

Investigating the mediating influence of faculty on gender-moderated attitudes and exposure towards research competence

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Abstract

Research competence is crucial for postgraduate students, since it develops analytical ability. This study assessed, with gender as a moderator, the direct and indirect links between student's attitude to research-related courses, faculty, and research competence among postgraduate students in Southwest Nigeria. Using a descriptive survey design, a standardised questionnaire on demographic traits, attitudes towards research, and research competence ($\alpha = 0.98$) was used to collect data from 316 postgraduate from sampled public universities (state and federal) in Southwest, Nigeria. The result shows that there is no statistically significant relationship between attitude and Faculty ($\beta = 0.021$, $t = 1.028$, $p > 0.001$); faculty and research competence ($\beta = -0.406$, $t = -0.142$, $p > 0.001$). However, there is a positive statistically significant relationship between attitude and research competence ($\beta = 1.063$, $t = 3.068$, $p < 0.001$). Summarily, the result shows that student's attitude to research-related courses has a positive significant direct effect on research competence. Hence, research competence is much improved by good attitude towards research. However, faculty and gender had no appreciable mediating effect on this association. Therefore, independent of faculty and gender; good research attitudes to improve research competence is essential.

Keywords: Research Competence, Mediating-Moderating, Postgraduate Students, Attitude to research-related courses

Introduction

Research involves students actively seeking out fresh knowledge. It involves the development of frequently known, commonly unknown, and completely unknown knowledge. It is motivated by a desire for knowledge or a curiosity about how things are, what they may do, or what they may have done. Research competence is required to look for answers to problems, to create evidence-based arguments or theories, and to advance knowledge in a certain field of study. It is the capacity to identify a problem, determine what types of informational resources are required to respond to the problem, locate those resources efficiently, evaluate the obtained information for quality and relevance, and apply it effectively to solve the problem (Badke, 2012). Research competence is required experience to do research, and could be developed or enhanced through schooling, seminars and similar activities attended (Afolabi et al, 2022). Past experiences in the conduct of research also contribute to enhancing research competencies and outputs. Research competence also refers to the knowledge, skills,

and dispositions necessary for students to develop a convincing thesis. It also emphasises the skills, knowledge, and attitudes necessary for students to compose a solid research thesis. The University of Skovde (2016) encouraged their students to develop their critical thinking, analytical, and communication skills through a range of postgraduate research techniques (Oyedokun, 2019; Ramirez-Montoya, 2017; Ugwu et al, 2015). These elements boost the worth of postgraduates with research capabilities because they enable the production of fresh information, additional research, and ultimately the advancement of postgraduates and the expansion of universities, societies, and even entire nations.

Research competence improves students' critical and independent thinking; the ability to think critically and independently is improved. Students are versatile on how to identify research problems, establish acceptable research procedures, and formulate research questions. It also enhances student's ability to gather data, analyse, and interpret effectively.

Research effective communication is also another benefit of adequate research competence of postgraduate students. They would be able to convey findings from their studies in a variety of formats, including reports, presentations, and papers. Hence, Postgraduate students interested in research activities are required to be competent. Therefore, it is necessary to assess the research competence of postgraduate students and to determine the training needs of these students at Nigerian universities (Oyedokun et al, 2019).

In a study conducted by Oragon (2016), a sample size of 1,744 postgraduate students was drawn from Postgraduate students in South-south Nigeria, to investigate the influence of students' characteristics such as gender, age, and academic discipline on resource usage. The study found that there is a significant influence of demographic features such as gender, academic discipline and age on postgraduate students' attitude towards the use of information resources. This is due to the fact that gender, academic discipline and age, which are the variables under discussion, can influence postgraduate students' attitude towards the use of information resources. Their study is on information resources and was carried out in South-South, Nigeria. However, this present study is centered on the research competence of postgraduate students and was conducted in South-west Nigeria.

