GENDER COMPOSITION OF STUDENTS IN NIGERIAN SCHOOLS OF ARCHITECTURE AND THE WAY OUT OF THE IMBALANCE

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Abstract. The study focuses on some selected universities in South Western Nigeria, which include two federal universities — Obafemi Awolowo University (OAU) and University of Lagos (UNILAG); two universities of Technology — Federal University of Technology, Akure (FUTA) and Ladoke Akintola University of Technology (LAUTECH). It also covers two private universities — Covenant University (CU) and Joseph Ayo-Babalola University (JABU). This study was aimed to better understand the gender composition of Nigerian school of architecture and the factors that influence a female student's choice of the course in order to encourage the girl child enrolment in the course in Nigeria universities. Through the survey approach, questionnaires were used to elicit information from students in the last two years of the B.Sc. programme and those in the two years of the M.Sc. programme. The result shows that the strongest stimulator of a young woman's decision to enrol in architectural course is the perceived future prospect in the profession this is followed by her personal interest as well as existing relationships with people who have studied the course. This research establishes that identity is often contested ground for women architectural students who, at times, uphold gen-

dered stereotypes about women's suitability for commonly viewed 'masculine' course like architecture, yet also subscribe to an ideal that the course is accessible to all who want to study it. As a consequence, it is critical that the education system finds novel ways of challenging and addressing cultural norms and practices that facilitate gendered stereotypes in construction-related courses (such as architecture) in the country.

Keywords: architectural education, gender, student enrolment, Nigeria, university

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Introduction

Gender perception from time immemorial has shaped many religions, cultures, occupations and settings. Gender as a concept entails expectations held about the aptitude, and possible behavioral patterns peculiar to men or women (UNESCO, 2003). Gender and sex are often used interchangeably. They include features that distinguish men from women. These features are most often not visible and can only be identified with respect to a culture or people of similar belief. The types of professions and activities to be done by the people are socially determined in gendered ways. This has been employed to justify the continued dominance of men in a particular profession (Dick & Cassell, 2004). Most of these beliefs give fewer privileges to the women, and they are assigned more household chores and less academic and professional duties, especially in Africa.

The architectural profession remains largely a male-dominated profession, and with women representing less than 20 per cent in Nigeria (Obianuju & Diyenaan, 2019). The popular ideology about the practice of architecture as a profession is that it is a male-oriented profession. This belief has continued to influence the under-representation of women in architectural education in the country. In most Nigerian universities, there are low female numbers in the

department of architecture. Many have argued that architecture is gendered (Domosh, 2005), which involves buildings designed to serve the societal needs (Bonnevier, 2007). According to Boys (1984), the built environment is specifically regarded as the role of men, while women face difficulties of pushing-chairs navigating city streets.

Most architectural literature focused mainly on building, while little attention has been given to gender related issues regarding architectural profession. Issues such as factors that influence gender composition, the socio-economic characteristics of the professionals and intending professionals are scarcely addressed. This gives rise to this question: Why female underrepresentation persists in the architectural department in Nigeria universities? Since the argument that divergent thinking abilities between male and female can be attributed to gender alone are non-factual, there is need to further understanding the cause of the perceived dichotomy between both sexes in architectural education enrolment in Nigerian Universities.

In addition, given that gender, among other factors such as socio-economic state and ethnicity (Cuff, 1991), has been viewed to often influence students' learning experience in the college of architecture, not so much focus has been accorded gender issues in learning in architectural profession/education (Sara, 2001). Most existing studies on architectural education are known to be centered on developed countries, while leaving a gap in knowledge about the state of the subject matter in less developed countries (Jaggar & Rothenberg, 1993). As a consequence, Momsen (2010) stressed that research is needed in this area so as to understand the condition of women all over the world. Thus, it is necessary to focus on Nigerian case to ensure proper documentation.

Based on the foregoing, the study focuses on some selected universities in South Western Nigeria. Generally, a federal university would admit more aspiring architects than a private university based on readily available facilities

and funds, and a school of technology would have more technologically inclined courses than others. Hence, in order to have a fair level of validation, the research cuts across the three types. It covers two federal universities which are Obafemi Awolowo University and University of Lagos. Two universities of Technology, which are Federal University of Technology, Akure (FUTA) and Ladoke Akintola University of Technology (LAUTECH). Finally, the study also covers two private universities — Covenant University and Joseph Ayo-Babalola University (JABU).

