



Manpower Development Programs and Academic Staff Productivity at Delta State University, Abraka

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ABSTRACT

This study examined Manpower Development Programs on Academic Staff Productivity at Delta State University, Abraka. Guided by four research questions and hypotheses, the study adopted a descriptive survey design. From a population of 950 academic staff, a stratified random sample of 100 was drawn. Data were collected using a validated questionnaire ($\alpha = 0.85$) and analyzed with descriptive statistics, Pearson correlation, and multiple regression. Findings revealed that all four manpower development programs were positively correlated with productivity, with research grants ($r = .64$) and professional development courses ($r = .58$) exerting the strongest influence. Regression results showed the predictors jointly explained 55% of the variance in productivity, $F(4,95) = 28.74$, $p < .001$. Research grants ($\beta = .37$), professional development courses ($\beta = .29$), and sabbatical leave ($\beta = .21$) were significant predictors, while ICT training, though positive, was not statistically significant ($\beta = .18$). The study concludes that manpower development substantially enhances academic productivity. For educational planning, the findings imply the need to institutionalize structured manpower initiatives, strengthen sabbatical opportunities, improve ICT infrastructure, and integrate manpower data into long-term planning frameworks. Policy recommendations include expanding TETFund interventions, ensuring equitable access to sponsorships, and adopting evidence-based manpower planning to sustain productivity and global competitiveness.

Keywords: Manpower Development, Academic Staff Productivity, Research Grants, Sabbatical Leave, Professional Development, ICT Training, Educational Planning.

I. INTRODUCTION

Background to the Study

Higher education is a fundamental driver of national development, economic transformation, and innovation (UNESCO, 2014). Universities are

central to developing human capital and advancing knowledge, with academic staff productivity playing a vital role in fulfilling mandates of teaching, research, and community service (Ofoegbu & Alonge, 2016). Productivity encompasses effective teaching delivery, research output, curriculum development, and institutional engagement.

Globally, manpower development has become a cornerstone of higher education systems. Research sponsorships, sabbatical leave, professional development courses, and digital competency training are widely recognized as integral to academic staff growth, contributing to research visibility, innovation, and student success (OECD, 2019; UNESCO, 2020). Such investments strengthen competitiveness and enable universities to thrive within knowledge economies.

In Nigeria, however, concerns about academic staff productivity persist due to inadequate research funding, poor access to global networks, and limited institutional support for professional development (Ezekwe & Ani, 2024; Igbokwe Ibeto et al., 2024). While universities are expected to produce competent graduates and serve as research hubs, these goals cannot be realized without equipping staff with adequate training and opportunities for growth.

Manpower development programs are structured interventions to enhance staff knowledge, skills, and effectiveness (Armstrong, 2014). Within Nigerian universities, these include research sponsorships, academic exchanges, professional development courses, and ICT training, all aimed at boosting academic performance and engagement in scholarship (Archibong et al., 2010; Abubakar Giade, 2019). Although initiatives such as the Tertiary Education Trust Fund (TETFund) support training, conferences, and research, questions remain about their effectiveness in significantly improving staff productivity (Igbokwe Ibeto et al., 2024).

Delta State University (DELSU), Abraka, illustrates these challenges. Despite growing expectations from stakeholders, staff face limited access to research grants, underutilized sabbatical opportunities, irregular development programs, and



weak ICT training integration. These gaps raise concerns over the adequacy of manpower development mechanisms in enhancing staff productivity and challenge the effectiveness of manpower planning in the university system.

Statement of the Problem

Despite multiple manpower development initiatives, academic staff in Nigerian universities often face significant challenges that limit productivity. At DELSU, constraints such as inadequate access to research sponsorships, limited opportunities for international exchange, insufficient professional development courses, and uneven digital competency training persist. These limitations contribute to relatively low research output, declining teaching quality, and weak competitiveness of graduates. Although programs such as TETFund sponsorships exist, empirical evidence about their effectiveness in enhancing staff productivity at DELSU is scarce. This lack of localized evidence constitutes a problem, as policymakers and administrators cannot make informed decisions on which manpower development programs most effectively drive academic productivity. This limits evidence-based manpower planning for higher education in Nigeria.

