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Gender and Family Size as Determinants of Research Productivity among Library Educators in Nigeria

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Abstract
This study examines gender and family size effects on Nigerian library educators' research productivity levels. The cross-sectional study used questionnaires to obtain data from 168 library educators in Nigeria. Data was collected via snowball sampling technique. All data collected were analysed using descriptive and inferential statistics. The study results showed that Nigerian library educators write journal papers and do research at high rates. However, male library educators published more and engaged in more research activities than female educators. Educators with more prominent families had better research production, suggesting time management support. These findings emphasized the need for gender equity and family-friendly policies in academic institutions to support research excellence and career progression for all educators. Thus, the study made workable recommendations and concluded that the link between family size and research output is complex.

Keywords: Academic publishing, family size, gender disparities, library educators, Nigeria, research productivity

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Introduction

Research productivity has received much attention over the last few years. Research productivity is vital for professional progression, improved living standards, and a more effective teaching job performance (Ekeroma et al., 2016). Research productivity in every institution cannot be over-emphasized. Research productivity plays a significant role in attaining academic success and research development. More so, research leads to the creation of new ideas and knowledge required for advancement. Therefore, being productive in research is very necessary for academics if they must expand the frontiers of knowledge. However, defining, assessing, measuring research productivity, and determining factors responsible for research productivity has been very difficult. Many have relied on bibliometric measures such as citation index to measure research productivity. Others have used several publications to assess the research productivity of academics. For instance, Bassey et al. (2017) noted that research published in universities and polytechnics is the primary or most significant indicator of academic staff productivity.

Given this, the quality and number of publications and academic attainments should be the benchmark for the measurement of the research productivity of lecturers. Therefore, research productivity means all the activities culminating in research output by a given author, such as journal articles, conference papers, posters, book chapters, books, theses/dissertations, reports, etc. Research productivity of academics can be grouped into various levels, including top, medium, and low performers. Gopalakrishna et al. (2022) have found that academics have different frequency of publishing although there were some prevalence of research misconduct. Notably, many studies (Brew et al., 2015; Edgar &Geare, 2013; Kim et al., 2011; Dever & Morrison, 2009) have determined the factors responsible for research productivity amongst lecturers. For instance, Postiglione and Jung (2013) investigated why some academics are more productive in research publications than others. They found that the main factor responsible for the most minor research-productive academics was their affiliated universities. However, Postiglione and Jung failed to refer to other predictors of research productivity but instead focused on descriptive statistics. Similarly, Brew et al. (2015) also considered the institution's type and size as a factor affecting research productivity. They found a significant relationship between size and type of organisation with the research productivity of workers.

Other factors suggested by some authors were the availability of funds (Jacob & Lefgren, 2011; Vlăsceanu & Hâncean, 2015), demographic variables such as age (Simisaye & Popoola, 2023), gender (Subramanian & Nammalvar, 2017); family size, etc.

Quimbo and Sulabo (2014) have also suggested academic capabilities and self-efficacy as factors that could affect research productivity among individuals. However, concerning gender as a factor of research productivity, many conflicting results have been found. For instance, Eloy et al. (2013) have found that the number of women in research has increased exponentially even though better performances in research have been found among men. Agaronnik et al. (2022) also reported higher research productivity among male academics, with female academics lagging. However, arguments emanate that the differences are more minor than what studies have portrayed and are likely to reduce over time (Abramo et al., 2009). Besides, given that the number of women who break the glass ceiling is increasing exponentially, it is believed that the research productivity of male educators will not be significantly different from that of female educators in Nigeria.

Again, most studies that addressed the impact of gender on research productivity did so alongside age rather than family size. In previous studies, men were found to publish more than their female counterparts. More so, Chatterjee and Werner (2021) study found that male scholarly works have received substantially more citations than female authors. Other studies like that of Subramanian and Nammalvar (2017) have concluded that gender gaps exist in research productivity. The puzzle accruing from this is what could be responsible for these gender gaps in research productivity.

