

## Factors Limiting the Participation of Women Construction Professionals (WCPs) in the Nigerian Construction Sector (NCS)

### Article History

**Received:** 05 February, 2022

**Revised:** 11 March, 2022

**Accepted:** 17 March, 2022

**Published:** 25 March, 2022

Copyright © 2022 Noble Academic  
Publisher & Author

### SAKA Najimu

Department of Quantity Surveying, Federal University of Technology  
Akure, Nigeria

### MOYANGA Dorcas Titilayo\*

Department of Quantity Surveying, Federal University of Technology  
Akure, Nigeria

### ADEGBEMBO Taiwo Fadeke

Department of Quantity Surveying, Federal University of Technology  
Akure, Nigeria

**Abstract:** Women constitute almost half of Nigeria's population and thus a critical mass in the potential labour force of the country. Though there has been increasing awareness to employ women professional in the construction sector yet their level of participation is still a subject of concern. Therefore, this study investigated the current level of participation of Women Construction Professionals (WCPs) and factors limiting their participation in the Nigerian Construction Sector (NCS). Convenience and purposive sampling techniques was adopted to sample WCPs and the data collected through the questionnaire was analysed using descriptive and inferential statistics. The finding reveals that WCP represents only 6% of the professionals in NCS, which implies that the current level of participation of WCPs in Nigeria is still very low. Furthermore, occupational hazards/risks, matrimonial/family, sexiest attitude, expecting/nursing mother and nature of the construction industry are the factors significantly limiting the participation of WCPs in NCS. Hence, the study recommends that NCS should urgently find ways to prioritise and balance its requirements to get the best out of women with family commitment. Finally, NCS as a progressive employer should develop strategies against cultural practices detrimental to the female gender as well as improve its image among young women.

**Keywords:** Construction Professionals, Construction Sector, Gender, Labour Force, Nigeria, Women.

## 1. Introduction

The Nigeria Construction Sector (NCS) plays a critical role in the national economy by contributing about 50 percent of the Gross Domestic Fixed Capital Formation (GDFCF), up to 10 percent of the Gross Domestic Product (GDP), and about 10 percent to employment opportunities in developing economies. The NCS is essentially a service sector, whose responsibility is to convert plans and specifications into finished products and it is exceedingly a complex individual in character. Simply, the NCS embraces a wide range of activities, products and skills including design, building, engineering, petroleum, consultancy and manufacturing/fabricating components. The construction sector is simply a traditional, blue-collared, male dominated, craft-based sector and resistant to women participation [1-3] whereas multitudes of skills and trades make up the labour force [4]. Aside from the poor image, some Women Construction Professionals (WCPs) leave the sector in their 30s, because of frustration such as verbal harassment [5], discrimination [6] and abuse sometimes after having children [7]. There is no doubt that as women gain experience in working in some of more challenging fields so as to become more creative and more self-confident for the benefit of the society [8]. Gender is a term that socially imposes division between sexes and connotes the emotional and psychological attributes which a given culture expects to coincide with physical maleness or femaleness. The concentration of women and men in different kinds of jobs, described as gender or occupational segregation, is a key issue for public policy and industry's stakeholders. It is damaging the economy and competitiveness by contributing to skills shortages and the gender pay gap, as well as restricting individuals' life choices, but it remains hidden and under-researched, hence its effects are not widely recognised [9]. The gender imbalance maintained by the Nigerian Construction Sector has been a growing concern among industry stakeholders since the fourth (4<sup>th</sup>) World Conference on Women (WCW4) in Beijing in September, 1995. According to [10], women account for only 11 per cent of the construction workforce and just 1 per cent of workers on site in UK.

Furthermore, the gender pay gap in construction is still wider than in other industries. Moreover, the problems facing women professionals in the construction industry globally still persists [6].

In Nigeria, the construction sector has changed significantly in the adoption and integration of innovation in terms of applying new forms of procurement, partnering arrangements, etc as opposed to trade skills, and more specialisation [11-13]. In the process, the workforce has to change to meet the new demands [14]. With the compelling challenges of improving skill shortage, there is a need to exploit the talents of the 'other half' of the workforce; women construction professional. Hence, the driving force to encouraging women in construction and expanding the labour force including attracting and retaining more WCPs. Moreover, it is noteworthy that this is strategic for the construction sector since it is being faced with skill and labour deficiencies [4, 14, 15]. Though, it is evident in recent studies that most of the women working in the construction industry carry out managerial, technical and specialized work, women professionals remain a small minority [16] while their employment level is still very questionable [17, 18]. Notwithstanding, despite the increasing initiative on employment of women in the construction sector and studies recommending strategies of how women participation can be improved in the Nigerian construction sector [16, 19, 20], there is still concern that women professionals are under-represented compared to their male counterpart. It is against the backdrop that this study examined the current level of participation of WCP, the factors limiting the participation of WCP and investigates possible relationship between their participation level and factors limiting the participation of WCP in Nigeria's construction sector.