Purpose of the Study

The general purpose of this study is to examine the impact of manpower development programs on the productivity of academic staff at Delta State University, Abraka. Specifically, the study seeks to:

1. Determine the extent to which research grants and sponsorships influence academic staff productivity.
2. Examine the effect of sabbatical leave and academic exchange on staff productivity.
3. Assess the impact of professional development courses on academic staff effectiveness.
4. Evaluate how ICT-based digital training contributes to staff productivity.

Scope of the Study

This study is limited to full-time academic staff across faculties and ranks within Delta State University, Abraka. It focuses on four manpower development programs: research grants and sponsorships, sabbatical leave and academic exchange, professional development courses, and ICT-based digital training. Other informal or unstructured development practices, such as mentorship or consultancy work, are excluded.

Research Questions

The following research questions guided the study:

1. To what extent do research grants and sponsorships influence academic staff productivity?
2. How does sabbatical leave and academic exchange affect academic staff productivity?
3. What effect do professional development courses have on academic staff effectiveness?
4. How does ICT-based digital training influence academic staff productivity?

Research Hypotheses

The study tested the following null hypotheses:

1. There is no significant relationship between research grants and sponsorships and academic staff productivity.
2. There is no significant relationship between sabbatical leave and academic exchange and academic staff productivity.
3. There is no significant relationship between professional development courses and academic staff productivity.
4. There is no significant relationship between ICT-based digital training and academic staff productivity.

Significance of the Study

This study has theoretical, empirical, and practical significance. Theoretically, it contributes to the body of knowledge on manpower development in higher education by providing evidence from a Nigerian university, where such empirical studies are limited. Empirically, it addresses the call for more systematic assessments of how development programs influence staff productivity (Ezekwe & Ani, 2024; Igbokwe Ibeto et al., 2024). Practically, the findings will provide administrators and policymakers with evidence on which manpower development programs to prioritize in resource allocation. For academic staff, the study highlights professional growth opportunities with the potential to enhance teaching, research, and institutional service. Ultimately, by improving staff productivity, the study contributes to producing competent graduates, advancing research output, and strengthening Nigeria's higher education system. For educational planners, the study provides empirical evidence to guide manpower forecasting, resource allocation, and strategic interventions aimed at sustaining academic staff productivity.

II. LITERATURE REVIEW

Conceptual Clarifications

Manpower development refers to systematic efforts aimed at improving employees' knowledge,



skills, and competencies to align performance with organizational goals. It encompasses both formal and informal strategies such as training, workshops, professional development programs, mentoring, and academic exchange. Armstrong (2014) defines it as a structured human resource intervention to enhance current and future staff capacity. Within higher education, manpower development is seen as an investment yielding returns in teaching effectiveness, research output, and institutional performance.

International bodies emphasize its global significance. UNESCO (2014, 2020) and the OECD (2019) highlight continuous manpower development as essential to sustaining competitiveness in knowledge economies. UNESCO (2020) further connects it to Sustainable Development Goal 4 (SDG-4), advocating inclusive and quality education. In Africa, the African Union (2018) regards manpower development as a strategy to address both quantitative and qualitative higher education deficits. Nigerian scholars similarly underscore its importance, with Abubakar Giade (2019) stressing its role in enhancing research visibility and rankings.

Academic staff productivity, a multidimensional construct, covers teaching effectiveness, research output, curriculum development, student supervision, mentoring, and community service (Ofoegbu & Alonge, 2016). Productivity involves both the volume and quality of work, with the World Bank (2019) noting its influence on graduate outcomes, innovation, and labor competitiveness. In Nigeria, declining research outputs, low global visibility, and challenges in teaching quality have raised concerns (Ezekwe & Ani, 2024; Igbokwe Ibeto et al., 2024). Adebayo and Akanbi (2021) argue that sustained professional development is essential for meeting universities' teaching, research, and service mandates.