Family-related factors were identified as the reasons for gender gaps in research productivity with men on the front lines (Roro et al., 2021; Sax et al., 2012). One likely family-related factor that could be responsible for females lagging behind their male counterparts in research is family size—few studies related to gender and family size together as predictors of research productivity among academics. Family size refers to the number of people in a family. Women are considered responsible for domestic labour and childcare. They bear a disproportionate share of domestic labour in the home to men taking care of the people in the family in both developed and developing countries. Historically, women's involvement in domestic labour, especially caregiving, was deeply rooted in gender norms applicable to colonialism as well as imperialism. Women are more involved in child-raising, elderly family care, etc, than men. The stereotypes associated with feminizing domestic labour in the past have, however, changed slightly. U.S. Bureau of Labor Statistics (2022) reported that in 2020, the percentage of women in the labor force was 56.2%, which was 1.2 percentage points less than in 2019. In 2020, the labor force participation rate for men, which has consistently been significantly higher than that of women, also declined; it fell by 1.5 percentage points to 67.7 percent for men. The impact of the pandemic on the labor market is

reflected in these decreases in labor force participation (U.S. Bureau of Labor Statistics, 2022).

Nevertheless, several studies have proven that women, to date, are more involved in domestic labour than men (Uko, 2019; Murry et al., 2012 & Gazzo & Mcmullin, 2003), which is a result of traditional gender roles and gender equality. For instance, O'Brien (2019) has found that even in 2019, women are still the majority that handles the burden of taking care of family members. Specific functionalist theories support the perception that men and women are naturally suited for various tasks. Therefore, in a situation where women are faced with the brunt of taking care of the family, research productivity, which is time and energy-demanding, may suffer.

Unfortunately, little or no attention has been given to the impact of gender and family size on the research productivity of educators. Even the few studies that considered family size as a predictor of research productivity covered various social sciences and humanities disciplines. Library educators' role in this digital age, especially during and beyond the new coronavirus pandemic, transcends from information providing and tutoring to agents of participatory educational processes. Library educators no longer only gather and make available information to students and the public at large but also actively participate in the entire educational process. Therefore, concerns are raised about the levels of research productivity among female and male library educators since research productivity is the bedrock for success in teaching, research, and service. Besides, considering the tenets of the conflict theory related to gender and research productivity, this study sought to investigate gender and family size as a determinant of research productivity among library educators in Nigeria.

Objectives of the study

The study specifically seeks to;

1. Determine the research productivity levels of male and female library educators in Nigeria.

2. Determine the gender disparities in research productivity among library educators in Nigeria.

3. Find out if family size influences the research productivity of male and female library educators in Nigeria

Theoretical Framework

Conflict theory

Karl Marx first propounded the Conflict theory in 1848. The theory holds that society is in perpetual conflict because of competition for limited resources". It focuses on the

competition between male and female educators within higher learning institutions (Challelow, 2020). Conflict theory defines society as a struggle for dominance among social groups (men and female library educators) that compete for scarce resources. According to conflict theorists, humans are productive. Nonetheless, one group may be more productive because of competitiveness, power, etc. In this study, it is believed that, like the conflict theory, male educators attempt to maintain power to the detriment of the female educator.

Historically, males have been found to have higher levels of research productivity than their female counterparts. They climb the ladder of research faster than females (Roro et al., 2021; Sax et al., 2012; Lone & Hussain, 2017). Therefore, men can be seen as the dominant group and women as the subordinate group. Nonetheless, irrespective of the perceived traditional gender roles, conflict theorists argue that men's dominance in research productivity persists because men naturally work to maintain their dominance in academics through research. Indeed, research productivity in most tertiary institutions is the criteria for academic promotions and advancement. The higher your research output, the higher your academic advancement. Nevertheless, we did not fail to recognise a moderating factor (family size) that may have inhibited women from maintaining higher levels of research productivity than their male counterparts.

