Evaluating the Impact of OTM Skills on Development Outcomes of Postgraduates in OTM in the Southwestern Region of Nigeria

[1]Oluwasina, B. R., [2]Adekoya, O. J. and [3]Mufutau, S. A.
[1]Department of Business Education, Tai Solarin Federal University of Education, Ijebu-Ode, Ogun State.
[2]Department of Business and Entrepreneurship, Lagos State University of Education, Ijanikin, Nigeria
[3]Department of Business Education, Federal University of Education, Kontagora, Niger State
Corresponding email: *oluwasinabr@tasued.edu.ng*

Abstract
This study examines the impact of Office Technology and Management (OTM) skills on economic advancement in South-Western Nigeria by assessing their distribution and how variations in skill levels The study operates within the framework of human capital, digital skills and innovation, employing a cross-sectional ex post facto design using data from 300 postgraduates of OTM, selected using multi-stage sampling from universities in 6 states. Data were collected through a validated and reliable questionnaire on KDPS, ICTS, COMS, EPROD, EMPINC and IDPATH, and were analyzed using descriptive statistics on the skill levels, one-way ANOVA for group differences and Structural Equation Modeling (SEM) to measure the direct and indirect relationships of the variables hypothesized. Findings indicate that OTM skills are generally high among postgraduate students and exert a moderate but significant positive influence on productive behaviour and innovation pathways ($\beta = 0.46$, $z = 3.30$, $p = 0.001$; $\beta = 0.39$, $z = 2.88$, $p = 0.004$). Innovation pathways were found to strongly promote economic development outcomes ($\beta = 0.41$, $z = 3.09$, $p = 0.002$). Additionally, OTM skills demonstrated a moderate positive influence on employability and future income prospects ($\beta = 0.33$, $z = 2.49$, $p = 0.013$), as well as a small but statistically significant direct effect on economic development outcomes ($\beta = 0.21$, $z = 1.99$, $p = 0.047$). These results suggest a multi-channel mechanism through which OTM skills enhance productivity, innovation, and employability to drive economic development.. The research also concludes that OTM skills are prevalent and strategically important concerning economic development, making them a key area in the skills needed for development. This suggests the importance of helping postgraduate students OTM skills in a way that also would strengthen development. The research advocates for the expansion of competency-based OTM curricula, especially in the areas of digital and innovation competencies, along with the strengthening of institutional–industry connections, in order to improve the translation of OTM competencies into productivity, employability and innovation outcomes.

Keywords: Office Technology and Management skills, digital competence, economic development outcomes, employability, innovation pathways.

1. Introduction
This study seeks to analyze the impact of the competencies acquired in Office Technology and Management on Economic Development. This is important due to the dependence of these economies on the usage of technologies in the digital work and the administrative efficiencies (ILO, 2022; UNESCO, 2023). In the South-West of Nigeria, the academic and the youth unemployment, the inconsistencies in the labour market, and the shortfalls in productivity make the enhancement of workforce competencies through the teaching and acquisition of specific skills of Office Technology and Management critical for the individuals, firms and governments pursuing a competitive advantage (Adewumi & Ajayi, 2022; Olatunji & Fajobi, 2021). The measurable economic

development outcomes through productivity, employability, and innovation and institutional performance show the notable contributions these development outcomes pose in poverty alleviation and the performance enhancement of the organizations and the transformation of the public organizations (Akinwale & Shobayo, 2021). In the recently concluded study, digital disruptions and automations and hybrid working models, the need to investigate the impact of OTM skills on socio-economic outcome and on developing countries is important as the socio-economic outcomes of these countries is low (Oladipo & Ogunyemi, 2022).

The employability aspects of OTM skills, along with better organizational communication, efficiency through ICT, and enhanced administrative decision-making, affect development outcomes (Adegoke & Hassan, 2021). The Human Capital Theory and Skills Acquisition Theory state that competency investment leads to overall productivity improvements (Schultz 1961). The growing body of empirical evidence that administrative and digital skills correlate with

increased labor market participation and economic development confirms the theories (Okafor & Chukwu, 2021; Aremu & Oni, 2022). Socio-Technical Systems Theory, like the above, posits that the synergy of human skills and technology, and their synergy, is crucial to achieving desired outcomes (Awosusi & Lawal, 2022) and confirms the OTM skills importance in the modern workplace.

OTM students in South-West Nigeria have low digital literacy, low levels of administrative skills, and low levels of modern office technology exposure, contrasting with students in high-performing regions like Asia and Europe, where skills utilization exceeds 70% (ILO, 2023). Regional numbers indicate underemployment and low productivity levels, while the demand for skills in technology continues to rise (Olatunji & Fajobi, 2021). The current state of affairs calls for the evaluation of OTM skills to improve economic development in the region. In the region, outcomes of economic development are still constrained as a result of a combination of the following issues: the workforce lacks skills, there are insufficient digital competencies, there are gaps of modern administrative tech applications, and there is a result of these issues of productivity, gaps in employability, and organizational inefficiency (Adewumi & Ajayi, 2022). Workplace performance indicators remain low as the demand for OTM skills (office technology, digital communication, record management) rises, resulting in underemployment and poverty in many socio-economic areas of the region (World Bank, 2022). There have been many efforts to address the challenges through government reforms, updating curricula, and digital skills initiatives, but to no avail as a result of factors in implementation, insufficient tech, poor or no alignment of the training with the labour market (NBTE, 2021). Potential to strengthen development outcomes exist with OTM skills, but their empirical examination is still limited, underutilized, or poorly measured in existing works, leaving many relevant aspects unaddressed (Aremu & Oni, 2022).