This study examines manpower development through four dimensions: research grants, sabbatical leave and academic exchange, professional development courses, and ICT-based training. These interventions provide opportunities for knowledge creation (Archibong et al., 2010; OECD, 2019), global exposure (Ofoegbu & Alonge, 2016), enhanced teaching and research skills (Igbokwe Ibeto et al., 2024; UNESCO, 2020), and digital competency for modern scholarship (Abubakar Giade, 2019; World Bank, 2019; Osakwe, Okonta & Moses-Promise, 2022).

Theoretical Framework

The Human Capital Theory, advanced by Schultz (1961) and Becker (1964), underpins the importance of manpower development in enhancing

academic staff productivity. It argues that investment in education and training improves knowledge and skills, thereby increasing productivity and generating long-term economic and social returns. Psacharopoulos and Patrinos (2018) confirmed that returns to higher education are among the highest globally, especially in developing countries. For academic staff, initiatives such as research sponsorship, sabbatical leave, professional development, and ICT training are investments that translate into better teaching, stronger research, and wider societal contributions. In Nigeria, this orientation shapes policies like TETFund, aimed at strengthening staff capacities (Archibong et al., 2010).

Complementing this, Systems Theory (von Bertalanffy, 1968) views organizations as interdependent systems of inputs, processes, and outputs. In higher education, manpower development is the input, teaching and research activities the processes, and academic productivity the output. Teichler (2017) emphasizes that equilibrium in higher education depends on consistent transformation of inputs into quality outputs. Owan and Ekpe (2020) applied this in Nigeria, showing that misalignment between inputs and institutional objectives explains gaps in outcomes.

Together, Human Capital and Systems Theory frame manpower development as both an individual investment and a systemic necessity for universities like Delta State University, Abraka.

Empirical Review

Empirical evidence across global, regional, and national contexts strongly supports the value of manpower development, though outcomes vary by context. OECD (2019) identified research grants as strong predictors of academic productivity, while studies in the U.S. and Europe confirm that sponsorships enhance staff mobility and research visibility (Bland & Ruffin, 1992; Lee & Bozeman, 2005; European Commission, 2020). In Asia, Chen and Lin (2018) demonstrated that research sponsorships in Taiwan and South Korea accelerated international publication growth. In Africa, Mouton (2019) reported that South African research grants and mentorship correlated with publication output, though Badat (2020) highlighted persistent inequities between institutions. In Ghana, Agyemang and Osei-Kufuor (2013) found professional development improved pedagogy and research, but inadequate funding and high turnover constrained effectiveness. Similarly, Ofori and Arko-Boham (2019) noted bureaucratic inefficiencies in grant distribution. Nigerian studies confirm these trends: Archibong et



al. (2010) and Igbokwe Ibeto et al. (2024) found that although TETFund positively influenced staff capacity, inequities left state universities disadvantaged compared to federal institutions.

In Latin America, Miranda de Mendonça and Gómez-Galán (2016) examined professional training for university teachers in Brazil using a mixed-method design, including surveys, interviews, and document analysis. They reported training was largely scientific and technical but deficient in pedagogy. This reflects broader challenges in developing contexts, where technical training dominates at the expense of teaching skills, paralleling concerns in Nigerian universities (Ezeugbor & Okeke, 2017; Owan & Ekpe, 2020).

Within Nigeria, Ogunode, Ukozor, and Agbo (2024) reviewed secondary data and found consistent academic training positively impacted teaching, research, and community service. They recommended structured, role-specific programs. Similarly, Ahmed et al. (2023), in a proposed study at Federal Polytechnic Mubi, emphasized manpower planning dimensions such as recruitment, training, and placement as crucial for staff productivity. Abdullahi et al. (2018), studying Kano State Polytechnic, empirically demonstrated through multiple regression that training design, method, and delivery all significantly shaped productivity. They concluded structured staff training not only enhanced performance but also strengthened institutional retention.

Sabbatical leave and academic exchange also receive scholarly attention. In Canada, Knight and Lee (2014) found sabbaticals boosted research productivity and collaboration, while Enders and Musselin (2008) in Europe confirmed sabbaticals as vital to academic mobility. Altbach and de Wit (2017) stressed mobility as central to internationalization. However, in South Africa and Nigeria, bureaucratic hurdles limit opportunities, with Ofoegbu and Alonge (2016) noting few staff access sabbaticals. Adebayo and Akanbi (2021) similarly observed that resource limitations constrain their effectiveness in improving research and teaching.