For example, a German sociologist, Friedrich Engels, studied the family structure and gender roles from a conflict theory perspective. Engels suggested that the same owner-worker relationship seen in the labour force could also be seen in the household, with women assuming the proletariat's role. This is because women depended on their men for financial needs. Thus, since research is time-demanding and fund-consuming, men, as argued by the conflict theorists, would naturally maintain their dominance in research productivity. However, today, many women have joined the wage labour market. They are gaining more power in the family, although studies like that of O'Brien (2019) have found that women are still the majority that handle the brunt of domestic labour and caregiving in the home. If the family structure is extensive and consists of younger children, would it not affect women's levels of research productivity? Therefore, the arguments of the conflict theory are debated in this study.

Literature Review

Gender and research productivity

Research productivity varies largely from institution to institution. However, research has shown that gender is a significant factor in research productivity among educators/ academics, irrespective of the institution. Exploring the ongoing research productivity puzzle, which is anchored on the beliefs that women's involvement in child-raising and domestic labour could reduce the research productivity of academics, has been a source

of concern. Roro et al. (2021) investigated gender and child-raising as it affects the research productivity of women. Roro et al. found that productivity is higher for PhDs with children under 11. His findings also revealed relatively low productivity for women with young children. However, he found that gender is unrelated to research productivity, but women in the social sciences with young children have relatively low productivity. These gender differences in research productivity were further confirmed in the studies of Aiston and Jung (2015), Flaherty (2020), and Cui et al. (2020). Even Eloy et al. (2013) attributed this gender difference as the leading cause of females' underrepresentation in professor cadre and departmental leaders. A different view was displayed by Krapf, Ursprung, and Zimmermann (2014). They found a negative effect of parenting on unmarried women and a positive one for untenured men. Moreover, women who became mothers before 30 were likely to have less research productivity than others. However, none of these studies investigated the reasons for these gender differences in research productivity, with men in preponderance.

However, in other studies like that of Tower, Plummer, and Ridgewell (2017), gender differences in research productivity do not exist. They examined the research productivity in male and female academics using 6 top journals worldwide and found no difference between women's and men's productivity. Tower, Plummer, and Ridgewell also discovered no significant statistical differences in journal impact factor ratings between men and women across all the major disciplines. Similarly, Kelchtermans and Veugelers (2013) revealed that female academics had a significantly lower probability of achieving top performances in research. However, there is no evidence of a gender bias hindering repeated top performance. On the contrary, they found that women persist in top performance more quickly than men. With mixed conclusions in previous studies, the nagging question is what factors are responsible for the gender difference in research productivity among academics found in some previous studies.

Family Size and Research Productivity

Family-related status might be linked to research productivity among educators. However, Aiston and Jung (2015) argue that family is not, in all cases, operating as a form of negative equity in the prestige economy of higher education. In Barber et al. (2021) study, family size was found to influence productivity, with wives being negatively affected more than husbands. This is because wives bear a disproportionate share of the burden for child care and care of family members. By this, a mild conflict is inherent, as postulated by conflict theorists. Rahim and Katz (2019) findings show that conflicts between males and females in research productivity exist even though it does not look antagonistic, but it shows that as straightforward as research productivity between male and female educators may seem, multiple layers of conflict arise.

Irrespective of the postulations of the conflict theory, we assume that women educators, despite their family size, are more likely than their male counterparts to have either

higher or insignificant lower levels of research productivity. This position was drawn from the conclusions of Norris (2011), who concluded that women are not only increasing in the labour market but are breaking the barriers to career advancement. Moreover, McGee (2010) found that women in his study have learned to balance personal and professional lives. Besides, most research on gender has shown that gender stereotypes, if at all, may be self-imposed. Again, Roro et al. (2021) has discovered that children are not a strong predictor of productivity, but the influence that they do have followed a gendered pattern. Women were found to publish less than men who had the same number of children. Could it mean that the number of children living in the home of a female library educator affects the research productivity of female educators, not that of males? This points to the premise that family size affects female educators' research productivity more than males because researchers have found that women are more likely than men to be involved in domestic labour, which takes up their time for research. Nonetheless, the likely association between the number of people in the family and the research productivity of male and female library educators has yet to be duly investigated. Therefore, the following hypotheses are raised.