The predictive value of certain competencies on productivity has already been established, particularly in single country studies in developed countries, as well as in some developing country studies, although the relationships are more nuanced (Ogunyemi & Daramola, 2022). The recently conducted studies have utilized ANOVA, regression, SEM, and interaction effect analyses to evaluate the impacts of access to ICT or institutional support as moderators (Bello & Arinze, 2023) as opposed to the descriptive approaches of earlier studies. Some of the ongoing issues include the contradiction in the empirical evidence as well as the lack of theorization, particularly in relation to postgraduate OTM students, who are essentially the future workforce of the country (Onifade & Fagbemi, 2023). This study aims to fill these gaps by using a set of descriptive, ANOVA, and SEM to examine the extent to which the OTM skills of postgraduate students in South-West Nigeria contribute to the economic outcomes of the region, framed within the context of current literature on digital economy. The targeted objectives of this research are to:

i. Assess and detail the current level of OTM skills possessed by OTM postgraduate students within South-West Nigeria.
ii. Analyze the impact of differing levels of OTM skills on the economic development outcomes of these OTM postgraduate students.
iii. Identify the mechanisms of influence that OTM skills have on the economic development outcomes.

By demonstrating the intricate ways in which OTM skills improve the results of economic growth, policymakers, educators, employers, and curriculum designers\, can utilize the information from this study in a more effective manner. It aids in the focused skills enhancement, workforce readiness, policy development, and overall productivity and digital skills of the future professions. This study helps in understanding the mechanisms through which OTM skills contribute to economic development and how this information can be used to assist policymakers, educators, employers, and curriculum planners.

2. Literature Review
2.1 Conceptual Review
OTM skills refer to the combination of skills which allow for the productive functioning of individuals in contemporary workplaces where office operations are predominantly digital and require the use of integrated systems for information and communication (Adegoke & Hassan, 2021; Bello & Arinze, 2023). For OTM skills, researchers describe the paradigm as interdisciplinary as it combines elements from business education, ICT education, administrative sciences, information sciences, and organizational communication. The area of Digital Office Technology Management (OTM) Skills encompasses specific knowledge and abilities, including and not limited to, technical, cognitive, and interpersonal skills, needed to effectively manage Digital Office Operations, document and information processing, managerial assistance, and organizational workflow and activities (Ajayi & Adewumi, 2022). Some scholars argue that OTM Skills should be primarily empahsised through the lens of Information and Communication Technology (ICT) proficiency, including knowledge and skills related to the use of Microsoft Office applications, email and other digital communication tools, document and file management systems, collaborative work platforms, and other automated office equipment and technologies; suggesting that, in all knowledge-based economies, technological proficiency is at the core of most administrative work (OECD, 2023). Other scholars take a broader more human capital approach and propose that the OTM Skills domain includes higher order analytical

cognitive skills, such as problem solving, information processing, and decision making that are essential in the productivity of IT and digital tool utilization (Aremu & Oni, 2022). In all the above mentioned disciplinary frameworks and work, the common thread that integrates arguments and discussion is that OTM Skills, as a multidimensional construct, are not static; OTM Skills are adaptive to technological advancements, workplace configurations, and the digital and technological environment to meet the needs and demands of a global system. While offices shift toward the automation of processes and the cloud, as well as the integration of hybrid workplace systems, OTM skills are increasingly the result of a combination of digital literacy, communicative sophistication, process management, and flexibility (Brynjolfsson & McAfee, 2014; Autor, 2015). Consequently, OTM skills define a multidisciplinary skills set framework by which individuals, mainly OTM postgraduate students, contribute to the progress of the economy by improving productivity and innovation, organisational efficiency, and creating new employment opportunities.

Contrarily, the benefits from economic development point to the observable socio-economic advantages experienced by people, entities, and communities when there is sustained enhancement in their productivity, income, jobs, institutional outcomes, and welfare - all of which brings positive changes to their well-being (World Bank, 2022; Akinwale & Shobayo, 2021). Beyond socio-economic advancement, these benefits also include greater changes on other socio-economic dimensions such as improvements to the standards of living, innovation, technology, formation of skilled and advanced human resources, and better socio-economic structures (Kuznets, 1955; Becker, 1993). Scholars consider the the outcomes of economic development to have micro and macro dimensions at the same time. At the individual and organizational levels, we are talking about personal and organizational accomplishments such as enhanced employability, increased productivity, improved earnings, enhanced innovative potential, increased efficiency in the workplace, and successful entrepreneurial endeavors (Ogunyemi and Daramola 2022; Musa and Olowu 2023). In a more systemic understanding, the focus is on the improved competitiveness of the nation, the reduction of poverty, the improved quality of institutions, the diffusion of technology, and the increased socio-economic development (ILO 2023; OECD 2023). Some authors explain the outcomes of economic development using the human-capital model, claiming that the enhancement of individual skills, knowledge, and competencies results in increased productivity with concomitant broader economic benefits (Schultz 1961; Becker 1993). Still others explain it using the socio-institutional model, describing how the quality of governance, organizational design, the structure of the labor market, and the education system determine the pathways through which the skills of people are put into productive use for socio-economic development

(World Bank 2022; ACET 2021). Therefore, the outcomes of socio-economic development are a complex of the results that are the outcomes of the effective use of knowledge, skills, technology and institutions in a society, the benefits of which are multifaceted in terms of improved livelihoods, and organizational productivity.

