of outputs to inputs (productivity indexes) and in the quality and timelines of outputs. To Myra (1980), with few exceptions, tapers appear to be regarded as afterthoughts, as opposed to be planned end-

products of the processing activity the timeliness of output on tape generally legs far behind that of other forms. There are some basic issues in mapping timeliness solutions to the information collection scenario. Firstly, in the timeliness context, staff requests correspond to production or output (a series of read/write requests), which typically take longer time to be processed (Michelle, 2017). Secondly, source update requests in the timeliness context do not have deadlines associated with them, enabling them to be treated differently from real-time productions. In this case, more fine-grained and timely interaction between the staff and system is needed. Both source and staff requests represent a single operation on a single data source.

Task Accomplishment

Conceptually, task accomplishment is defined as the ability of employees at all levels to effectively carry out assigned targets/tasks within record time or before deadline. Task accomplishment is some strategic contribution to the higher objectives of an organization that could take the form of revenues generated, costs avoided, revenues recovered and percent improvement in some process, smooth operation etc.; something above and beyond the normal day-to-day duties and responsibilities. Now, those daily duties and responsibilities may be tactics that support the strategic contribution (Mattessich, 2015).

Employees at all levels are primarily employed to provide administrative assistance and carry out other office tasks assigned to him/her. Employers and bosses look out for employees that can accomplish any assignment, task or target given to them promptly or early enough before deadline. In fact, an employee that is fund of completing tasks at the last minute or deadline can be said to be underperforming. Employees are expected to be up and doing in preparation of documents, information dissemination, and carrying out their day to day official duties (Nayyar, 2015). Additionally, Ilies and Judge in Nayyar (2015) posit that task accomplishment is an observable and measurable end result having one or more objectives to be achieved within a more or less fixed timeframe. Task accomplishment is the desired result or possible outcome that a person or a system envisions, plans and commits to achieve at the end: a personal or organizational desired end-point in some sort of assumed development. Many people or organizations endeavor to reach goals within a finite time by setting deadlines. It is roughly similar to purpose or aim, the anticipated result which guides reaction, or an end, which is an object, either a physical object or an abstract object, that has intrinsic value.

Task accomplishment is the process of finishing a task on time with and without supervision. It involves planning, testing, tracking, and reporting (Besim, 2015). Task accomplishment can help either individual achieve goals, or groups of individuals collaborate and share knowledge for the accomplishment of collective goals. Tasks are also differentiated by complexity, from low to high. For any job, there are a wide variety of tasks that employees must perform on a daily basis (Motowidlo, 2013). As such, task accomplishment is a key focus of many employees given that “goals are always there in the workplace, if only by default”. Further, research has shown that goal attainment, or the lack thereof, relates to personal well-being. However, most of the work linking task accomplishment to worker well-being has done so using between-person research designs, though there may be important variability in these constructs within a person over time. Accomplishment is found in the successes that create positive end results for more than one person. It aligns itself as a more selfless measure of success in working towards a goal greater than an individual. Things such

as curing disease, winning a team sport and participating in community activities all go under the frame of accomplishment as end results are more communal.

Empirical Review

Tom-West (2023) examined the relationship between workplace technological adoption and organizational productivity of construction companies in Rivers State. The aim of the study was to ascertain how dimensions of workplace technological adoption (task automation, digital communication and virtual reality) relate with measures of organizational productivity of construction firms in Rivers State in terms of quality of output, quantity of output and timeliness of output. The study adopted the cross sectional survey research design. The population of the study consists of One-hundred and Twenty-Four (124) construction firms operating in Rivers State. Due to manageability and accessibility, Forty-Two (42) registered construction firms with more than five years of existence operating in Rivers State are studied. The study adopted a census population which involves using the entire population rather than drawing sample from it. Hence, the study uses the entire population Forty-Two (42) construction firms with Two Hundred and Ten (210) respondents. Structured questionnaire was used as instrument for data collection. Simple percentage was used for the demographic analysis, mean and standard deviation were used for the univariate analysis; Spearman Rank Order Correlation Coefficient was used for the bivariate analysis, while the multivariate analysis was done using Partial Correlation. The findings revealed that a significant positive relationship exists between dimensions of workplace technological adoption such as task automation, digital communication and virtual reality; and measures of productivity such as quality of output, quantity of output and timeliness of output in construction companies in Rivers State. It was also found that organizational adaptability has a moderating impact on the relationship between workplace technological adoption and organizational productivity in construction companies in Rivers State. The study concluded that Construction firms that adopt emerging technology in their workplace stand bigger chance of improving their productivity than others who neglects the relevance of workplace technological adoption in the virtual business world. Consequently, it was recommended amongst others that management of construction firms should regularly assess current infrastructure, identify area of improvement and evaluate emerging technologies that will benefit the organization.