Ho1: The research productivity of library educators with larger family sizes will not significantly differ from those with smaller family sizes.

Ho2- The research productivity of male library educators will not be significantly different from that of female library educators in Nigeria

Methods

This study is cross-sectional research that uses a correlational research design. The population of this study consists of all library educators in library schools in Nigeria which is 346 educators NALISE (2020). A sample size of 183 library educators was selected using the Wimmer and Dominick sample size calculator. In both online and printed formats, questionnaires were the research instruments used for the study. 105 printed copies were distributed, while 78 responses were online responses. However, one hundred sixty-eight questionnaires were considered valid for analysis. Content and face validity were ascertained for the instruments with the help of experts in the library and information science education and research who made recommendations and corrections incorporated into the instruments. Furthermore, a pilot test was conducted to ascertain the reliability of the questionnaires. Data gathered were tested using Cronbach Alpha on SPSS version 25. The questionnaire's internal consistency (reliability) coefficient of 0.83 was obtained. We understand that some library educators may have

children who no longer live in the house and are not expected to influence their present research output. However, we did not exclude library educators whose children no longer live with them because it is assumed that while climbing the ladder of their research productivity, there must have been a point when their children lived with them. Thus, no inclusion or exclusion criterion was used to avoid biases and embrace objectivity. Data from questionnaires were analysed using descriptive statistics, bootstrap t-test, and regression analysis using SPSS version 25. A test of the normality of data was conducted using Kurtosis and Skewness. Values ranged from -1 to +1. Thus, the data used in this study were usually distributed. The threshold for significance was set at $P < 0.05$.

Results

Table 1: Respondents Bio-data (n=168)

Variables		Frequency	Per cent
Gender	Female	96	57.1
	Male	72	42.9
age	31 - 40 years	36	21.4
	41-50 years	66	39.3
	51 years and above	66	39.3
How many persons live in your home, including yourself?	1-5 persons	96	57.1
	6-10 persons	66	39.3
	16 persons and above	6	3.6
How many children do you have?	1 - 3 Children	24	14.3
	3 - 6 years	77	45.8
	7 children and above	49	29.2
	None	18	10.7

The importance of gender and other socio-demographic variables is vital for understanding library educators' productivity patterns. Table 1 shows the socio-economic variables of respondents (library educators) in Nigeria. There is a preponderance of female library educators as 96 respondents identified as female, accounting for 57.1% of the sample, while 72 respondents identified as male, accounting for 42.9%. This gender distribution implies that there are more female library educators than male. The age distribution of respondents covers all professional phases, with 36 respondents aged 31-40 (21.4%), 66 aged 41-50 (39.3%), and an equal number aged 51+

(39.3%). Also, most respondents (57.1%) lived with 1-5 people. With 66 respondents (39.3%), fewer reported living with 6-10 people, and just 6 reported with 16 or more. Likewise, respondents reported various numbers of children they had. The majority of library educators, that is, 77 respondents, have 3-6 children (45.8%). 24 respondents have 1-3 children (14.3%), 49 respondents have 7 children and beyond (29.2%), and 18 respondents report having no children (10.7%). These show that library educators have relatively large family sizes.

Table 2: Research productivity levels of male and female library educators in Nigeria (n=168)

Variables		Frequency	Percent
How many published journal articles/ or accepted articles do you have in scholarly journals	None	1	0.6
	Less than 5	22	13.1
	6-14	30	17.9
	15-24	37	22.0
	24 articles and above	78	46.4
Have you reviewed any scholarly articles/books?	No	43	25.6
	Yes	125	74.4
How many abstracts of conference papers do you have that have appeared in conference proceeding	None	60	35.7
	Less than 5	84	50.0
	6-10	10	6.0
	11-15	9	5.4
	16 and above	5	3.0
Have you given any keynote addresses/presentations?	No	96	57.1
	Yes	72	42.9
Have you ever delivered a public lecture?	Not sure	6	3.6
	No	60	35.7
	Yes	99	58.9
how many chapters of books have you read in an edited book?	None	41	24.4
	Less than 5	93	55.4
	5-10	3	1.8
	11 and above	31	18.5
Are you currently carrying out any research?	I would instead not tell	6	3.6
	No	24	14.3
	Yes	138	82.1
How many books have you	None	123	73.2

authored/coauthored?	Less than 3	30	17.9
	3-5	15	8.9
Do you have any original posters/exhibitions, etc.?	Not sure	12	7.1
	No	132	78.6
	Yes	18	10.7