Literature review

Over the years, there have been a number of studies that have examined the gendered working practices within the construction industry where women have been significantly under-represented. However, little attention has been given to the architectural profession/education regarding the perceived gender inequality in the sector in Nigeria. For example, in the work of Fulcher (2010), it is confirmed that women are not well represented in the UK architectural profession. Given that Architects work mostly in the construction industry, women find it difficult to participate fully in this sector — a highly masculine working industry (Watts, 2007; Ness, 2012). Some researchers also assert that women architects face a lot of difficulties (Fowler & Wilson, 2004; Caven, 2005). Sang et al. (2014) in a careful cross-examination of how gender is reproduced in architecture, these authors argue that architectural practice depends on long working hours, creative control and homo-social behaviour.

Furthermore, career decisions have been shown to be strongly influenced by gender (Whittock, 2002). This could be the main reason for the under-representation of women in the architectural profession. On the other hand, some authors indicate that there are different reasons for both women and men choosing certain occupations. For example, Dick & Rallis (1991) reveal that pay is a more significant factor in career choice for men compared to women.

Woolnough (1994) indicates that women are more induced by their involvement with human issues and seem to have a solid social ethic. It is also confirmed that women are more likely than men to appreciate a teacher who encourages them to study engineering. Focusing on Nigeria, Adeyemi & Akpotu (2004) make an assertion that there is a gap between the gender compositions in the science-based disciplines than the humanities. Since architecture is part of art and science, it would beneficial to examine such a discipline's gender composition. Hence, literature has shown that in the profession of architecture in most countries, there exist a gap between the number of women and men. In spite of this, reasons for the gap and possible remedial measures that could be effective are not well pronounced in the literature especially in Nigeria's context. Thus, this study sets out to explore the gender composition of Nigerian schools of architecture and understand the reason for gender imbalance in Nigeria's architectural education. We are of the view that the study outcome will help to show ways in which the gender imbalance in the enrolment of students of architecture can be bridged in a developing country like Nigeria.

Methodology

Research techniques

The employed method is based on quantitative means with a survey approach using questionnaire. The questionnaires were administered to the targeted respondents. These techniques allow for easy collection of data and easy analysis, and the survey method allows for a basis of obtaining diverse opinions from the respondents (i.e., it gives a quantitative measure). Essentially, gender composition of both students and lecturers were also put into consideration. Furthermore, in the analysis, the KMO and Bartlett's test were used as a means of ascertaining sampling adequacy and the suitability of the data prior to the application of factor analysis

Target respondents

The target respondents are students of architecture in the selected schools in Nigeria and the current head of department (HOD) of the schools of architecture where the study was carried out. The target students are the MSc 1 and 2 students in the post graduate study and the last two years of the BSc degree which are years 3 and 4 in some schools and years 4 and 5 student in others. These 6 universities bear different characters with two of which are federal universities, two others being universities of technology and finally two private universities, these universities have some differences in the administrative structure and academic structure which gives a good mix for the questionnaire administration. Primary data were collected irrespective of the respondent's school (Federal, Private or School of Technology) through the questionnaire, while secondary data about students' enrollment and staff numerical strength were collected from the HODs. Attention was paid to the factors influencing the choice of architecture as a course of study.

Questionnaire design

The questionnaire was drafted with utmost care and respect for personal information and anonymity. The questionnaire is divided into two basic sections (section A-B) of which. Each section features a new set of information required of the respondents. The sections are: Section A: basic information about respondents: In this section, the respondent's basic information is evaluated. The information is otherwise personal and entirely dependent on the respondents such as gender, age range, and the current year of study. This aspect has just 5 questions; Section B: gender composition and reason for choice of study: The section entails the assessment of the average gender composition of the respondents' class, factors that influenced the choice of study, who determined the course of study, why respondent studied architecture.