Amirize (2021) examined the influence of office digitalization on work-life balance of employees in broadcast stations in South-South, Nigeria. The objective of the study was to examine how dimensions of office digitalization such as digitalized flexible work system, social media based interactivity, and network virtualization influence measures of work-life balance such as socio-personal functions satisfaction, official time maximization, and ample rest/leisure. The explanatory cross sectional survey research design was adopted for this study. Using the Krejcie and Morgan Sample Size Determination Table of 1970, sample size of 328 respondents was drawn from a population of 1819 staff of broadcast stations in South-South Region of Nigeria. Questionnaire was used as instrument for data collection after face-validation by the supervisors, having ascertained the reliability of the instrument at 0.73 using Cronbach alpha. Out of 412 copies of the questionnaire administered, a total 350 were retrieved. Arithmetic mean and standard deviation were used for univariate analysis; Spearman Rank Order Correlation was used for the bivariate analysis, while Partial Correlation was applied for the multivariate analysis.The findings revealed that dimensions of office digitalization such as digitalized flexible work system, social media based interactivity and network virtualization have significant positive influence on work-life balance of employees. It was also found that managerial style significantly moderates the relationship

between office digitalization and work-life balance. The study concluded that office digitalization is a necessary workplace condition for the achievement of work-life balance of employees broadcast stations in South-South, Nigeria. The research therefore, recommended that management should invest more in digital infrastructure and e-capacity development to enable workers strike a balance between work and personal functions in the ever busy world of today and the future.

Jenic and Lamovsek (2019) examined how digitalization affects the workplace. The work focus specifically on how digitalization influences the measures of the workplace such as job satisfaction, work/life balance, and worker autonomy. It was suggest that digitalization improves job satisfaction, blurs work/life balance, and promotes more worker autonomy. This research is based on answers collected with an online survey of 98 individual employees, working professionals across industries and disciplines. We analyze gathered data with one-sample t-tests and support all three hypotheses. Findings from the research can help managers better understand the importance and the effects of the digitalization. Because digitalization at work brings challenges and as well opportunities, it is important for managers to understand them completely in order to eliminate the risks and increase the favorable effects. The study recommended that organizations should have their offices well sophisticated with digital technologies and devices to help lessen work burden of employees, so they can enjoy work-life balance.

Youngki and Nilesh (2016) investigated the complexity of organizational digitization and firm Performance: A Set-Theoretic Configurational Approach. This study investigates the causal complexity and diversity of the relationship between organizational digitization and firm performance. Digitization defined as the penetration of IT in the organization is a complex organizational phenomenon in that it involves changes in organizational strategy, business processes, organizational knowledge and eventually the whole socio-technical organizational system, thus influencing organizational performance. The study adopted a holistic configuration theory lens and a set-theoretic method, fuzzy-set qualitative comparative analysis (fsQCA) to explain how such interdependent relationships among digitization and organizational strategic elements result in high firm performance. The study applied the set-theoretic method to a longitudinal field data set collected from 1816 Canadian firms. It was found that multiple equifinal configurations results to high performance. By comparing the similarities and differences within and between the configurations, we could explain the multifaceted roles that digitization plays in achieving high performance together with organizational strategies.

Odu (2021) examined the influence of workplace virtual environment on organizational health of tertiary institutions in South-South, Nigeria. The objective of the study was to examine how dimensions of workplace virtual environment such as virtual computing system, virtual interfacing system, network virtualization system and local office information system interact with measures of organizational health such as communication health, institutional innovativeness, learning and research output, and community service health. The explanatory cross sectional survey research design was adopted for this study. The population of this study consisted of one hundred and three (103) tertiary institutions across the six (6) states in the South-South Region of Nigeria. The entire population of 103 tertiary institutions was used as the study sample with a total of 412 institutional managers as respondents. Thus, this study is a census research which involves using the entire population rather than drawing a sample from it. The collection of primary data was done using a questionnaire designed by the researcher. Structured questionnaire was used as instrument for data collection after face-validation. Cronbach alpha was used to test the internal consistency of the instrument. Out of