In Table 2, it can be seen that 78 respondents out of the 168 library educators surveyed (46.4%) reported having 24 or more scientific journal papers published or accepted for publication. This shows that library educators in Nigeria are well-published. Interestingly, only one respondent (0.6%) reported having no publications published or accepted. Similarly, a high majority of 74.4% acknowledged reviewing scholarly articles or books. Many respondents have given keynote talks or presentations (72, 42.9%), public lectures (99, 58.9%), and written books (45, 26.8%). Most educators, that is 82.1%, are currently conducting at least one research. These data suggest that library educators are highly involved in academic activities, which boosts research output. However, few respondents have unique posters or exhibitions (10.7%). An alarming majority of respondents have yet to author or coauthor a book (73%). This suggests that there is room for improvement.

Table 3. Gender disparities in research productivity among library educators in Nigeria (n=168)

Independent Samples Test						
		Levene's Test for Equality of Variances				
		F	Sig.	t	df	Sig. (2-tailed)
How many published journal articles/ or accepted articles do you have in scholarly journals	Equal variances assumed	82.438	0.000	-4.218	166	0.000
	Equal variances not assumed.			-4.563	152.642	0.000
Have you reviewed any scholarly articles/books?	Equal variances assumed	81.323	0.000	-3.867	166	0.000
	Equal variances not assumed.			-4.096	163.228	0.000

How many abstracts of conference papers do you have that have appeared in conference proceeding	Equal variances assumed	4.323	0.039	-0.706	166	0.481
	Equal variances are not assumed.			-0.680	129.253	0.498
Have you given any keynote addresses/presentations?	Equal variances assumed	5.247	0.023	-5.905	166	0.000
	Equal variances are not assumed.			-5.832	145.528	0.000

To achieve objective two, Ho2, "The research productivity of male library educators will not be significantly different from that of female library educators in Nigeria", will be tested. An independent samples t-test was used to test the hypothesis. The results showed significant disparities in research productivity measures between male and female library educators in Nigeria. The study found that male library educators wrote more journal papers than female educators ($t(166) = -4.218$, $p < 0.001$). This shows a gender disparity in academic publications, with male educators publishing more journals. Female educators were less likely to review scholarly papers or books than male educators ($t(166) = -3.867$, $p < 0.001$). However, the number of conference papers respondents presented was similar for both male and female educators ($t(166) = -0.706$, $p = 0.481$), showing gender parity in conference participation and presentation. It was also found that male educators are more likely to give keynote addresses or presentations than female educators ($t(166) = -5.905$, $p < 0.001$). These gaps highlight gender inequalities in academic visibility and leadership, which could perpetuate academic hierarchical power relations.

Table 4. Family size influences the research productivity of male and female library educators in Nigeria (n=168)

ANOVA						Tukey B[a,b]		
How many published journal articles/ or accepted articles do you have in scholarly journals?								
	Sum of Squares	df	Mean Square	F	Sig.	How many persons	N	Subset for alpha =

						live in your home, including yourself?		0.05	
Between Groups	60.338	2	30.169	34.412	0.000			1	2
Within Groups	144.656	165	0.877			1-5 persons	96	3.49	
Total	204.994	167				6-10 persons	66		4.67
						16 persons and above	6		5.00

Results in Table 4 showed significant differences in research productivity levels among library educators based on their family size ($F(2, 165) = 34.412$, $p < .001$). A post hoc comparison using Tukey's Honestly Significant Difference (HSD) test was done to determine which group of family size had more research productivity levels. The findings indicate that educators in households with 1-5 members had a mean research productivity score of 3.49, significantly less than those with 6-10 people ($x = 4.67$) and 16 or more people ($x = 5.00$). However, the differences between the latter two groups were not significant. Therefore, it could be implied that educators with larger families are likely to have higher research productivity levels. This could be because support systems are more robust in larger families (Forsberg, 2019), letting library educators delegate domestic duties and childcare to others. This support can help them focus on their research.