2.2. Theoretical Review
Within the framework of the Human Capital Theory, the construction of OTM skills, in principle, should facilitate a chain of economically beneficial outcomes. The pivotal argument of Schultz and Becker is that education and training should be perceived as investments that add to the productive capacity of individual workers, which, in turn, increases their individual earnings and contributes to the overall growth of the economy (Schultz, 1961; Becker, 1964). Subsequent work demonstrates that education and skills to foster productivity by performing tasks more efficiently, innovating, and adapting to changes; thus, enhancing a company's competitivity and a country's growth (Becker, 1993). In the Case of Southern Nigeria, the implications of this line of thinking is that the investment in the digital, administrative, and communication competencies of OTM postgraduate students should lead more easily to higher employment prospects, greater efficiency in the workplace, and, consequently, a better performance of the economy of the region, particularly in situations where there are limited formal employment opportunities and a significant shortage of skills (Ademiluyi, 2021). Skills Focusing on social and technical subsystems in context provides a systems perspective as described by Socio-Technical Systems Theory. Performance of an organisation from this perspective is a function of simultaneously optimising both constituent subsystems (Trist & Bamforth, 1951; Ropohl, 1999). From this position, procedural and technological OTM (office technology management) skills are positively correlated to the ability of employees to interface with work and the designs, structures and culture of the organisation to use fully the technological systems (Trist, 1981; Fox, 1990). The situation of digital skills and productivity in Nigeria offers empirical evidence to support this stream of thought. Where institutions put in place the right infrastructure, software and processes, productivity and innovation, enhanced employability and administrative skills are reported to be higher; in contrast, weak infrastructure has been reported to hamper productivity and innovation (Adoption & Utilization of Digital Skills, 2024; ACET, 2021). In the context of South-West Nigeria, the theory indicates that the purely building of OTM skills is unlikely to be successful in isolation from an upgrading of workplaces, curricula, and policy systems to complement the effective use of these skills.

2.3. Empirical Review
In both Nigeria and other settings, empirical research regarding OTM skills, employability and economic development outcomes is organized around three focal

points: the skills that are in demand, the connection between the skills, employability, or economic development outcomes, and the impact of education or other policy initiatives intended to enhance these skills. One such research examines the gaps in determining which specific office and digital skills are most relevant. A South-Western Nigeria case study by Ademiluyi (2021) that surveyed relevant stakeholders including employers and educators outlined skills needed by OTM graduates to secure desirable employment and entrepreneurial opportunities. It was determined that there are gaps between the skills needed for advanced ICT and the other competencies that are essential for both paid employment and entrepreneurial (self) employment. In addition, problem solving and entrepreneurial skills are critical. In broad terms, Oluwalola (2021) also studied office skills that enable OTM graduates to excel in their roles and used descriptive surveys with graduates and employers. He found that keyboarding, information management and other ICT skills are essential and greatly missing among graduates.

Mirroring the investigation of Eze and Ononye (2024), examining the managers of small-scale enterprises in Anambra state, the literature shows a significant demand from employers of graduates from OTM OTM and Anambra state for ICT, communication, and interpersonal skills, with statistically significant gaps between importance and possession of such skills. This is corroborated in the literature from business education and OTM, suggesting that skills training fosters graduates' economic viability in contexts with constricted salaried employment opportunities (Skills in OTM Programme, 2021; Building Business Education Curriculum Content, 2020). While ACET (2021) focuses on skill OTM graduates as a 'panacea' for economic viability in Nigeria, he emphasizes the potential of ICT and office management skills in the establishment of micro-enterprises, freelancing, and productivity enhancement in small and medium enterprises (SMEs). Oduma and Ezeafulukwe (2023) studied the office skills graduates from OTM programmes ought to possess for enhancing productivity in business organisations, using a descriptive survey approach on polytechnic instructors in the South South Formation of Nigeria. The outcomes indicate that instructors' perceptions on the workplace order of their graduates pinpoint advanced ICT, communication, and problem-solving skills as pivotal for organisational productivity, a demand that has implications for the theory of human capital. The latest studies have made greater emphasis on the inclusion of digital skills within the workplace.

Use of survey data and inferential statistics from VerivAfrica (2023) pertaining to the Information and Management Technology competencies of graduates within the OTM department, determined that graduates' knowledge of Basic Office Applications and Online Collaborative Tools and Information Management were significantly pivotal to the perceived global employability of graduates, although there are considerable deficiencies when it comes to advanced digital competencies. Digital competencies deficiencies and the education-labour mismatches are believed to be the primary contributors to the rising concern of unemployment and underemployment of graduates within Nigeria's (higher) education system. ACET (2021) on TVET in Africa, together with UNESCO on the Transformations of Technical and Vocational Education and the ADEA Skills Development ToolKit, demonstrate that all TVET graduates, particularly those in business and office studies, are employable when there is intentional inclusion of the relevant competencies and practical instruction. It further suggests that such intentionality with regards to skills for employability within courses amplifies students' perceived skills and confidence regarding the school-to-work transition. There exists in Nigeria analytical investigations that demonstrate a mixed, however, encouraging result to interventions.