Data analysis and discussion of results

This section deals with the presentation, analysis and interpretation of data collected in response to the questionnaires administered to the respondents. A total of six hundred questionnaires were administered, out of which four hundred and eight were filled and returned, indicating a response rate of (68.0%). These were used for the analysis. Analysis of data involved both descriptive and inferential statistics. Description statistics used include frequency count and percentages, while Factor Analysis (using Principal Component Analysis as method of extraction) was the inferential statistics performed. Before performance principal component analysis, reliability analysis of the scales used was ascertained using Cronbach alpha reliability scale. The result of the reliability analysis indicates the first scale accessing reasons for studying Architecture as a course yielded a Cronbach alpha value of 0.855, while the second scale assessing factors for gender differentials in the study of Architecture yielded a Cronbach alpha value of 0.850. These values lies within the acceptable limit, thereby implying the data measured what it ought to measure. Data collected were analysed using the Statistical Package for Social Scientist (SPSS) version 22 software.

Socio-demographic characteristics of respondents

Table 1 presents the distribution of respondents according to their socio-demographic characteristics. The result showed that majority (59.3%), of the respondents surveyed were males, while the female respondents accounted for the remaining (40.7%). The distribution according to age group showed higher proportion (40.2%) of the surveyed respondents were in the age group 19-21 years, followed by those in the age group 22-24 years (32.6%), while age group 28-30 years accounted for the least proportion (4.7%). The distribution according to marital status indicates significant proportion (94.6%) were single, while those married accounted for (5.4%).

Table 1. Socio-demographic characteristics of respondents

Variables	Frequency	Percentage
Gender		
Male	242	59.3
Female	166	40.7
Age range		
16-18 years	18	4.4
19-21 years	164	40.2
22-24 years	133	32.6
25-27 years	43	10.5
28-30 years	19	4.7
Above 30 years	31	7.6
Marital status		
Single	386	94.6
Married	22	5.4
Present year of study		
Part 3	84	20.58
Part 4	126	30.88
Part 5	31	7,59
MSC 1	75	18.38
MSC 2	92	22.55
Schools		
OAU	71	17.4
UNILAG	73	17.9
COVENANT	76	18.6
JABU	46	11.3
FUTA	80	19.6
LAUTECH	62	15.2

Higher proportion (29.2%) of the respondents surveyed were in their third year, followed by MSC 2 students (21.8%) and part 4 students (21.2%), while part five students accounted for the least proportion (9.3%). Table 2 presented the distribution of respondents by their schools of architecture. The schools of architecture in the University of Technology run a five-year programme therefore students in Parts 4 and 5 were sampled. All other schools of architecture run a 4 year B.Sc. architecture programme, therefore students in Parts 3 and 4 were sampled. In all the schools of architecture, the M.Sc. pro-

gramme is for 2 years and the students from the two postgraduate classes were sampled.

Table 2. Distribution of respondents by school

Gender			Part three	Part four	Part five	MSC 1	MSC 2	Total
Male	School	OAU	11	10	-	7	11	39
		UNILAG	8	11	-	9	12	40
		COVENANT	16	19	-	10	6	51
		JABU	12	11	-	4	2	29
		FUTA	-	8	12	20	11	51
		LAUTECH	-	8	10	2	12	32
	Total		**47**	**67**	**22**	**52**	**55**	**242**
Female	School	OAU	11	12	-	6	3	32
		UNILAG	14	7	-	1	11	33
		COVENANT	8	9	-	3	5	25
		JABU	4	12	-	1	0	17
		FUTA	-	14	4	5	6	29
		LAUTECH	-	5	5	7	13	30
	Total		**37**	**59**	**9**	**23**	**34**	**166**
Total	School	OAU	22	22	-	13	14	71
		UNILAG	22	18	-	10	23	73
		COVENANT	24	28	-	13	11	76
		JABU	16	23	-	5	2	46
		FUTA	-	22	16	25	17	80
		LAUTECH	-	13	15	9	25	62
	Total		**84**	**126**	**31**	**75**	**92**	**408**

Gender factors in architecture as a course of study

Table 3 presents the result assessing gender factors in Architecture as a course of study. The result revealed nearly all the respondents surveyed (98.5%) agreed to the fact that there are more males than females in Architecture as a course. However, nearly three quarter (74.0%) were of the opinion that Architecture as a course is considerate to the female gender.