412 copies of the questionnaire administered, a total 350 were retrieved. Arithmetic mean and standard deviation was used for univariate analysis while bivariate analysis was done using Spearman Rank Order Correction, while Partial Correlation was applied for the multivariate analysis.The findings revealed that there is a significant positive influence of dimensions of workplace virtual environment such as virtual computing system, virtual interfacing system, network virtualization system and local office information system on measures of organizational health like communication health, institutional innovativeness, learning and research output and community health. Financial resource availability has a significant moderating influence in the relationship between workplace virtual environment and organizational health of tertiary institutions in South-South, Nigeria The study concluded that workplace virtual environment is a major determinant of the organizational health of tertiary institutions in South-South, Nigeria. The research therefore, recommended that management should establish and constantly upgrade institutional information and communication infrastructure in order to enhance the quality of organizational communication, learning and research output and general performance.

Knowledge Gap

There are several research efforts targeted towards exposing how Digital storage/ digitalization correlates with organizational/employee outcome. For instance, Tom-West (2023) examined the relationship between digital storage workplace technological adoption and organizational productivity of construction companies in Rivers State; Amirize (2021) examined the influence of office digitalization on work-life balance of employees in broadcast stations in South-South, Nigeria; Jenic and Lamovsek (2019) examined how digital storage enhanced the employer productivityYoungki and Nilesh (2016) investigated the complexity of organizational digitization and firm Performance: A Set-Theoretic Configurational Approach; Odu (2021) examined the influence of workplace virtual environment on organizational health of tertiary institutions in South-South, Nigeria. Elekwachi H N(2022) examined the relationship between E-Document storage and front Desk Officers Job performance of Hotels in Port Harcourt.

METHOD

The explanatory cross-sectional survey research design was adopted for this study. The study was conducted across different manufacturing firms at the same time which makes it a survey study; it involves the test of hypotheses which is explanatory in nature. The population of the study was Eight Hundred and Thirty-Two (832) employees of thirty (30) registered manufacturing firms currently operating in Port Harcourt. Taro Yamene Sample was used to obtain a sample of 270 respondents from a population of 832. Considering the disparity in the number of employees across the manufacturing firms, Bowley's (1960) Population Appropriation Formula was applied to determine the sample unit for each of the firm in Port Harcourt. Structured questionnaire was used as instrument for data collection after validation by other experts in Office and Information Management. Their comments were used to validate the questionnaire items. Cronbach alpha was used to test the reliability of the instrument. Cronbach alpha was used to test the reliability of the instrument. Out of 270 copies of the questionnaire administered, a total of 240 copies (representing 88%) were retrieved. Mean and standard deviation were used for the univariate analysis; Spearman Rank Order Correlation Coefficient was used for the bivariate analysis. Spearman Rank Order Correlation Coefficient was used in testing the hypotheses one to three.

Results

Ho_1: There is no significant relationship between digit storage and employees' efficiency in manufacturing firms in Port Harcourt.

Ho_2: There is no significant relationship between digital storage and employees' timeliness in manufacturing firms in Port Harcourt.

Ho_3: There is no significant relationship between digital storage and employees' task accomplishment in manufacturing firms in Port Harcourt.

Test of Hypotheses

Ho_1: There is no significant relationship between digital Storage and employees' efficiency in Manufacturing Firms in Port Harcourt.

Table shows Correlations of Digital Storage and Efficiency

			Digital Storage	Efficiency
Spearman's rho	Digital Storage	Correlation Coefficient	1.000	**.858****
		Sig. (2-tailed)	.	.000
		N	240	240
	Efficiency	Correlation Coefficient	**.858****	1.000
		Sig. (2-tailed)	.000	.
		N	240	240

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Survey Data, 2024.

Table above shows r value of 0.858 at a significance level of 0.00 which is less than the chosen alpha level of 0.05 for the hypothesis relating digital storage and efficiency. Since the significance value is less than the alpha level of 0.05, the null hypothesis (Ho_1) which states that there is no significant relationship between digital communication and employees' efficiency in Manufacturing Firms in Port Harcourt was rejected and the alternate hypothesis (Ha_1) was accepted. This implies that there is a very strong positive relationship between digital communication and employees' efficiency in Manufacturing Firms in Port Harcourt.

Ho_2: There is no significant relationship between digital collaboration and employees' timeliness in manufacturing firms in Port Harcourt.

