

PATH-ANALYTIC STUDY OF STUDENTS' ACADEMIC CAPABILITY AND COMPLETION RATE OF PH.D. PROGRAMMES IN SOUTHWESTERN NIGERIA PUBLIC UNIVERSITIES

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Abstract

This study examined the influence of students' academic capability on the completion rate of Ph.D. programmes using a path analytic framework. It conceptualizes academic capability as a multidimensional construct comprising research ability, analytical ability, research productivity and self-efficacy. The study adopted a descriptive survey research design approach to obtain information using both physical and online approaches from 200 study participants which comprised of postgraduates who are through with their programmes of study and those who are on research, using a four-points scale questionnaire developed from the list of academic capability dimensions influencing completion rate as identified by the researcher through inductive and deductive studies. The findings of the study revealed that, research ability, analytical ability, and self-efficacy directly and indirectly influenced one-another as well as completion rate except for research productivity that exhibited a single path of direct relationship with completion rate. Self-efficacy demonstrated positive direct influences on research ability, research productivity, and completion rate ($\beta = .049$), ($\beta = .666$) and ($\beta = .152$) respectively. Furthermore, research productivity exhibited indirect positive effects on analytical ability and research productivity but a negative indirect influence on completion rate at ($\beta = .37$), ($\beta = .456$), and ($\beta = -.060$) respectively. It was also revealed that self-efficacy and research productivity demonstrated negative total effects on completion rate ($\beta = -.152$) and ($\beta = -.467$) indicating that individual students' over confidence in their ability to successfully plan and execute their research-related tasks might make them end up graduating late.

Key words: Path Analysis, Academic Capability, Ph.D. Completion Rate

Introduction

Doctoral degree as the highest level of academic training plays critical roles in knowledge production and national development. However, low completion rates and prolonged graduation time remains persistent challenge confronting all universities globally and particularly in developing countries (Lovitts, 2001; Organization for economic co-operation and development (OECD), 2022). In the context of Nigeria public universities concerns over delayed graduation and attrition in Ph.D. programmes have intensified due to institutional, financial, systemic inefficiencies and student-related factors (Ogunode & Musa, 2022). Among these factors, students' academic capability has been identified as a central determinant of doctoral degree success. Academic capability encompasses cognitive, motivational, and behavioral competencies necessary for independent research and scholarly productivity (Zimmerman, 2002; Ryan & Deci, 2020). Empirical evidence suggests that many candidates exceed the stipulated duration or fail to complete their programmes entirely (Owoade, 2021). According to Aina (2015), research indicates that less than 10% of doctoral students in Nigeria complete their programmes within the stipulated time frame. Evidence reveals that, the average completion time for doctoral degree is about 4.8 to 7 years in many Nigerian universities (Abiodun-Oyebanji, 2024; Aina, 2015).

Academic capability as a major determinant of students' effective engagement in learning and research activities encompasses prior academic achievement, research skills, critical thinking, and self-regulation (Zimmerman, 2002). Studies indicate that students with strong academic backgrounds are more likely to complete their doctoral programmes successfully and on time (Pang

et al., 2025). Students with strong research abilities are more likely to overcome research challenges, complete their dissertations on schedule, and graduate within the stipulated period, whereas those with inadequate research skills often experience delays, frustration, and attrition (Lovitts, 2001; Gardner, 2009; Pyhältö et al., 2015). Student with weak analytical abilities often experience difficulties in data analysis, interpretation, and thesis writing, thereby prolonging programme completion (Kellogg, 2006; Gardner, 2009; Pyhältö et al., 2015). Also, studies have shown that doctoral students who consistently publish and participate in research activities acquire greater research competence, receive stronger academic support, and demonstrate higher completion rates (Lee, 2008; McAlpine & Amundsen, 2011; Aarnikoivu et al., 2019). Research productivity is widely recognized as an important determinant of timely doctoral completion. According to Bandura (1997), Doctoral candidates with strong self-efficacy are more likely to maintain consistent research progress, manage academic stress effectively, and achieve timely completion.