With regards to major influencer in choosing Architecture as a course, the result indicates person decision/choice was the major factor influencing the

choice to study Architecture, followed by parental influence (9.6%) and counsellor/interaction with professionals in the field.

Table 3. Gender factors

Variable	Frequency	Percentage
Gender composition of class		
More males	402	98.5
More females	-	-
Equal males and females	6	1.5
Study of Architecture is considerate to females		
Yes	302	74.0
No	106	26.0
Decider of the course Architecture		
Personal decision	360	88.2
My Parent	39	9.6
My counsellor	6	1.5
My friends	3	0.7

Reasons for studying architecture

In assessing the reasons for choosing Architecture as a course, factor analysis was performed. Before performing factor analysis, the suitability of the data was first of all ascertained. The KMO and Bartlett's test of sampling adequacy (Table 4) indicates the data were suitable for factor analysis (p=0.001). Using Principal Component Analysis to identified factors responsible for choice of architecture as a study, five components were extracted (Table 5). The criterion for the extraction was that these factors had eigen values greater than 1. Also, to correct for overlap of variables, only variables with very high factor loadings were extracted. To do this, extraction of variables were restricted only to those whose co-efficient is greater than 0.5. Overall, ten out of the sixteen variables loaded highly on at least one of the five components. The five components extracted explained (68.0%) variation in factors influencing choice of Architecture as a study (Table 6).

The result implies employment prospect explained the highest variance (17.6%), which means the topmost factor responsible for choice of Architecture as a course of study is employment prospect. This was closely followed by personal choice/likeness, explaining (14.9%) variation, external influence (such as influence of counsellor in second secondary, interaction with professionals in the field among others) accounted for the third important reason for choosing Architecture. Parental influence and wealth generating prospect of the course were the least important reasons for choosing Architecture as a course of study.

Table 4. Bartlett's test of sample adequacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.754
Bartlett's Test of Sphericity	Approx. Chi-Square	3074.774
	Df	120
	Sig.	.001

Table 5. Rotated component matrix showing five components extracted

	Component				
Variables	**1**	**2**	**3**	**4**	**5**
B9_1				.766	
B9_2				.875	
B9_3					
B9_4					
B9_5					
B9_6			.641		
B9_7			.626		
B9_8					
B9_9					
B9_10		.837			
B9_11	.762				
B9_12					
B9_13	.725				
B9_14					.817
B9_15					.856
B9_16	.774				
Extraction Method: Principal Component Analysis. **Rotation Method: Varimax with Kaiser Normalization.**					

Table 6. Extracted components and variances explained

Factors	Category	Variables	% of Variance Explained
Factor one	Employment prospect	B9_9, B9_13, B9_16	17.59
Factor two	Personal choice/likeness	B9_10	14.89
Factor three	External influence	B9_6, B9_7	13.45
Factor four	Parental Influence	B9_1, B9_2	11.93
Factor five	Wealth generating ability	B9_14, B9_15	11.89
Total			**68.0**

Factors influencing gender differentials in architectural study

Assessment of factors influencing gender differentials in Architectural study was performed using factor analysis. The choice of factor analysis was informed by the need to identify and group related factors that best explain issues under consideration. The KMO and Bartlett's test of sampling adequacy (Table 7) indicate that the data were suitable for factor analysis (p=0.001). Using Principal Component Analysis to identify related group of factors that best explain the influencing factors for gender differentiation, four components (based on eigenvalue greater than one) were extracted (Table 7). To optimize the relationship among variables and aid interpretation, the factors were rotated using the Varimax and Kaiser Normalization method. In addition, only variables with high correlation coefficient were extracted and retained to correct for overlap among variables and also ensure that these factors best explained the underlying relationships being examined. In all, 14 out of the 16 variables loaded highly on at least one of the rotated component matrix (Table 8). This resulted in extraction of four components. The first group of factors with the highest variance (16.6%) has to do with attribution of higher intelligence to the male gender relative to the females and gender perception about female architects. The second group of factors has to do with general societal believe ascribing Architecture to the male gender and these factors accounted for (15.5%) of the variance. The third group of factors relate to general female

perception of the course and their self-esteem, while the fourth group of factors relate to socio-cultural factors and general gender bias. The five components extracted explained (58.8%) variation in factors responsible for the wide gender variance in the study of Architecture (Table 9).