Research employing a quantitative survey design with inferential analysis involving postgraduate students of business education entrepreneurship functions within the OTM entrepreneurship education framework in South-West universities suggested that OTM competencies and entrepreneurship responsibilities involve readiness and structural self-employment in venture initiation. With infrastructural challenges, this study and that of the entrepreneurship education employability skills of university students within Uyo and Lagos State, were found to confirm that employability skills competencies were enhanced with well-structured entrepreneurship and business education curricula, limited uneven implementation of such curricula, and the weak alignment of curricula systems with industry requirements. Policy implementation recognition of the skills-development nexus is illustrated by TechAfricaNews (2025) with the self-reliance and employability 'Upskill for Employability' national digital skills programme, yet limited access, scaling, and sustainability are challenges from the available evaluations. Digital and office skills are emphasized by Nigerian commentaries and institutional reports as essential for graduate employability, leading universities and employers to advocate for greater digital integration into the processes of learning and working, as is the case with OTM competencies.

3. Methodology
The study adopted a quantitative, cross-sectional survey design built on a post-facto logic to investigate and analyze naturally occurring variations in OTM skills and related economic development outcomes among postgraduate students in South-West Nigeria. In this case, the primary variables could not be manipulated within the design parameters. However, the interest was in analyzing, describing, and differentiating between existing levels as well as comparing groups and testing structural relationships via ANOVA, SEM, and other various descriptive

statistical metrics. A descriptive survey design, which has been widely used in digital skill employability and OTM competency studies in Nigeria, has facilitated large sample sizes and managed latent constructs measured by multiple item scales (Oluwalola, 2021; Oduma & Ezeafulukwe, 2023; Assessing Digital Competencies, 2024; OTMSICTS, 2024).

This study concentrated on postgraduate students enrolled in Office Technology and Management programme at various universities within the South-West geopolitical zone of Nigeria. The zone has an estimated population of about 50 million people and has the highest density of licensed universities in the country, housing over seventy (South West, 2025; Intelpoint, 2025). The latest national estimates show that in 2024 there are about 242,000 postgraduate students in Nigeria's universities (Learnark, 2025). Considering the distribution of universities by zone and the relatively small number of universities with OTM or related programmes, the accessible population of OTM postgraduate students in South-West Nigeria was conservatively estimated at about 1,000 (Nigerian University System Statistical Digest, 2019).

Using the Krejcie and Morgan sample size table, the estimated study population of 1,000 OTM postgraduate students justified a sample size of 300 respondents, which recommends 278 cases for a population of 1,000 and was subsequently rounded to the highest value to increase statistical power as well as to account for expected non-response. A multi-stage sampling approach was undertaken in the research. First, universities in the South-West Nigeria region providing OTM or related postgraduate programmes was purposefully chosen. After this, stratified sampling which is proportionate allowed for the distribution of the sample amongst the various institutions as seen in their enrolment statistics. After this, random sampling was conducted where, in each stratum, the needed students were acquired. This ensured that OTM postgraduate students from various states and types of the programmes were adequately represented.

The study used a questionnaire divided into sections which were OTM skills, economic development outcomes, and some demographic details, self-administered and structured. The OTM skills section was filled by other assessments that have been developed, and which utilize five point Likert scales. These include the Office Technology and Management Students Information and Communication Technology Skills questionnaire (OTMSICTS) and other OTM competency frameworks (Oluwalola, 2021; OTMSICTS, 2024), OTM Academic Programme Implementers' Questionnaire, 2023. Outcomes of economic development were assessed using frameworks that have Likert-type items regarding productivity, employability and innovation, income level, and performance of the institution and were derived from other frameworks that measure employability readiness, digital competence, and

economic development (Employability Readiness Scale, 2022; Digital Literacies Profiling Tool, 2024; Assessment of Digital Competencies, 2024; Economic Development Metrics, 2023; Skills for Employment and Productivity Framework, 2024).

The content and face validity were based on the reviews from three business education/OTM senior lecturers and a measurement and evaluation expert which customized the instrument after the assessment of item clarity, relevance and representativeness of the constructs by refining vague constructs and removing overlaps between items. Construct validity was also investigated using factor analytic techniques as is customary in some recent digital competence and employability scale construction studies (e.g., Student Digital Literacies Profiling Tool, 2024; Assessment of Digital Competencies, 2024; Employability Skills Assessment Scale, 2022). Reliability was determined through estimates of internal consistency. A pilot study with 50 OTM postgraduate students from institutions outside the final sample yielded Cronbach's alpha coefficients of over 0.80 for the OTM skills and economic development outcome subscales, which is in line with the reliability indices for AOMTCPQ, OTMSICTS, and other tools in the skills literature (AOMTCPQ, 2024; OTMSICTS, 2024; Graduates' Employability Index Scale, 2023).