Gender has featured as one of the most researched variables in higher education focusing on both students and staff. According to Bassi and Camble (2011), the gender variable is interesting to explore when considering students' use of electronic resources and library resources. In their study which examined gender differences in the use of electronic libraries, they found out that male postgraduate students tend to use library resources more often than their female counterparts. The study employed a survey method that targeted the 5,269 student population at the Federal University of Technology in Yola State, American University of Nigeria and Adamawa State University, all in Yola. The selected sample size was 1,053 including 496 male and 228 female students.

The details of the discussion reveal that the type of e-resources available in each school moderates the use of the resources by each gender. While both genders interact with e-library resources, it was observed that males' interactions were more than that of the females because more female students indicated a difficulty in sourcing for information on the internet and in general, technology usage. Other factors observed to be responsible for the disparity in male and females' use of e-resources include exposure to technology and computer resources, socioeconomic status and the time each gender spend on the internet.

Agah et al. (2023) examine the characteristics of lecturers and students and their influence on research competence among postgraduate students. The study adopted a correlational design method in which 628 postgraduate students from federal universities in the South-eastern part of Nigeria participated. The variables included in the study were lecturers' characteristics such as age and qualifications, while students' characteristics include gender, age, and time spent studying. The findings show that there is a direct effect on an array of lecturers' and students' characteristics such as lecturer-student relationship, lecturers' experience, and time students spent studying, lecturers' competence in research supervision and students' research competence. In Ekpoto et al. (2020), gender and academic discipline are considered as correlates of research competence and research skills application among postgraduate students in the Faculties of Education in Cross River State University of Technology and the University of Calabar. The study examined research skills based on data collection, and data analysis, problem statement, literature search, instrument formulation and validation, reporting and referencing. The study examined M.Ed. theses for 2017/2018 academic session in both faculties considered. Thus, 124 theses from the University of Calabar and 20 theses from Cross River University of Technology were examined. The findings indicated no significant difference between students' sex and academic discipline. It was also observed that academic discipline does not significantly correlate with application of research skills by postgraduate students on the

metric of research competence identified. While it was observed that individual differences among students can moderate between academic discipline and elements of research competence, the scale of the differences is however not application when generalised.

Saleem et al. (2015) examine differences in gender among postgraduate students in public and private universities alongside their attitudes towards research. The study investigates male and female students' attitudes to research compared with their postgraduate level in public and private universities in Pakistan. Research attitudes were examined on the basis of research anxiety, research difficulty, usefulness of research to the relevant profession, positive attitude towards life and relevance of research to life. The study followed a descriptive methodology using survey questionnaires while data were collected from MPhil/MSc students in the social sciences and humanities. The findings show a significant difference between research attitudes of both sexes, with the males expressing a relatively positive attitude towards research compared to the females. However, there was an insignificant difference in the research attitudes of the female and male students in the private universities, thus suggesting that university ownership moderate between gender differences in attitude to research. Despite the male students expressing more positive attitudes towards research compared to the female students, it was however observed that male students consider research to be important to their lives and hence expressed more anxiety towards research as compared to the female students. Some causative factors in the variation between students' sex and attitudes towards research as indicated in the study include the Pakistani culture in which females are usually expected to avoid field work with strangers and only participate in research for academic purpose, while the male students consider research as an important part of their lives.

Kakupa and Xue (2019) also examine graduate education students' attitudes towards research, and explored the demographic factors associated with those attitudes. Using

Papanastasiou's (2014) Revised Attitude towards Research (R-ATR) scale, the study collected data from 100 graduate students of an Education Faculty at a university in northern China. Findings from the study established that the attitudes of students were moderately positive. Additionally, the study did not find any significant differences among the age groups examined. Also, the overall mean attitude scores of males and females were not found to be significantly different. Interestingly, the study found that males had significantly more positive research predispositions than females.