Professional development programs are consistently linked with teaching quality and innovation. Darling-Hammond et al. (2017) in the U.S. and Healey, Flint, and Harrington (2014) in the U.K. reported that structured training improves pedagogy and student engagement. In Australia, Bexley, Arkoudis, and James (2013) found

professional development raised job satisfaction and productivity. African and Nigerian evidence aligns: Ezeugbor and Okeke (2017) showed that training workshops improved teaching and student outcomes, while Akpan and Effiong (2019) linked methodological training to publication growth. Owan and Ekpe (2020), however, highlighted that irregular and poorly funded state-level programs reduce their impact.

ICT-based training has recently gained prominence. UNESCO (2020) and Allen and Seaman (2017) established that ICT-trained faculty adapt better to online teaching and research dissemination. Zhang and Zhu (2020) found ICT training in China increased international research visibility, while Czerniewicz et al. (2020) showed digital skills supported European universities during COVID-19. In Africa, Barasa and Omulando (2018) observed ICT training in Kenya boosted e-learning adoption, while Ugwu and Akinwale (2022) confirmed similar benefits in Nigeria. Conversely, Adeoye and Iwu (2021) reported inadequate ICT training hindered Nigerian academics during the pandemic, revealing systemic weaknesses.

Despite extensive literature, important gaps remain. Much Nigerian research privileges federal universities, leaving state institutions like Delta State University (DELSU) underexplored (Ezekwe & Ani, 2024). Furthermore, many studies treat manpower development broadly, rather than isolating the contributions of research grants, sabbaticals, professional development, or ICT training. Compared with global contexts, Nigerian evidence reveals irregular implementation, poor funding, and inequitable access (Owan & Ekpe, 2020; Abubakar Giade, 2019). These limitations underscore the need for contextualized research at DELSU to inform targeted strategies for improving academic staff productivity.

Drawing on this review, the study positions manpower development as a critical determinant of academic staff productivity in higher education institutions. Guided by Human Capital Theory and empirical findings, the framework identifies four independent variables—research grants and sponsorships, sabbatical leave and academic exchange, professional development courses, and ICT-based training. The dependent variable, academic staff productivity, is reflected in teaching, research output, and institutional service. These relationships are presented in Figure 1, which depicts the conceptual framework guiding this research.



Conceptual Framework: Manpower Development Programs and Academic Staff Productivity

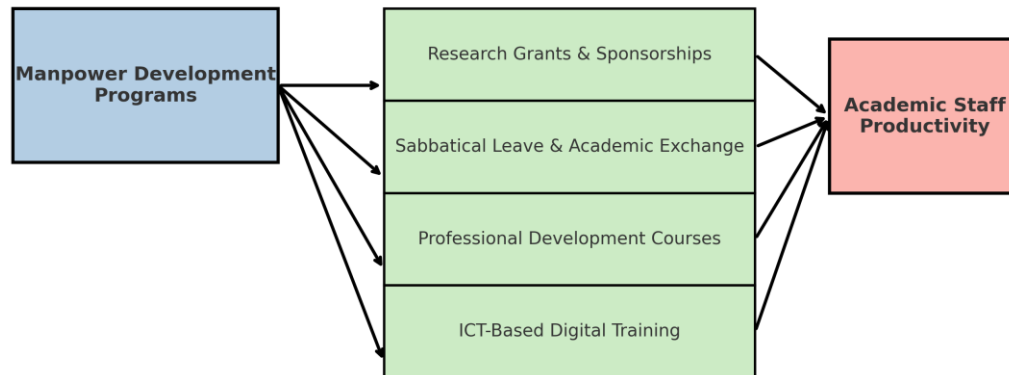


Figure 1: Conceptual framework showing the relationship between manpower development programs and academic staff productivity.