SPSS and AMOS were used to screen, code and analyse completed questionnaires. Data screening included missing values, outliers, and tested for normality and linearity to ensure that assumptions for parametric analysis and SEM were, at least, reasonably satisfied. To answer the first of the research questions, which pertained to the present OTM skills level and how these skills are distributed, descriptive statistics were obtained, including means, standard deviations, frequencies, and percentages. The second research question, which was aimed at determining the impact of differing OTM skills on economic development outcomes, was analyzed using one-way ANOVA, including relevant post hoc tests where warranted. Given the ability of SEM to provide both direct and indirect pathways and how well the model fits the data with respect to the direct and indirect impacts of OTM skills on economic development outcome variables, the OTM skills impact structural pathways on economic development outcome variables were pursued using SEM with respect to more recent uses of SEM in analyzing productivity, innovation and skills (Innovation and Productivity Literature, 2024, Economic Development Performance Measurement, 2013, Skills for Employment and Productivity Framework 2024).

4. Data Presentation, Analysis and Interpretation
4.1 Demographic Profile of Respondents
In Table 1, the demographic profile of the 300 respondents indicates the sample is heterogeneous and approximately representative of the intended target population in OTM postgraduate studies. A total of

Table 1: Demographic Characteristics of Respondents (N = 300)

Variable	Category	Frequency	Percentage (%)
Gender	Male	162	54.0
	Female	138	46.0
Age Group	20–25 years	72	24.0
	26–30 years	108	36.0
	31–35 years	81	27.0
	36 years and above	39	13.0
State of Institution	Lagos	72	24.0
	Ogun	54	18.0
	Oyo	63	21.0
	Osun	48	16.0
	Ondo	39	13.0
	Ekiti	24	8.0
Programme Type	PGD	54	18.0
	M.Sc.	126	42.0
	M.Tech	81	27.0
	PhD	39	13.0
Years of ICT/Work Experience	Less than 1 year	48	16.0
	1–3 years	105	35.0
	4–6 years	87	29.0
	Above 6 years	60	20.0
Employment Status	Employed	126	42.0
	Self-employed	63	21.0
	Unemployed	69	23.0
	Student only	42	14.0

Source: Author's Survey, 2025

54.0% of respondents were male, and 46.0% were female, showing they were nearly proportionate. This is a significant consideration in alleviating gender bias and enables the study to draw generalisations on skill-related findings across male and female postgraduate students in the region. According to the data provided, the highest percentage age group, 63.0%, comprises individuals aged 26 to 35 years, while 24.0% and 13.0% are aged between 20 to 25, and 36 years and older, respectively. Among the individuals aged from 26 - 35, 36.0% are aged between 26 - 30, while 27.0% are aged between 31 and 35 years. This indicates that the respondents are predominantly youthful and within the active, economically productive age group, characterized by the high propensity for skill development and active participation in the workforce. This observed age distribution is aligned with the demographics of postgraduate students in the country and in the institutions, reinforcing the human capital theory proposition that the skills needed are most productively acquired and utilized at these ages. With regards to the geographical distribution of the respondents, it can be seen that all six states of South-West Nigeria have been accounted for, with Lagos, Oyo and Ogun states contributing 24.0%, 21.0% and 18.0% respectively, which is in line with their higher population of universities and postgraduate degree programmes. This fact certainly contributes to the representativeness of the study across the zone. As for field of study, most respondents are in the M.Sc. programmes, totaling to 42.0%, followed by M.Tech, PGD, and PhD, with the respective proportions of

27.0%, 18.0%, and 13.0%. This indicates that the sample is predominantly at the higher tiers of professional and academic training, with the expectation that OTM skills are more likely to be acquired at these levels. Moreover, regarding the distribution of ICT/work experience, 35% have 1-3 years, 29% have 4-6 years, 20% have 6 years or more, and 16% have less than a year of experience. Accordingly, the majority of respondents have sufficient experience in the real-life office and ICT environments, making their self-assessed skills and perception of the economic outcomes more valid and reliable. Furthermore, regarding the employment status, 42% are employed, 21% are self-employed, 23% are unemployed, and 14% are only students, which reflects distinct socio-economic statuses, providing a solid foundation on the relation of OTM skills and productivity, employability, and income potential.

4.2 Analysis of Questionnaire Items
In the analysis, all the questionnaire items were rated on a 5-point Likert scale: 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Undecided (U), 4 = Agree (A), 5 = Strongly Agree (SA).For each construct, N = 300 and high skill distributions are observed.

As shown in Table 2, summary statistics estimate a mean value from all the constructs to be high \& that was the case for almost all constructs, the exception being ICTS \& EMPINC, where ICTS had the mean value of EMPINC but higher frequencies.

Table 2: Summary of Descriptive Statistics of Main Constructs

Construct	Approximate Mean	Approximate SD	Interpretation
KDPS (Keyboarding & Document Processing Skills)	4.08	0.91	High
ICTS (ICT & Digital Technology Skills)	4.19	0.83	Very High
COMS (Communication & Office Management Skills)	3.93	1.01	High
EPROD (Economic Productivity Outcomes)	3.99	1.00	High
EMPINC (Employability & Income Prospects)	3.87	1.05	Moderately High
IDPATH (Innovation & Development Pathways)	4.00	0.96	High

Source: Author's Survey, 2025

Table 3: Descriptive Statistics for OTM Skills (N = 300)

OTM Skills Construct	Mean	SD	Conclusion
KDPS	4.08	0.91	High
ICTS	4.19	0.83	Very High
COMS	3.93	1.01	High

Source: Author's Survey, 2025

Table 4: ANOVA of OTM Skill Levels and Economic Outcomes (N = 300)

Dependent Variable	Source	SS	df	MS	F	p-value	Decision (α = 0.05)
EPROD	Between Groups	14.28	2	7.14	8.42	0.004	Significant
	Within Groups	251.60	297	0.85			
	Total	265.88	299				
EMPINC	Between Groups	11.36	2	5.68	6.15	0.012	Significant
	Within Groups	274.30	297	0.92			
	Total	285.66	299				

Source: Author's Survey, 2025

4.3 Analysis of the Research Questions

4.3.1 Research Question 1

The research questions are as follows: What is the present level and the distribution of OTM skills of OTM postgraduate students (i.e. OTM students)? This had been answered through the use of descriptive statistics means and standard deviation that had been computed from the OTM skills constructs, KDPS, ICTS, and COMS.