Path analysis as an extension of multiple regression and a subset of Structural Equation Modeling (SEM), enables the examination of both direct, indirect and total effects among variables (Kline, 2015). This study therefore investigates how the identified dimensions of academic capability (research skills, academic self-efficacy, cognitive analytical ability, and research productivity) influence Ph.D. completion rates through a comprehensive causal model

Statement of the Problem

The completion of doctoral degree programmes remains a major concern in higher education globally, particularly in developing countries such as Nigeria, where delayed graduation and non-completion among doctoral students are increasingly reported. Doctoral education requires students to be able to navigate successfully with adequate research skills, cognitive analytical ability, research productivity, and self-efficacy. Despite growing recognition of student's academic capability as one of the major factors required for successful completion of postgraduate programmes, many studies have focused largely on institutional, student's, external/systemic and research-related factors with limited attention given to student's academic capability.

This study therefore, contributes to higher education research by offering a structural model that explains how academic capability predicts completion rates, mediated by factors such as motivation, quality of research supervision, and institutional support. Implications for policy and doctoral training are discussed.

Methods

This study adopted correlational research design using path analysis to examine the direct, indirect and total influences of academic capability (research ability, academic self-efficacy, cognitive analytical ability, and research productivity) on the completion rate of Ph.D. programmes in the study area.

The population of the study comprised 2,268 Ph.D. students enrolled in accredited public (federal = 8,546 and state = 820) universities in Southwestern Nigeria (NUC, 2019 statistical digest). A multi-stage sampling technique was employed, first, all public universities approved for doctoral degrees in the region were selected using stratified sampling technique, thereafter, two universities comprising one state and one federal were randomly selected, each with a total sample size of 100 respondents, five faculties were selected from each of the two selected universities, , from the 5 faculties selected, two departments from each were selected making a total of 20 departments selected from the two universities, from each selected department, 10 respondents comprising of doctoral students who are through with their programme of study and those who are on research making a total of 200 respondents selected from the two universities. The two categories of respondents were selected using convenience and purposive sampling procedures.

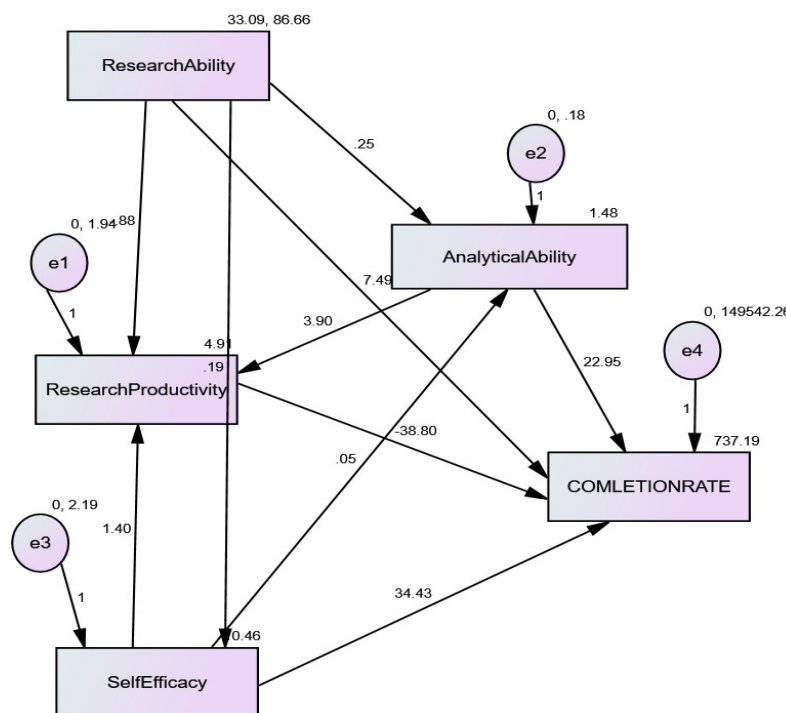
The instrument for the study comprised an adapted four-points scale questionnaire titled academic capability factors influencing completion rate (ACFICR) developed from the list of academic capability factors measured through indicators such as research skills, academic self-

efficacy, cognitive analytical ability, and research productivity as identified in literatures. The instrument had two sections, Section A, comprised of items use to elicit information on the demographic and institutional information of the respondent, section B comprised of items on academic capability of the respondents. Also, document analysis of the admission and graduation record of doctoral students admitted for 2018/2019 and 2019/2020 academic sessions in the selected universities.