III. METHODOLOGY

This study adopted a descriptive survey design, because it allows quantitative data collection on practices and perceptions without manipulating variables. Creswell (2017) emphasizes that such designs are useful for describing current conditions, analyzing relationships, and informing educational decision-making. In this case, the design enabled an assessment of how manpower development strategies—research grants, sabbatical leave and exchange, professional development courses, and ICT-based training—influence staff effectiveness in teaching, research, and service.

The population comprised 950 academic staff at Delta State University across faculties and ranks. Given the diversity in rank and responsibilities, stratified random sampling was adopted to ensure representativeness. The population was stratified by faculty and rank, and proportional allocation used for selection. A total of 100 staff were surveyed.

Sample adequacy was guided by Cohen's (1992) power analysis, which confirmed that the sample size of 100 provided sufficient statistical power. This exceeded minimum thresholds, reduced risk of Type II error, and improved generalizability. The decision aligns with international recommendations for sufficiently powered educational studies (OECD, 2019). This approach

aligns with manpower planning principles by ensuring representative input across academic ranks and faculties, thereby reflecting the diversity of human resources in the institution.

Data were collected with a structured questionnaire developed by the researcher and informed by manpower development literature (Armstrong, 2014; Archibong et al., 2010). The instrument had two sections. Section A collected demographic data (gender, age, qualification, rank, and experience). Section B contained 16 items on manpower development programs and productivity. Items were organized into four subscales: Research Grants and Sponsorships (Q1–Q4), Sabbatical Leave and Exchange (Q5–Q8), Professional Development Courses (Q9–Q12), and ICT-Based Digital Training (Q13–Q16). Responses were rated on a four-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree), where higher scores indicated stronger agreement with program effectiveness. A four-point scale was preferred to avoid a neutral midpoint and yield clearer attitudes.

Content validity was ensured through review by three experts in educational management and human resource development, who suggested refinements in wording and alignment with objectives. Cronbach's alpha reliability analysis yielded an overall coefficient of 0.85, with subscales ranging from 0.79 to 0.87, exceeding Nunnally's



(1978) 0.70 benchmark, confirming internal consistency.

The data collection process involved direct administration of questionnaires by the researcher and trained assistants to maximize participation and accuracy. Participation was voluntary, and informed consent was obtained. Ethical clearance was secured from the Delta State University Research Ethics Committee, while confidentiality was maintained by anonymizing responses and restricting data access to the research team.

Data analysis was carried out using IBM SPSS Version 26. Descriptive statistics (means and standard deviations) summarized responses and demographics. Pearson correlation was used to determine the strength and direction of relationships between manpower development programs and productivity. Multiple regression analysis examined the combined and individual predictive effects of the four programs on productivity. Model assumptions were rigorously checked: scatterplots confirmed linearity, the Kolmogorov-Smirnov test verified normal distribution of residuals, Variance Inflation Factor (VIF) values showed no multicollinearity, and residual plots confirmed homoscedasticity. These diagnostics validated the regression model and strengthened the robustness of the findings.

IV. RESULTS

The demographic characteristics of the respondents revealed that of the 100 academic staff surveyed, 58% were male and 42% were female. The

largest proportion of respondents (45%) were between the ages of 35–44 years, followed by 35% who were 45 years and above, while 20% fell within the 25–34 years age range. In terms of academic rank, senior lecturers (28%) and lecturers I (22%) represented the largest groups, with assistant lecturers making up the smallest proportion (12%). Faculty representation was fairly distributed, with the Faculty of Social Sciences (30%) having the largest share of respondents. This distribution indicates that the sample adequately captured the diversity of staff across age, gender, rank, and faculty, thereby strengthening the validity of the findings.

The descriptive statistics of manpower development programs and academic staff productivity are presented in Table 1. The results show generally favorable perceptions across the four manpower development initiatives. Research grants and sponsorships recorded the highest mean score ($M = 3.21$, $SD = 0.48$), suggesting that academic staff highly valued opportunities for research funding. Professional development courses followed closely ($M = 3.15$, $SD = 0.53$), indicating their importance in improving staff competencies. Sabbatical leave and academic exchange were rated moderately ($M = 2.98$, $SD = 0.61$), while ICT-based digital training had the lowest mean score ($M = 2.85$, $SD = 0.65$), reflecting limited institutional investment or access to digital training opportunities. Academic staff productivity itself was reported at a high level ($M = 3.18$, $SD = 0.51$), suggesting that respondents generally perceived themselves as effective in teaching, research, and service delivery.