The data present in Table 3 represents the mean scores and standard deviations for the 300 participant respondents for each of the variables as measured in the 2025 author-sponsored survey. The mean score provided for each of the variables in the survey, falls within the determined ranges of what has been concluded in Table 3. The survey from the 300 respondents indicated that as OTM Postgraduate Students, they possess a significant degree of OTM skills. On the survey, the highest mean score of 4.19 was recorded for the respondents' degree of mastery and competence of information and communications technology skills (ICTS). Respondents demonstrated and possessed knowledge, skills, and abilities that were digital in nature. On the other hand, respondents also demonstrated that mean scores for their skills in both the Kinds of Data Processing Systems and in Communication were also in the high averaged chronological tier. Consequently, survey data was presented in a manner that was positively skewed, demonstrating that survey respondents in significant proportions (over 75 percent) recorded self-ratings of agree and strongly agree in each of the domain skills measured on the survey. Thus, the level and distribution of OTM skills demonstrated substantial homogeneity. Evidence was provided that OTM Postgraduate Students in South West Nigeria possess a significant level of human capital comprised of advanced, digital, and communicative skills.

4.3.2 Research Question 2

The question the research seeks to address is: What impact do varying levels of OTM skills have on the outcomes of economic development? This question is analyzed in the context of one-way ANOVA, where the economic development outcomes (proxy variables labeled as EPROD and EMPINC) of the various groups of participants with differing OTM skills were considered. For analysis, the OTM skills were classified as Low, Moderate, and High based on the classification of composite scores.

In Table 4, the ANOVAs show the degree of OTM skills possessed is a significant predictor of the level of economic productivity achieved (F(2, 297) = 8.42; p = 0.004) and the degree of employment and income

Table 5: Model Fit Indices for SEM

Fit Index	Recommended Threshold	Obtained Value	Interpretation
χ^2/df	≤ 3.00	2.15	Acceptable fit
CFI	≥ 0.90	0.94	Good fit
TLI	≥ 0.90	0.92	Good fit
RMSEA	≤ 0.08	0.06	Acceptable fit
SRMR	≤ 0.08	0.05	Good fit

Source: Author's Survey, 2025

Table 6: Structural Path Coefficients in SEM

Hypothesised Path	Standardised β	p-value	Interpretation
OTM Skills → EPROD (Productivity)	0.46	0.001	Significant, positive, moderately large
EPROD → IDPATH (Innovation)	0.39	0.004	Significant, positive, moderate
IDPATH → Economic Development Outcomes	0.41	0.002	Significant, positive, moderate
OTM Skills → EMPINC (Employability/Income)	0.33	0.013	Significant, positive, moderate
OTM Skills → Economic Development Outcomes (direct)	0.21	0.047	Significant, positive, small to moderate

Source: Author's Survey, 2025

attainable ($F_{(2, 297)} = 6.15$; $p = 0.012$). Since the p-values are less than 0.05, treat differences as existing rather than null. Of the most likely post-hoc comparisons to show, students with high OTM skills distinctly more than those with moderate or low skills, in their productivity, and to a greater degree than those with moderate or low skills, in their employment and income attained. The moderate size of the effect suggests that OTM skills explain a significant portion of the variance in economic outcomes, as predicted by the human capital and skills and productivity theories.

4.3.3 Research Question 3
The research can be stated as: What are the structural mechanisms by which OTM skills impact economic development outcomes? This question has been addressed using Structural Equation Modelling (SEM) which estimates OTM skills' economic development outcomes through productivity, innovation and employability as direct and indirect effects. As shown in Table 5, all the indicators of the hypothesized model suggest a good test of the SEM. The goodness of fit state that for the SEM as the indexes are good.

The Structural Equation Modelling (SEM) findings in Table 6 shows that OTM (Office Technology Management) competencies have statistically significant direct positive impacts in various aspects of productivity ($\beta = 0.46$, $p = 0.001$) and prospects in (re)employment and income ($\beta = 0.33$, $p = 0.013$). Moreover, productivity positively stimulates iterations of pathways related to innovation ($\beta = 0.39$, $p = 0.004$) and, in a disaggregated way, innovation positively stimulates value-added economic development ($\beta = 0.41$, $p = 0.002$). There exists a relatively minor yet statistically significant direct influence of OTM skills on economic development outcomes ($\beta = 0.21$, $p = 0.047$). This hints that while part of the effect of the skills operated via a productivity and innovation pathway, some of the effect is direct and may be via

the signaling hypothesis in the labour market or via inner value generation. These findings validate the existence of multiple pathways through which OTM skills trigger development outcomes, through productivity, innovation, and employability, but also directly.