For postgraduate students, research competence is crucial since it determines their capacity to carry out efficient research, which is necessary for academic achievement and professional growth. Though research competence is clearly important, there are questions regarding the suitability of these abilities among Nigerian postgraduate students in particular. Many studies have underlined problems such as poor mentoring, restricted access to research tools, and different opinions on research that could hinder the evolution of research ability. Moreover, demographic elements like gender and the kind of teacher could affect students' perceptions of research and their following research competence. Previous studies on the influence of these factors have produced conflicting findings, implying the necessity of an all-encompassing investigation including direct and indirect consequences. This study attempts to close this knowledge gap by methodically analysing the elements influencing research competence of Southwest Nigerian postgraduate students. The study aims to shed light on how attitudes towards research, gender, and faculty type interact to influence research competence so guiding focused interventions to improve research competence among postgraduate students, in order to aid progress, knowledge and general university and society growth.

Objectives of the study

The main objective of this study is to investigate Southwest Nigerian postgraduate students' research competence and investigate the elements affecting it. Particularly, the specific objectives are:

- to examine whether gender influences

the relationship between students' research competence and attitudes about research;

- to examine whether faculty influences the relationship between students' research competence and attitudes about research; and
- to investigate how gender and faculty type interact to affect students' attitudes towards research and their degree of research competence.

Hypothesis

The following hypotheses were tested in the study:

Ho1: Attitude does not positively influence research competence.

Ho2: The relationship between attitude and research competence is not moderated by gender.

Ho3: The relationship between attitude and research competence is not mediated by faculty type.

Ho4: The mediating effect of faculty on the relationship between attitude and research competence is not moderated by gender.

Methodology

This study investigated, among postgraduate students, the effects of attitude, faculty type, and gender on research competence using a descriptive survey design. Data were gathered and examined using a quantitative method from a sample of postgraduate students in Southwest Nigeria. This methodology was selected to ascertain the degree to which attitudes, faculty type, and gender predict research competence, as well as to identify the correlations between variables.

This survey included postgraduate students from Six Southwest Nigerian universities. The formula adopted for the sample size calculation

$$n = \frac{Z^2 p (1-p)}{E^2}$$

Using the formula, the corresponding to the desired confidence level is 1.96 for 95% confidence; p is the estimated proportion of the population (set at 0.5 for maximum variability), and E is the margin of error (also set at 0.5 for maximum variability). Hence, the sample size

for the study is 384.16 approximately = 384 (Singh and Masuku, 2014). However, 82% (316 postgraduate students) of the intended respondents participated in the study. The strata examined included gender (male and female), type of institution (federal and state universities), and academic fields (Arts/Humanities, Education, Social Sciences/Management).

Demographic Characteristics of participants

Variable	Characteristics	Percent
Gender	Male	55.4
	Female	43.0
Faculty	Art/Humanities	6.3
	Education	47.2
	Social Science/Management	46.5
Current Programme Level	Coursework	31.6
	Proposal	19.9
	Fieldwork	25.9
	Post field	7.3
	Oral defense/viva	15.2

A standardised questionnaire comprising items on demographic traits, attitudes towards research, and self-evaluated research competence was used for data collection. Designed to meet the framework of this study, the questionnaire was modified from previously tested instruments. Gender, faculty type and current programme level were among the demographic details recorded here. Items gauging students' interest, drive, and view of research included part of the attitude towards research section. The part on research competence evaluated knowledge in data collection, analysis, reporting, and problem identification. Gender, institution, faculty, programme type, and current programme level constitute demographic information. Attitude towards research: Inspired by the Revised Attitude towards Research (R-ATR) scale (Papanastasiou, 2014), this part had items scored on a 5-point Likert scale spanning "Strongly Disagree" to "Strongly Agree." Research Competence: Designed based on literature (Badke, 2012; Oyedokun et al., 2019), this part comprised items evaluating competence in several research activities is also scored on a 5-point Likert scale. The reliability

coefficient for the scale is 0.98, which signified highly reliable internal consistency of the instrument.