Table 7. Bartlett's test of sample adequacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.729
Bartlett's Test of Sphericity	Approx. Chi-Square	2415.691
	Df	120
	Sig.	.001

Table 8. Rotated component matrix showing five components extracted

Variables	Component			
	1	2	3	4
B12_1		.529		
B12_2				
B12_3	.716			
B12_4	.756			
B12_5	.651			
B12_6		.718		
B12_7	.537			
B12_8				
B12_9		.784		
B12_10			.785	
B12_11				.512
B12_12			.640	
B12_13				
B12_14				.722
B12_15		.506		.672
B12_16			.705	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				

Table 9. Factors responsible for gender differential

Factors	Category	Variables	% of Variance Explained
Factor one	Highly intelligence attributed to males and gender perception about female Architects	B12_3, B12_4, B12_5 and B12_7	16.61
Factor two	General societal believe ascribing Architecture to the male gender	B12_1, B12_6, B12_9 and B12_15	15.52
Factor three	General female perception of the course and self-esteem	B12_10, B12_12, B12_16	15.37
Factor four	Socio-cultural factors and general gender bias.	B12_11, B12_14, B12_15	11.33
Total			**58.83**

The enrolment of students

In Table 10, secondary data about the students' enrollment are presented. These data which were released by the HOD of the Architectural Department of the targeted institutions also buttress the prevailing evidence that the number of male students' enrollment exceeds their female counterpart across the institutions. For instance, out of the six schools of architecture, only one of them (COVENANT) has an overall female enrolment at the undergraduate level of about 40%. The next school closest to this is OAU with an overall female enrolment of 32%. All the other schools' female enrollment was 30% and below. Similarly, for the postgraduate study, only COVENANT has an overall female enrollment of about 41%. Next to this is 33%, and a school has as low as 11% female in the postgraduate programs (JABU).

Based on Table 11, the gender composition of the members of faculty of all the six schools of architecture also revealed that male faculty members are more than the female members. COVENANT has 38% female while FUTA and JABU both have 10% female members The other three schools of ar-

chitecture have between 21% and 23%. It could be inferred that male students are viewed to be significantly motivated to enroll for Architecture, while female might view architecture as masculine course that their role is perceived to be irrelevant. Considering the large difference in the enrolment rates, the issue of gendered stereotypes and other social factors could militate against women participation in architectural education. Hence, strong interconnections could be found to exist between male-female architectural enrolment rates and perceived social factors in the country.

Table 10. Male – female students' enrolment rate[1)]

		PART 3		**PART 4**		**PART 5**		**M.Sc1**		**M.Sc2**		
		No.	**%**	No.	**%**	No.	**%**	No.	**%**	No.	**%**	**%**
OAU	FE-MALE	18	32.7	13	25.5			10	23.8	11	26.2	52/27.4
	MALE	37	67.3	38	74.5			32	76.2	31	73.8	138/72.6
	TOTAL	55		51				42		42		190
FUTA	FE-MALE			13	27.1	20	16.0	17	21.0	19	26.4	69/29.2
	MALE			35	72.9	105	84.0	64	79.0	53	73.6	257/70.8
	TOTAL			48		125		81		72		326
UNILAG	FE-MALE	15	24.2	18	25.7			25	28.4	17	21.0	75/25.0
	MALE	47	75.8	52	74.3			63	71.6	64	79.0	226/75.0
	TOTAL	62		70				88		81		301
JABU	FE-MALE	5	11.0	17	30.0			2	11.0	0	0.0	24/18.6
	MALE	41	89.0	40	70.0			17	89.0	7	100	105/81.4
	TOTAL	46		57				19		7		129
COVE-NANT	FE-MALE	23	41.0	26	47.3			12	30.0	14	41.2	75/40.5
	MALE	33	59.0	29	52.7			28	70.0	20	58.8	110/59.5
	TOTAL	56		55				40		34		185
LAUTECH	FE-MALE			7	10.4	11	19.3	0	0	9	33.3	27/17.6
	MALE			60	89.6	46	80.7	2	100	18	66.7	126/82.4
	TOTAL			67		57		2		27		153