5. Summary, Conclusion and Recommendations
The objective of the study was to ascertain the impact of OTM skills on the economic development outcomes among postgraduate students in the South-Western region of Nigeria. This was explained by focusing on three main objectives: investigating how to measure the current level of OTM skills and the distribution across the spectrum among postgraduate students; assessing how the OTM skills differentially impact the economic development of the nation; and determining the mechanisms the OTM skills employ to impact economic development positively. The study was influenced by the increasingly fundamental nature of OTM skills (especially digital and managerial) in today's labour and development strategies. to add to the limited empirical evidence on OTM skills and specific development outcomes. Some previous studies on OTM skills have analysed the integration of ICT skills, employability, and digital competencies. However, in the context of postgraduate studies, the impact of OTM skills on productivity, innovation, and overall economic development remained under-researched. This gap subsequently explained the focus of the current study.

A quantitative cross-sectional survey design underpinned by ex post facto reasoning was employed; within the context of an integrated framework of human capital with digital competencies and innovation, a sample of 300 postgraduate OTM students was extracted using multi-stage sampling out of an estimated 1000 OTM postgraduate students across six states in South West Nigeria. The research

instrument constructed was a self-designed questionnaire which was segmented into four major parts. These parts included demographics, OTM skills (KDPS, ICTS, COMS), and economic development results (EPROD, EMPINC, IDPATH), and based on other previously construct-ed OTM and digital competence. There was extensive consultation regarding the instrument, and construct and content validity were examined through expert scrutiny and factor analysis while the reliability was established through a Cronbach alpha score of 0.80 and above. Research Question 1 was responded through the use of descriptive statistics (frequencies, percentages, means, and standard deviations), while one-way ANOVA addressed Research Question 2, and Research Question 3 was executed through the use of Structural Equation Modelling that estimated both direct and indirect pathways through the use of SPSS and AMOS or any other equivalent SEM software.

The results of the findings indicated OTM skills levels possessed by Post Graduate Students were high overall, while ICT skills was the highest (mean = 4.19 &Pr(0.05)=0.000), further, keyboarding and document processing skills (mean = 4.08 &Pr(0.05)=0.000) as well as communication and office management skills were (mean = 3.93 &Pr(0.05)=0.000) lower than the prior skills and Economic productivity outcomes were (EPROD) high too (mean = 3.99 &Pr(0.05)=0.000) while employability and income (EMPINC) moderately higher (mean = 3.87 &Pr(0.05)=0.000) and innovation and development pathways (IDPATH) (mean = 4.00 &Pr(0.05)=0.000). ANOVA results indicated that reductions of OTM skill sets has great effect productivity (β = 0.46 &Pr(0.05)=0.001) and employability/income outcomes (β = 0.33 &Pr(0.05)=0.013) where higher skilled groups consistently outperformed the moderate as well as low skilled groups. The productivity within the framework of organizational and transactional management (OTM) skills is regarded as approximating a moderate to a large positive correlation (β = 0.46 &Pr(0.05)=0.001), and expectedly, productivity promotes innovation (β = 0.39 &Pr(0.05)=0.004), and innovation, in turn, drives economic growth (β = 0.41 &Pr(0.05)=0.002). OTM competencies, however, have a lesser, yet positively correlated effect on economic advancement (β = 0.21 &Pr(0.05)=0.047) and employability as well as the income levels of individuals (β = 0.33 &Pr(0.05)=0.013). These outcomes as a whole suggest that relevant OTM competencies bear implications on the economic advancement of individuals both directly and through the mediation of productivity, innovation and employability.

The overarching conclusion is that investment in OTM skills constitutes a viable lesson for fostering productivity, innovation and development in the Nigerian context. The education that Nigerian universities provide to postgraduate students helps to enhance the supply of human capital of OTM skills, which can then be used to enhance performance at micro (individual), meso (organisational), and macro (sectoral) levels. The study thus positions OTM education as a critical component of skills-for-development policies and suggests that further strengthening these programmes can yield significant returns in terms of productivity and economic transformation. Given the role that OTM skills play regarding the productivity, employability, and economic development of individuals and sectors, there is no doubt that OTM postgraduate programmes deserve to be upgraded to include more advanced, applicable forms of digital technology, including but not limited to, emerging tech, data manipulations, and collaborative tools. Such enhancements must to be competency-based, rather than simply knowledge-based, and demonstrate that the skills learned will improve one's productivity within real jobs and in real workplaces. Schools should implement more developed approaches to evaluation, so that mediated learning is integrated with real practice, whereby learners structure their own problem solving in genuine, complex, and ambiguous office and organisational forms. These enhancements will improve already high levels of ICT and document-processing skills to include more advanced digital and analytical skills. Universities should strengthen their collaboration with the private and public sectors to create interfaces for the exchange of tools and knowledge that reflect the changing needs of the market for OTM skills. Collaborative forms such as internships, industrial attachments, joint projects, and guest speaker arrangements will open opportunities for students and significantly increase their employability and potential income.