The pertinent institutional review boards certified ethical approval for the study. Before data collection, participants' consent was sought and acquired after their knowledge of the goal of the research. Participants' anonymity and confidentiality were guaranteed all through the study. Data were analysed with Andrew F. Hayes' PROCESS macro, and the Statistical Package for the Social Sciences (SPSS). The participants' demographic traits were gathered using descriptive statistics. The hypotheses were tested using inferential statistics, comprising multiple regression analysis and moderated moderation analysis.

Results

The presentation of the result is based on the tested hypotheses in the study:

Ho1: Research competence is not much influenced by attitude.

Ho2: Gender does not affect the association between attitude and research competence.

Ho3: Faculty type has no mediator effect between attitude and research competence.

Ho4: Gender does not influence the mediating effect of faculty on the association between attitude and research competence.

Model Summary

The moderated moderation analysis was conducted using model 7 of the Andrew F. Hayes 'PROCESS' Marco to explore the relationship between Attitude (ATT), faculty (mediator), and research competence with gender as the moderator variable. The model summary shows 2.93% of variation in research competence is due to the predictor variable (attitude) which indicates that the predictor variable significantly predicts the outcome variable. The R-square = 0.1710, and the adjusted R-square = 0.0293. The sample size is 316.

Direct Relationships	Unstandardized Coefficient	T values	P Value	Remarks
Attitude (ATT) -> Faculty	0.021	1.028	0.305	Not Significant
Faculty -> Research Competence	-0.406	-0.142	0.888	Not Significant
Attitude -> Research Competence	1.063	3.068	0.003	Significant
Attitude (ATT) * Gender-> Faculty	-0.151	-1.098	0.273	Not Significant

The result of the analysis examines the direct relationship between Attitude and Faculty, the relationship between faculty and research competence, attitude and research competence and the interaction between attitude, gender and faculty. The result shows that there is no statistically significant relationship between attitude and Faculty ($\beta = 0.021$, $t = 1.028$, $p > 0.001$). In addition, the result shows that there is no statistically significant relationship between faculty and research competence ($\beta = -0.406$, $t = -0.142$, $p > 0.001$). The result of the analysis also shows that there is a positive statistically significant relationship between attitude and

research competence ($\beta = 1.063$, $t = 3.068$, $p < 0.001$). The result also shows that there is no statistically significant interaction between attitude, gender and faculty ($\beta = -0.151$, $t = -1.098$, $p > 0.001$). The result of the analysis shows that that Attitude of students has a positive significant direct effect on research competence of students. This implies that positive attitude of students towards research increases research competence of students. The result further implies that exhibiting positive attitude towards research activities increases research competence of students.

Indirect Relationships	Direct Effect	Indirect Effect (SE)	Confidence Interval Low/High	T values
Attitude (ATT) -> Faculty -> Research Competence	1.063	-0.002 (0.030)	-0.063/0.071	-0.087
Probing Moderated Indirect Relationships	Effect	SE		t-statistics
Gender Male	-0.003	0.031	-0.063/0.072	-0.085
Gender Female	0.004	0.036	-0.068/0.090	0.100
Index of Moderated Mediation	0.006	0.056	-0.115/0.129	0.109

The mediation moderation analysis shows the indirect relationship between the mediator and moderator on the predictor variable. The result of the analysis shows that the indirect effect the mediator (faculty) on the relationship between attitude and research competence is not statistically significant ($\beta = 1.063$, $t = -0.087$, $p > 0.001$). The result shows that possession of adequate research competence is not mediated by faculty type of students. The result implies that student faculty does not have a significant positive influence of research competence of students.

The result of the analysis also shows the relationship between attitude and research competence through the moderator (Gender). The result shows that the moderator (Gender) does not have a statistically significant indirect effect on the mediator. The result shows that gender does not have an effect on research competence. The result also shows that the mediated moderated indirect effect on the predictor is not statistically significant ($\beta = 0.006$, $t = 0.109$, $p > 0.001$). The result implies that the mediation effect of faculty on attitude and research competence is not dependent on gender.