Table shows: Correlations of Digital storage and Timeliness

			Digital	Timeliness
Spearman's rho	Digital Storage	Correlation Coefficient	1.000	**.717****
		Sig. (2-tailed)	.	.000
		N	240	240
	Timeliness	Correlation Coefficient	**.717****	1.000
		Sig. (2-tailed)	.000	.
		N	240	240

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Survey Data, 2024.

The above shows r value of 0.717 at a significance level of 0.00 which is less than the chosen alpha level of 0.05 for the hypothesis relating digital collaboration and timeliness. Since the significance value is less than the alpha level of 0.05, the null hypothesis (Ho_2) which states that there is no significant relationship between digital storage and employees' timeliness in Manufacturing Firms in Port Harcourt was rejected and the alternate hypothesis (Ha_2) was accepted. This implies that there is a strong positive relationship between records digital storage and employees' timeliness in Manufacturing Firms in Port Harcourt.

Ho_3: There is no significant relationship between digital storage and employees' task accomplishment in Manufacturing Firms in Port Harcourt.

Correlations of Digital Storage and Task Accomplishment

			Digital Storage	Task Accomplishment
Spearman's rho	Digital Storage	Correlation Coefficient	1.000	**.350****
		Sig. (2-tailed)	.	.000
		N	240	240
	Task Accomplishment	Correlation Coefficient	**.350****	1.000
		Sig. (2-tailed)	.000	.
		N	240	240

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Survey Data, 2024.

Table shows r value of 0.350 at significance value of 0.00 which is less than the chosen alpha level of 0.05 for the hypothesis relating digital storage and task accomplishment. Since the significant value is less than the alpha level of 0.05, the null hypothesis (Ho_3) which states that there is no significant relationship between digital storage and employees' task accomplishment in Manufacturing Firms in Port Harcourt was rejected and the alternative hypothesis (Ha_3) was accepted. This implies that there is a moderate positive relationship between digital storage and employees' task accomplishment in Manufacturing Firms in Port Harcourt.

Summary of Findings

Based on the analyses of data and results, the following findings were made:

1. There is a very strong positive relationship between digital storage and employees' efficiency in Manufacturing Firms in Port Harcourt.
2. There is a strong positive relationship between records digital Storage and employees' timeliness in Manufacturing Firms in Port Harcourt.
3. There is a moderate positive relationship between digital storage and employees' task accomplishment in Manufacturing Firms in Port Harcourt.

Discussion of Findings

The findings of this study are discussed under the following headings:

Digital Storage and Employees' Efficiency

The test of hypothesis one revealed that there is a very strong positive relationship between digital Storage and employees' efficiency in Manufacturing Firms in Port Harcourt. This implies that improvement of digital Storage in terms social media, emailing, web conferencing etc. brings about an enhancement of employee productivity. Digital communication, such as email, instant messaging, and video conferencing, allows for faster and more efficient storage.

Digital Storage and Employees' Timeliness

The test of hypothesis two revealed that there is a strong positive relationship between records digital storage and employees' timeliness in Manufacturing Firms in Port Harcourt. This is because it influences various aspects of their workflow and productivity. Instant messaging, video conferencing, and collaborative platforms facilitate immediate communication, allowing for quicker decision-making and problem-solving. Employees no longer need to wait for in-person meetings or email responses, enabling them to proceed with their tasks more promptly (Yulianto & Layona, 2022).

In line with the above, Roy (2012) found that digital collaboration tools integrate various functions as well as creating a seamless workflow that reduces the time needed to transition between different stages of production. Automated notifications and reminders help employees stay on top of their schedules and deadlines, reducing the chances of tasks being delayed. Digital tools facilitate better coordination among different departments, such as engineering, production, and quality control, ensuring that everyone is aligned and tasks are completed on time (Quet & Dahdah, 2020). Teams spread across different locations can collaborate effectively, minimizing delays due to time zone differences and geographical separation.

Also, Susanti and Suyudi (2020) found that digital storage space platforms enable real-time monitoring of progress and performance, allowing for immediate adjustments and interventions when necessary. Digital platforms offer on-demand training resources, ensuring employees can quickly acquire the skills they need without waiting for scheduled training sessions. Digital storage device allow for rapid adaptation to changes in schedules, production plans, and priorities, ensuring employees can respond to shifts without significant delays. Thomas and Bhat (2022) revealed that digital storage enhances employees' timeliness by streamlining communication, improving task management, facilitating efficient workflows, and enabling quick problem-solving and decision-making. This leads to more efficient operations, reduced downtime, and the ability to meet deadlines more consistently in manufacturing firms.