Table 1: Descriptive Statistics for Manpower Development Programs and Productivity ($n = 100$)

Variable	Mean	Std. Deviation (SD)
Research Grants & Sponsorships	3.21	0.48
Sabbatical Leave & Academic Exchange	2.98	0.61
Professional Development Courses	3.15	0.53
ICT-Based Digital Training	2.85	0.65
Academic Staff Productivity	3.18	0.51

The relationship between manpower development programs and academic staff productivity was further examined using Pearson's correlation analysis. Results presented in Table 2 below show that all four programs were significantly and positively correlated with productivity at the $p <$

.01 level. Research grants and sponsorships exhibited the strongest correlation with staff productivity ($r = .64$), followed by professional development courses ($r = .58$). Sabbatical leave and academic exchange ($r = .55$) and ICT-based digital training ($r = .52$) also demonstrated moderate to strong positive



associations with productivity. These findings indicate that improvements in manpower development initiatives are likely to result in higher

levels of staff effectiveness in teaching, research output, and institutional service.

Table 2: Correlation between Manpower Development Programs and Academic Staff Productivity (n = 100)

Variable	1	2	3	4	5
1. Research Grants & Sponsorships	1				
2. Sabbatical Leave & Academic Exchange	.47**	1			
3. Professional Development Courses	.51**	.44**	1		
4. ICT-Based Digital Training	.45**	.42**	.46**	1	
5. Academic Staff Productivity	.64**	.55**	.58**	.52**	1

Note: $p < .05$, $p < .01$ (two-tailed).

To test the study's hypotheses, a multiple regression analysis was conducted to determine the joint effect of manpower development programs on academic staff productivity. The results in Table 3 reveal that the model was statistically significant, $F(4, 95) = 28.74$, $p < .001$, with an R^2 value of .55. This indicates that the four predictors jointly explained 55% of the variance in academic staff productivity. Among the predictors, research grants and sponsorships ($\beta = .37$, $p < .001$) emerged as the strongest predictor, followed by professional

development courses ($\beta = .29$, $p = .002$). Sabbatical leave and academic exchange ($\beta = .21$, $p = .019$) also had a significant effect, while ICT-based digital training ($\beta = .18$, $p = .071$) was positively associated with productivity but did not reach statistical significance at the .05 level. These results suggest that manpower development programs play a significant role in shaping staff productivity, with research support and professional development standing out as the most influential dimensions.

Table 3: Multiple Regression Predicting Academic Staff Productivity from Manpower Development Programs (n = 100)

Predictor	β	t	Sig. (p)
Research Grants & Sponsorships	0.37	4.25	0
Sabbatical Leave & Academic Exchange	0.21	2.38	0.019
Professional Development Courses	0.29	3.18	0.002
ICT-Based Digital Training	0.18	1.83	0.071

In summary, the results demonstrate that manpower development programs are positively and significantly associated with academic staff productivity. Research grants and professional development courses exert the strongest influence, while sabbatical leave and academic exchange also contribute significantly. ICT-based digital training, though positively related, requires greater

institutional support and investment if it is to exert a stronger impact on productivity outcomes.

To further validate the significance of the regression model predicting academic staff productivity from manpower development programs, an ANOVA test was conducted. The results are presented in Table 4 below.



Table 4: ANOVA Summary Showing the Significance of the Regression Model Predicting Academic Staff Productivity from Manpower Development Programs

Source	SS	df	MS	F	Sig.
Regression	28.74	4	7.19	28.74	< .001
Residual	23.77	95	0.25		
Total	52.51	99			

The ANOVA results confirm that the regression model was statistically significant, $F(4, 95) = 28.74$, $p < .001$, indicating that the combined influence of research grants, sabbatical leave, professional development courses, and ICT training significantly explained variations in academic staff productivity. This finding reinforces the earlier correlation and regression analyses by demonstrating that manpower development programs, when considered together, account for a substantial proportion of the variance in productivity. In other words, the model provides strong evidence that structured manpower development initiatives serve as meaningful predictors of teaching, research, and service outcomes within the university context.