Discussion of findings

Objective 1: Determine the research productivity levels of male and female library educators in Nigeria.

Library educators improve their field via academic writing and conference involvement (Rimmer & Floyd, 2020). It was found that Nigerian library educators have high levels of research productivity since 46.4% have 24 or more scientific journal papers published or accepted for publication and were involved in different research activities. This is consistent with a study by Brew et al. (2016), which found that academics publish their research internationally even though they think of research differently. In contrast, Caminiti, Iezzi, and Ghetti (2015) found that only a few individuals performed well across multiple indicators, whereas for the majority, output mainly consisted of publications. High journal article publication rates and active research participation

demonstrate a dedication to knowledge advancement and intellectual interchange. This supports higher institutions' goal of encouraging faculty research and innovation.

Objective 2: Determine the gender disparities that exist in research productivity among library educators in Nigeria

The study found significant gender differences in Nigerian male and female library educators' research productivity indicators. Male library educators wrote more journal papers, reviewed more academic publications or books, and gave more keynote addresses or presentations than female educators. These findings are consistent with prior research, which found a gender disparity in research productivity among academics in numerous countries (Ha et al., 2021; Cui et al., 2021; Subramanian & Nammalva, 2017; Stack et al., 2017). Specifically, Stack, Lone, and Hussain (2017) found that gender was related to research productivity, with male academics having higher average productivity than females for all the performance indicators, especially research productivity. Similarly, Subramanian and Nammalva (2017) found that the male teaching faculty (N=520, Mean score=12.47, Median =12.00 SD=4.671) fared better than the female teaching faculty (N=654, Mean score=11.70, Median = 9.00, SD=4.784) (Subramanian & Nammalva, 2017). However, the results of Tower, Plummer, and Ridgewell (2017) contradict the current study as they found that gender differences in research productivity do not exist. Thus, despite contradicting findings, the present study supports past studies about the gender disparity among educator research productivity. This calls for more research and strategies to overcome it.

Objective 3: Find out if family size influences the research productivity of male and female library educators in Nigeria.

The study found that family size affects Nigerian library educators' research productivity. Researchers found that teachers with more prominent families had better research productivity. This result somewhat contradicts those of Hunter (2016). The author found that having children and a large family size affects the research productivity of academics. However, the current study results are consistent with the findings of a Forsberg (2019) study, which found that having children can enhance academic research productivity. Parents with more prominent families may acquire better time management and organisational abilities, boosting research productivity.

It is unclear if Forsberg's (2019) findings will apply to Nigerian academics as the study was based on a U.S. sample. The link between family size and research productivity may be complicated and varied.

Conclusion and Recommendations

This research has revealed that library educators had commendable research productivity levels. It shows that they are committed to expanding knowledge through publication and research. However, gender disparity exists in this regard. Male educators outperformed female educators in journal publishing, academic reviews, and keynote addresses, mirroring global trends that require further investigation and action. The link between family size and research output is complex. Educators from more prominent families were more productive due to better support structures for domestic delegation. However, this conclusion requires further study of cultural differences and support networks. Therefore, the following recommendations are made:

1. Institutions should prioritise gender equity activities to alleviate research productivity and gender discrepancies. These activities involve mentorship, professional development, and targeted assistance for female educators to improve their research abilities and growth.

2. Encouraging inclusive work cultures where male and female educators feel respected and encouraged is vital. Universities and polytechnics should support gender-sensitive policies and procedures that promote fair workload distribution and diversified scholarship.

3. Family size affects research productivity. Thus, institutions should help educators with caregiving obligations. Telecommuting and part-time schedules can help educators manage work and life.

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