Digital Storage and Employees' Task Accomplishment

The test of hypothesis three revealed that there is a moderate positive relationship between digital storage and employees' task accomplishment in Manufacturing Firms in Port Harcourt. This implies that the adoption and usage of tools such as Google drive, Onedrive and database management brings about employees' timeliness of production. Unlike the traditional tangible flash drive which requires being carried about with the risk of loss, theft, and misplacement, digital storage does not require carrying about, since it is a service-based storage facility. With the password, office employee can create, upload, download and access files on any device and anytime beyond the physical office space. As revealed by Clement (2018), the use of digital storage provides more security for organizational data and

information than the traditional practice of saving administrative files in desktop computers, laptops, external hard stick, memory stick, memory card, CD ROM, and other tangible devices. The reason is simple: mobile devices are highly to data security risks like virus attack, theft, fire and weather attack, fall, and misplacement.

Odu (2019) revealed that digital storage makes it easier for administrative committees and colleagues to share relevant files in real time even when they are geographically dispersed. Damage or loss of office devices does not truncate with access to information stored in digital storage usage since such data are not housed in the physical computer device. Administrative information such notice of meetings, minutes of meetings, list compilation, memos, etc. are easily prepared and shared to designated users with the help of digital storage. This makes work to flow smoothly. Digital storage usage as a file storage and synchronization service allows users to store files on their servers, synchronize files across devices, and share files. Such files can also be printed virtually too thereby enhancing routine jobs.

Conclusion

Based on the analyses of data and discussion of findings, the study concluded that there is a significant positive relationship between digital storage and employee productivity in manufacturing firms in Port Harcourt. By integrating advanced digital storage tools, administrative apps and technologies, firms can streamline operations, improve decision-making, and foster collaboration across departments and geographical boundaries. These improvements lead to significant gains in efficiency, quality, and speed of production.

Recommendations

Based on the findings, the following recommendations were made:

1. Management of manufacturing firms should come up with policies that will make the use of email and other online platforms compulsory as means of managerial storage communication across all levels in their organization.
2. Management of manufacturing firms should regularly assess current infrastructure, identify area of improvement and evaluate emerging technologies that will benefit their organization.
3. Employees of manufacturing firms should take it upon themselves to personally acquire basic cloud skills to enable them work remotely for optimal performance and productivity.

REFERENCES

Akinreti, Q. O., Ojo, T. O., Odegbenle, L., Owolabi, R. O., Tsebee, A. K., Goke, R., Jegede, O. & Nwaolikpe, O. N. (2018). The challenges of digitization on the broadcasting media in Nigeria. *Arabian Journal of Business and Management Review*, *3*(5), 89-98.

Amancio, B. (2018). *What is digital transformation, digitalization, and digitization*? https://medium.com/api-product-management/what-is-digital-transformation-digitalization-and-digitization-c76277ffbdd6

Amirize, C. (2021). The influence of office digitalization on work-life balance of employees in broadcast stations in South-South, Nigeria. Unpublished Ph.D Thesis, Ignatius Ajuru University of Education Port Harcourt.

Besim, H. (2015). The impact of increased employee retention on performance in a customer contact centre. *Manufacturing and Service Operation Management, 8*(3), 235-252.

Buyya U. I., Rob, P., & Coronel, C. (2008). *Database systems: Design, implementation and management (4th ed.).* Cambridge Publishing.

Cerere, S. J. (2013). Computer applications to office management. *Kenya Institute of Administration, 18*(5), 23-32.

Clement, R. (2018). *Fundamentals of administrative science.* PTK Publications.

Cooper, W. W., Seiford, L. M., & Zhu. J. (2018). *Data envelopment analysis: history, models and interpretations.* Kluwer Academic Press.

Dixon, J. A. (2019). *7 ways to communicate with digital skills.* https://www.digital-communications

Edward, T. P. (2018). *The digital workplace: Think, share, and do.* https://www2.del oitte.com/content/dam/Deloitte/mx/Documents/human-capital/The_digital_workplace.pdf

Elekwachi, H.N. (2022) Improving Employee Digital Capabilities in Nigerian Organizations: challenges and prospects. *International Journal of Marketing Management and Accounting research,* 10(1), 135-146.

Elekwachi, H.N. (2022) E-Document Storage and Front Desk Officers' Job performance of Hotels in Port Harcourt. *BW Academic Journal of Management and Accounting Innovative journal,* 1(1), 6. Retrieved from https://bwjournal.org/index.php/bsjournal/artice/view/736

Farrell, M. J. (2016). The measurement of productive efficiency. *Journal of the Royal Statistical Society, 5*(2), 253-281.