In conclusion, the result shows that students' attitude towards research positively increases the research competence of students. However, the result shows that the relationship between attitude and research competence is not mediated by faculty of students. Also, the result reveal that the relationship between attitude and students is not moderated by gender. The result also reveals that faculty and gender does not significantly have an effect on the relationship

between students' attitude to research and their research competence.

Therefore, we do not reject Ho2, Ho3, Ho4, while Ho1 is rejected since the result of the analysis shows there is a statistically significant relationship between attitude and research competence.

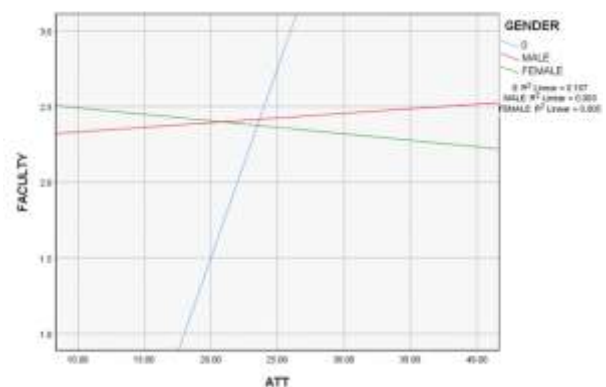


Figure 1: Showing Visualisation of the relationship between the variables

Discussion

The findings of this study underline the important role attitudes play in determining research competence of postgraduate students. A good attitude towards research directly improves research competence; so, it is clear that students who are more eager and involved in research activities usually acquire better research skills. This is consistent with earlier research underlining the need for motivation and curiosity in driving research capacities (Badke, 2012; Afolabi et al., 2022). Fascinatingly, the study revealed no appreciable mediator between teacher type and attitude or research competence. This implies that a student's attitude towards research does not affect their particular academic discipline or faculty

affiliation significantly, therefore determining their research skills. This result runs counter to the findings of Oyedokun (2019) and Ramirez-Montoya (2017) that different faculties could offer varying degrees of assistance and resources, therefore influencing research competence. But the present study posits that personal attitudes could be more important than institutional or disciplinary setting.

Furthermore, lacking any notable moderating influence on the connection between attitude and research competence was gender. This outcome is in line with other earlier studies (Bassi and Camble, 2011; Ekpoto et al., 2020) which noted little gender variations in research resource use and skills application. It implies that when students have good attitudes towards research, both male and female ones can reach equivalent degrees of research competence. This result, however, runs counter to previous studies such as Saleem et al. (2015), which noted notable gender variations in research attitudes and anxiety levels. These variances could be the result of institutional or cultural differences, which emphasises the necessity of more study in many settings. The lack of a notable relationship between faculty, gender, and research competence emphasises the worldwide need of encouraging good research attitudes among all postgraduate students, independent of their demographic or academic background. This result is consistent with the stance of Kakupa and Xue (2019) which underlined the significance of helpful surroundings fostering good research orientations.

Conclusion

This study shows that among Southwest Nigerian postgraduate students, good attitudes about research greatly improve research competence. Although gender and faculty type do not modify or mediate this association, establishing excellent research competence depends on encouraging a positive attitude towards the work.

Recommendation

Based on the findings of this study, it is recommended that universities should concentrate on building environments that foster good research attitudes, therefore

improving the general quality of the postgraduate research output. Notwithstanding these revelations, the study had restrictions including its regional concentration on Southwest Nigeria, which could restrict the generalisability of the results. Future studies could consider more general geographical settings and incorporate qualitative data to offer better understanding of the fundamental causes of students' views and their effect on research competence. Future studies should investigate these dynamics in many cultural and institutional settings in order to validate and extend upon these results even more.

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