V. DISCUSSION

The findings of this study demonstrate that manpower development programs significantly enhance academic staff productivity at Delta State University (DELSU), Abraka. The results show that research grants and sponsorships, sabbatical leave and academic exchange, professional development courses, and ICT-based training each contribute to staff effectiveness, though with varying magnitudes. Together, these initiatives explained 55% of the variance in academic staff productivity, underscoring their centrality to institutional performance. The ANOVA results further confirmed that the regression model was statistically significant ($F = 28.74$, $p < .001$), validating the joint contribution of the four manpower development programs to academic staff productivity.

Among the four programs, research grants and sponsorships emerged as the strongest predictor of staff productivity ($r = .64$; $\beta = .37$). This finding aligns with earlier work by Archibong et al. (2010) and Abubakar Giade (2019), who emphasized that access to research funding enhances research capacity, visibility, and career progression. Similarly, OECD (2019) and Chen and Lin (2018) reported that research sponsorships drive international publications and strengthen competitiveness in global knowledge economies. Within the Nigerian context, Igbokwe Ibeto et al. (2024) noted that inequities in research sponsorship often disadvantage

state universities, a concern echoed at DELSU where staff reported limited access. This finding rejects the first null hypothesis, confirming research sponsorship as an indispensable lever for boosting staff productivity.

The study also found a positive and significant relationship between sabbatical leave, academic exchange, and staff productivity ($r = .55$; $\beta = .21$). This corroborates evidence from Knight and Lee (2014) and Enders and Musselin (2008), who observed that sabbaticals enhance collaboration and research visibility. In Nigeria, however, Ofoegbu and Alonge (2016) reported that bureaucratic bottlenecks limit sabbatical utilization, while Adebayo and Akanbi (2021) linked such constraints to underperformance in teaching and research. This findings affirm that academic mobility contributes to staff renewal and global exposure, thereby rejecting the second null hypothesis. Nonetheless, the relatively weaker predictive strength compared to grants reflects systemic limitations in implementation at state universities such as DELSU.

Professional development courses also showed a significant influence on productivity ($r = .58$; $\beta = .29$), ranking second only to research grants. This reinforces the conclusions of Darling-Hammond et al. (2017) and Healey, Flint, and Harrington (2014), who argued that structured training improves pedagogy and student-centered teaching. Within the Nigerian setting, Ezeugbor and Okeke (2017) and Akpan and Effiong (2019) similarly demonstrated that workshops and methodological training increase teaching quality and research output. This findings therefore reject the third null hypothesis and highlight the urgent need for more consistent and better-funded staff training initiatives.

Although ICT training correlated positively with productivity ($r = .52$), it was not a significant predictor in regression analysis ($\beta = .18$, $p > .05$). This partial support reflects systemic challenges in Nigerian universities, where inadequate infrastructure and policy gaps limit the effectiveness of digital training (Adeoye & Iwu, 2021; Ugwu & Akinwale, 2022). Yet global evidence, such as Zhang and Zhu (2020) in China and Czerniewicz et al. (2020) in Europe, shows that ICT skills are



indispensable for online teaching, digital scholarship, and international visibility. The rejection of the fourth null hypothesis at the correlation level, but not at regression, indicates that ICT training in its current form at DELSU is insufficiently impactful, pointing to an urgent need for structural reforms.

Collectively, the results affirm the central assumptions of Human Capital Theory (Schultz, 1961; Becker, 1964), which posits that investment in education and training yields measurable productivity gains. The significant predictive role of research grants, professional development, and sabbatical leave provides clear evidence that manpower development is a productive investment in academic staff. Simultaneously, these findings resonate with Systems Theory (Von Bertalanffy, 1968), which conceptualizes manpower development as an input into the university system that produces outputs in teaching, research, and service. The weak impact of ICT training illustrates a misalignment between inputs and expected outputs, echoing Owan and Ekpe's (2020) observation that institutional gaps reduce the effectiveness of manpower policies.