Foroux, D. (2019). *What is productivity? A definition & proven ways to improve it.* https://dariusforoux.com/what-is-productivity/

Ghemawat, P. & Ricart, J. E. (2014), The organizational tension between static and dynamic efficiency. *Strategic Management Journal*, *4*(2), 1-23.

Howard, P., Rainie, L. & Jones, S. (2017). *Days and nights on the internet*. Blackwell Publishers.

Jacobson, M. (2016). *Elements of organizational records management*. Arms Prints.

Jenic, L. & Lamovsek, A. (2019). How digitalization changes the workplace. *Dynamic Relationships Management Journal,8*(1), 12-23.

Johnny, Y. (1993). *Information technology and sustained competitive advantage*: A resource-based analysis. *MIS Quarterly*, 487–505.

Joseph, G. (2018). *What is Google drive and how does it work? – A 2019 guide*. https://w ww .cloudwards.net/how-does-google-drive-work/

Loredana, P. (2016). The impact of digitalization on business communication. *SEA-Practical Application of Science,4*(2), 319-325.

Love, A. J. (2016). Internal evaluation: Building organizations from within. *Sage Publications.*

Mattessich, R. (2015). Budgeting models and system simulation. *The Accounting Review, 36*(3), 384–397.

Michelle, P. I. (2017). Assessing asymmetric effects in the formation of employee satisfaction. *Tourism Management Journal, 28,*1093–1103.

Microsoft (2019). *Audio conferencing.* https://docs.microsoft.com/en-us/microsoftteams/audio-conferencing-in-office-365

Motowildo, R. N., & Borman, M. C. (2013). Microversus small family businesses: A multinational analysis. *Journal of Small Business and Enterprise Development*, *22*(3), 380–396.

Myra, U. (1980). How information gives you competitive advantage. *Harvard Business Review, 63*(4), 149-160.

Nayyar, H. (2015). *Performance management: The new realities.* Institute of Personnel and Development.

Odu, S. (2019). *Information security in organizations: Issues, challenges, and the way forward.* Unpublished Ph.D Course Seminar Paper, Department of Office and Information Management, Ignatius Ajuru University of Education.

Odu, S. (2021). *Workplace virtual environment on organizational health of tertiary institutions in South-South, Nigeria*. Unpublished Ph.DThesis, Department of Office and Information Management, Ignatius Ajuru University of Education.

Park, K. H. (2018). *What is employee efficiency?* http://www.taskmanagementguide.com/glossary/what-is-employee-efficiency-.php

Parkins, R. S. & Hudgins, S.C. (2014). *Bank Management & Financial Services (6th Edition).* McGraw-Hill.

Pranjali, G. (2017). *Digital transformation and its impact on organizations' human resource management.* IOR and Stakeholder Management, MCM, School of Communication and Information, Rutgers University.

Quet, M., & Dahdah, M. A. (2020). Technologies without borders? The digitization of society in a postcolonial world. *Science, Technology and Society*, *25*(3), 363-367.

Roy, S. R. (2012). Digital mastery: The skills needed for effective virtual leadership. *International Journal of e-Collaboration (IJeC)*, *8*(3), 56-66.

Sandeep, R. (2019). What is digitalization? https://www. quora.com/What-is-Digitalization-1

Susanti, D., & Suyudi, M. (2020). WhatsApp usage training in marketing home-based products for Benzo Amanah Cooperative Members Bandung Indonesia. *International Journal of Research in Community Services*, *1*(3), 29-34.

Thomas, L., & Bhat, S. (2022). A comprehensive overview of telegram services-a case study. *International Journal of Case Studies in Business, IT and Education (IJCSBE)*, *6*(1), 288-301.

Tom-West, P. O. (2023). *The relationship between workplace technological adoption and organizational productivity of construction companies in Rivers State*. Unpublished M.Sc Dissertation, Ignatius Ajuru University of Education Port Harcourt.

Youngki, M. & Nilesh, P. F. (2016). The complexity of organizational digitization and firm performance: A set-theoretic configurational approach. *International Journal of Innovative Research in Science, Engineering and Technology*, *2*(2), 527-528.

Yulianto, B., & Layona, R. (2022). Web and iOS-based instant messaging (im) application for educational institution with limited internet access regions. In *2022 8th International Conference on Education and Technology (ICET)*, 65-69.