Table 11. Male – female staff strength

	Gender	Number (%)
OAU	FEMALE	4 (21%)
	MALE	15 (79%)
	TOTAL	**19**
FUTA	FEMALE	3 (9.4%)
	MALE	29 (90.6)
	TOTAL	**32**
UNILAG	FEMALE	6 (20%)
	MALE	24 (80%)
	TOTAL	**30**
JABU	FEMALE	1 (10%)
	MALE	9 (90%)
	TOTAL	**10**
COVENANT	FEMALE	8 (38%)
	MALE	13 (62%)
	TOTAL	**21**
LAUTECH	FEMALE	04 (23.5%)
	MALE	13 (765%)
	TOTAL	**17**

Conclusion remarks

The study focuses on some selected universities in South Western Nigeria. The study strived to better understand the enrolment of students in schools of architecture based on their gender, also the factors that influence students' choice of architecture in Nigeria universities. It is found that the strongest stimulator of a young person's decision to enrol into architectural course is the perceived future prospect in the profession this is followed by personal interest and existing relationships with people who have studied the course.

This research establishes that the enrolment of students in the schools of architecture is heavily tilted in favour of the male gender which is similar to what is obtainable in other developing countries and few developed countries

(Smith & Gayles, 2018; Powel & Sang, 2015; Franta & Guzi, 2008; Assie-Lumumba, 1992). Employment opportunity is the major reason for enrolling in the course according to the findings of the study, with the situation in the construction industry, it is not surprising that fewer females enrolled to study architecture in these schools. A graduate of architecture entering into the industry will have to contend with long hours of work on construction sites and in offices (Adeyemi et al., 2006), the demand of these on young ladies could be much and as such fewer number of young girls will be subscribing to the course (Fulani et al., 2020). This with the society attributing (though unfounded) higher intelligence to male students and painting architecture as a male domain increases the gender imbalance in the enrolment of students.

This highlights an array of contradictions in women construction students' discourse, suggesting that these women face a multitude of challenges, not only as a result of participating in a male- dominated course, but also participating in a society where social inequality, entrenched stereotypes and gendered behaviour continue to persist. These indicate that women architectural students must be able to demonstrate some resistance to cultural norms on an individual level (for example, taking pleasure in the challenge of studying in a male dominated course), but that this capacity is also limited by structural inequalities in society and the system that suggests construction is not a suitable career for women.

Furthermore, the evidence reveals the problematic nature of entrenched gender stereotypes and the need to consider the views of women in construction courses when striving for cultural change aimed at achieving gender equality. It suggests that while the universities may find new ways and approaches for promoting women's enrolment to the architectural department, which may or may not be successful, it does not necessarily mean that women's retention and progression will improve unless ensconced perceptions of the gendered nature of construction are also fundamentally addressed. This is

particularly crucial given that these women are likely to act as gatekeepers to the architectural profession for other women. However, it is also important that women are not regarded as part of the problem by either researchers or educationists. As women are widely perceived as outsiders in the construction industry, addressing the issue further requires dire commitment.

In conclusion, engendering targeted initiatives, such as establishing networks or support programmes for women and promoting the value of a diverse workforce to employers could have a dramatic impact on gender equity and architectural education in Nigeria. Also, it is critical that the education system finds novel ways of challenging and addressing cultural norms and practices that promote gendered stereotypes in construction-related courses (such as architecture) in the country.

NOTES

1. The difference in the levels of studies (i.e., why some BSc degree students are 4th and 5th) indicates that in conventional universities students only spend 4 years, while in the universities of technology is five years. *Source:* The Head of the Architectural Department of the institutions (OAU, FUTA, UNILAG, JABU, COVENANT, AND LAUTECH)

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