The content validity of the instrument was conducted using eight panels approach to Lawshe Content Validity ratio (CVR) with item validity values ranging from .75 to 1.00 while the reliability was conducted through pilot-testing at a private university using 50 respondents and the result was subject to Cronbach's Alpha with a reliability coefficient of demographic and institutional information (.70), academic capability items (.80). Data collected for the study were analyzed using Analysis of Moment Structures (AMOS) 23 in IBM SPSS statistical package

Results and Discussion of Findings

Research Question 1: What are the paths of relationship between research skills, academic self-efficacy, cognitive analytical ability, research productivity, and the completion rate of doctoral degree programmes in the study area?



completion rate, this indicate an inverse direct relationship between research productivity and completion rate, that is the more committed doctoral students are to enhancing their research productivity, the lesser the committed to their degrees which may in turn lead to running out of the official stimulated time for their programmes, vice versa.

Research Question 3: What are the indirect effects of research ability, academic self-efficacy, cognitive analytical ability, and research productivity on the completion rate of doctoral degree programmes in the study area?

Table 2

Estimated Indirect Effects of Research Ability, Analytical Ability, Research Productivity and Self-efficacy on Completion Rate

VARIABLE INDICATOR	ESTIMATED EFFECTS	INDIRECT EFFECTS
RESEARCH ABILITY>>>>>>>>>ANALYTICAL ABILITY	.037	
RESEARCH ABILITY>>>>>>>>>RESEARCH RODUCTIVITY	2.456	
RESEARCH ABILITY>>>>>>>>>COMPLETION RATE	-.060	
SELF-EFFICACY>>>>>>>>>>>RESEARCH RODUCTIVITY	.096	
SELF-EFFICACY>>>>>>>>>>>COMPLETION RATE	-.349	
ANALYTICAL ABILITY>>>>>>>COMPLETION RATE	.926	
RESEARCH ABILITY>>>>>SELF-EFFICACY>>>>>ANALYTICAL ABILITY>>>>>COMPLETION RATE	.528	

Table 4.2 revealed that research productivity exhibited indirect positive effects on analytical ability and research productivity but a negative indirect influence on completion rate at ($\beta = .37$), ($\beta = .456$), and ($\beta = -.060$) respectively. Similarly, research ability demonstrated a positive and negative indirect influences on research productivity and completion rate at ($\beta = .096$) and ($\beta = -.349$) respectively, also, analytical ability demonstrated a positive indirect influence on completion rate at ($\beta = .926$). Conversely, research ability demonstrated a positive indirect effect on completion rate through self-efficacy and analytical ability at ($\beta = .528$). Thus, research ability and self-efficacy are the major negative indirect influencers of completion rate at ($\beta = -.060$) and ($\beta = -.349$).

Research Question 4: What are the total effects of research ability, academic self-efficacy, cognitive analytical ability, and research productivity on the completion rate of doctoral degree programmes in the study area?

Table 3

Estimated Total Effects of Research Ability, Analytical Ability, Research Productivity and Self-efficacy on Completion Rate

VARIABLE INDICATOR	ESTIMATED INDIRECT EFFECTS
RESEARCH ABILITY>>>>>>>>SELF-EFFICACY	.762
RESEARCH ABILITY>>>>>>>>ANALYTICAL ABILITY	.984
RESEARCH ABILITY>>>>>>>>RESEARCH PRODUCTIVITY	.744
RESEARCH ABILITY>>>>>>>>COMPLETION RATE	.115
SELF-EFFICACY>>>>>>>>ANALYTICAL ABILITY	.049

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