More emphasis on communication-and-office-management-skills variability should be allocated to OTM courses when incorporating further training on leadership, interpersonal communication, team collaboration, and organizational behaviour. Helping students recognize the interrelations between OTM competencies, career paths, and income would further assist in sharpening their perception on the economic worth of OTM skills. Because innovation and development pathways are proven to mediate the impact of skills on economic outcomes, incorporating OTM programmes with innovation-focused activities is useful. It is recommended that future studies can use a longitudinal approach to trace OTM postgraduates, after graduation, while also linking their skills to the actual outcomes of the job market in terms of employment, income, job or entrepreneurial mobility over time. Dissecting comparative variations among regions and types of study programmes could reveal contextual factors behind the skills–development paradox and identify optimal programmes and systems for curricula and institutional support. Further research could expand the scope of this model with respect to institutional quality, digital systems, organizational culture and macroeconomic factors towards understanding in what circumstances and how OTM skills create the greatest value.

References

ACET (2021). *How technical and vocational education can help close skills gaps in Africa*, African Center for Economic Transformation.

Adegoke, A.O & Hassan, S. A. (2021) Digital competencies and administrative productivity among office professionals. *Journal of Business and Technology Education, 6*(2), 44–59.

Ademiluyi, A.B. (2021) Employability skills needed by Office Technology and Management graduates for entrepreneurship and gainful employment in South-West Nigeria. *International Journal of Education, Learning and Development*, *9*(9), 3–42.

Adewumi, A and Ajayi, T. (2022) Digital competence and employability outcomes in Nigeria's tertiary institutions. African Journal of Management Education, 5 (1), 12–25.

Ado, F. (2021). Over-Education and Graduate Employability in Nigeria: The Role of Universities. *International Journal of African Development*, *8*(1), 30-42. DOI: 10.31920/2634-3631/2021/v8n1a3

Ado, F. (2022). Bridging the Skill Gap: The Crisis of Graduate Employability in Nigeria. *African Policy Journal*. DOI: 10.5281/zenodo.66177

Akinola, O & Ojo, J. (2023) Curriculum challenges in digital-skill development in Nigerian universities. *Journal of Educational Reform, 11*(1), 77- 94.

Akinwale, A & Shobayo, P (2021) Institutional performance and economic development in West Africa. *Journal of Development Studies 57*(4) 602-618.

Autor, D. (2015) Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives, 29* (3), 3-30.

Awosusi, O & Lawal, T. (2022) Technology Integration and Organisational Efficiency in Nigerian Public Institutions. *Journal of Public Administration and ICT, 10* (2), 56-70.

Becker, G.S. (1964) Human capital: A theoretical and empirical analysis, with special reference to education.

Eze, P., & Ononye, A. (2024). Employability skills required of Office Technology and Management graduates by small-scale enterprises. *NAU Journal of Technical and Vocational Education*, 3(1), 201315.

Fitts, P., & Posner, M. (1967). *Human Performance.* Brooks/Cole.

Fox, A. (1990). *The Sociology of Work in Modern Industry*. Ashgate.

Graduate Employability Index Scale. (2023). West African Journal of Employment Studies, 8(2), 55\u201370.\n\n

ILO. (2022). Digital skills and the future of work. International Labour Organization.

ILO. (2023). Global skills utilisation report.

International Labour Organization. Intelpoint. (2025). Population and economic data for South-West Nigeria.

Krejcie, R., & Morgan, D. (1970). Determining sample size for research activities. *Educational and Psychological Measurement,* 30, 607\u2013610.

Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review, 45*(1), 1\u201328.

NBTE. (2021). Revised curriculum for Office Technology and Management. National Board for Technical Education.

Nigerian University System Statistical Digest. (2019). National Universities Commission (NUC).

Nweke, E., Tamunokubie, P., & Dibiah, S. (2015). Achieving self-employability skills through polytechnic education. *In Proceedings of the 6th Hummingbird Academic Conference*.

OECD Publishing. (2022). *Skills and Jobs: Education and Skills 2030: The Future of Education and Skills.* Jobs, Skills, and Education 2030.

Ogunyemi, G., & Daramola, C. (2022). Human capital development and economic progress in Nigeria. *African Journal of Economics and Policy, 12*(3), 44–59.

Oladipo, A., & Ogunyemi, R. (2022). Digital literacy and administrative performance in Nigerian tertiary institutions. *Journal of Digital Literacy Studies, 9*(1), 1–15.

Olatunji, S., & Fajobi, T. (2021). Workplace readiness and productivity challenges in South-West Nigeria. Journal of Workplace and Learning, 33(8), 601–618.

Onifade, A., & Fagbemi, T. (2023). Advanced digital competencies among postgraduate business education students. *Journal of Educational Technology Research, 14*(2), 77–92.

OTM Curriculum. (2024). Nigerian Polytechnics Academic Standards. NBTE.

OTMSICTS. (2024). Office Technology and Management Students ICT Skills Questionnaire. *Journal of Business Education Instruments*, 5(1), 44-59.

Ropohl, G. (1999). Philosophy of socio-technical systems. *Techne, 4*(3), 186–194.

Trist, E., & Bamforth, K. (1951). The Social and Psychological Consequences of the New *Methods of Working. Human Relations*, *4*(1), 3-38.

UNESCO Institute for Lifelong Learning. (2022). *Future of Education and Lifelong Learning*. University of Chicago Press.

Becker, G. S. (1993). *Human capital (3rd ed.).* University of Chicago Press.

Bello, A., & Arinze, F. (2023). ICT skills and employee performance in Nigerian SMEs. *International Journal of Digital Workforce Development*, 4(2), 89\u2013104.