This study addresses three critical gaps in the literature. First, it provides localized evidence from a state university, responding to concerns by Ezekwe and Ani (2024) that most Nigerian manpower research has focused on federal institutions. Second, it isolates the individual contributions of four manpower development programs, whereas previous studies often treated them broadly. Third, it quantifies their joint predictive power, showing that these programs explain over half of the variance in productivity. Importantly, the study highlights that ICT training, despite global relevance, remains weakly implemented in Nigerian state universities.

VI. Conclusion

This study examined the influence of manpower development programs—research grants and sponsorships, sabbatical leave and academic exchange, professional development courses, and ICT-based digital training—on the productivity of academic staff at Delta State University, Abraka. Guided by four research questions and four hypotheses, the results showed that manpower development programs are strongly and positively associated with staff productivity. Research grants and professional development courses emerged as the most influential predictors, while sabbatical leave also contributed significantly. ICT-based digital training, though positively related, did not exert a statistically significant effect, reflecting infrastructural and implementation challenges.

Collectively, the programs explained 55% of the variance in productivity, providing robust support for the assumptions of Human Capital Theory and Systems Theory of Education. The significance of the ANOVA test further reinforced the robustness of the regression model, confirming the reliability of these findings. The study concludes that sustained investment in manpower development is critical to strengthening teaching, research, and service outcomes in Nigerian universities.

Implications

The results carry important implications for theory, policy, practice, and educational planning:

1. **Theoretical implications:** The findings reinforce Human Capital Theory by empirically confirming that investments in manpower development yield measurable improvements in staff productivity. They also support the Systems Theory of Education, showing that when subsystems (academic staff) are strengthened through capacity building, the entire educational system functions more effectively. The ANOVA confirmation of the regression model further underscores the robustness of these theoretical insights.
2. **Practical implications:** For university administrators, the results highlight the need to prioritize structured manpower development initiatives. Research sponsorship and professional development must remain central strategies for enhancing staff performance. Sabbatical and academic exchanges should be expanded to strengthen international collaborations, while ICT-based training needs substantial improvement to meet the demands of digitalized higher education.
3. **Policy implications:** For government and agencies such as TETFund, the findings underscore the need for sustained funding commitments. Policies should target equitable access to research grants, consistent professional training opportunities, and long-term investments in ICT infrastructure. The statistical significance of the ANOVA results strengthens confidence in these recommendations, making them reliable for decision-making.
4. **Implications for educational planning:** For educational planners, the study highlights the necessity of integrating manpower development into broader institutional and national planning frameworks. Effective manpower planning requires data-driven projections of staff training needs, alignment of development programs with institutional objectives, and continuous monitoring of



their impact on productivity. By validating the regression model through ANOVA, the study provides planners with evidence-based assurance that structured manpower interventions can reliably predict productivity outcomes, thereby guiding resource allocation and long-term academic planning.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Expand research funding and sponsorship: Universities and TETFund should increase the accessibility and transparency of grant schemes, ensuring equitable participation across faculties and academic ranks.
2. Institutionalize continuous professional development: Regular training programs, workshops, and conferences should be embedded in university policy to continually update staff skills and knowledge.
3. Strengthen sabbatical leave and exchange programs: Universities should build stronger partnerships with regional and international institutions to create more opportunities for academic staff to benefit from global best practices.
4. Invest in ICT infrastructure and training: Universities must establish robust digital learning platforms, provide regular ICT-based training, and improve access to technological resources to maximize the productivity benefits of digital tools.
5. Adopt data-driven manpower planning: University management should integrate evaluation and performance monitoring systems into manpower planning, ensuring that training programs are tailored to address specific productivity gaps.
6. Strengthen educational planning frameworks: Educational planners at institutional and national levels should incorporate manpower development evidence into long-term planning. This involves forecasting staff training needs, aligning manpower initiatives with institutional goals, and using empirical data (such as ANOVA-supported regression evidence) to guide resource allocation and ensure sustainable productivity growth.

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