## **2. Literature Review**

### **2.1. Demographic Situation of Women in Nigeria**

Women represent about half of the population of Nigeria. Nigerian government have had various policy initiatives to improve the condition of women [21]. This implied that over 49 percent of the Nigerian population are women while close to 70 percent of the population reside in the rural areas of whom majority are women. Women are responsible reproduction of the labour force and the production of over 70 percent of the nation's food supply, but they have access to less than 20 percent of the resources available in the agricultural sector. Women constitute less than 18 percent of the formal sector workforce and these are mainly constituted in the lower cadres' categories. Women lag far behind men in most indicators of socio-economic development. They face a variety of constraints many of which are gender-specific; and demonstrate the lowest Human Development Indicators (HDI) in health, nutrition, maternal mortality, fertility and education [22] with a worldwide HDI value of 0.705, 5.9% lower than that of men [23].

### **2.2. Women Construction Professionals (WCPs) in the Construction Sector**

[24] stated that women constitute less than 6% of the 15% of construction staff who are in the professional and managerial level of the industry. In recent years, there has been changes already occurring in academic institutions in which the proportion of female full-time students in engineering and construction-related research is on the increased [25]. The logical solution to increasing the number of women in industrial professions is in two stages: first, is attracting more women to the construction sector and subsequently increasing their retention [2]. In the UK, in spite of constituting nearly 50 per cent of the population, more than 46 per cent of the labour market, and more than 50 per cent of the entrants into higher education, women account for just 10 per cent of the construction sector workforce [26, 27]. These figures have remained relatively static [28]. In the US, since 2005 more women have gone into the building trades in New York City than at any other period in history. The women are electricians, plumbers, steamfitters, ironworkers, bricklayers and most often carpenter [29].

Recently, to further solve the persistent labour resources crisis and skill shortages, studies were conducted to investigated the involvement of women and women professionals by suggesting ways of improving the entering and participation of women in the construction sector. [8] conducted to study to ascertain the status of women workforce participation in Indian construction industry, issues and challenges faced by them and recommendations for improving working environment for them. Like in the construction industry, [30] posited that engineering industry too remains one of the most male dominated industries in the world, with between 10 and 25 percent of its employees being female. They carried out an exploratory qualitative study to provide a better understanding of how we attract and retain female professionals within the construction industry and ensure gender diversity within senior leadership teams. It was concluded that women remain to be underrepresented within the industry due to the difficult workplace culture and stereo typing that still exists which undermines women in the workplace.

According to [31], despite the construction industry offering successful career opportunities to women, the low representation of women in this sector has always been a point of concern. In their study, they posit that one of the major reason why women do not consider themselves suitable for construction jobs is poor work-life balance.

In Nigeria, women constitute almost half of the population and currently there is less than six million women employed in Nigeria, accounting for almost 22% of the work force [18]. Also, the total percentage of women participants engaged in one activity or the other in the economy is 43.1% as opposed to 56.9% of men. Whilst women may be entering the workforce in increasing numbers, female workers remain concentrated in certain occupational sectors such as education, health and service sectors, notably banking, insurance and the retail trade. In the construction sector, women continue to be underrepresented and underutilized as a result of their low participation rate both in industry and academia. According to force [18], the population of women in the construction industry represents only 0.2% of those in the construction profession. [16] posited that there has been increasing initiatives and awareness over the years on the significance of women's participation in the industry with the efforts to balance the diversity and inequality in the industry workforce. The study investigated the current level of women participation, challenges faced by professional women, factors that influence them in the course of developing careers in construction and the criteria that can be used to encourage women participation in the Nigerian construction industry. The study found out that the construction industry is largely dominated by men, with women having a lot of challenges ranging from lack of self-confidence to compete with their male counterparts to insecurity in the midst of men to execute their work as professionals. The study by [17] ascertained the current participation level of women in the construction industry by assessing the gender ratio among the participant professionals in building construction industry; identify the factors affecting female participation in building construction industry and examine areas where female can participate in construction industry. The study concluded that the ratio of female professionals to their male counterpart in the construction industry is 1:2.5, which is due to the rigid working hours and managing motherhood simultaneously.

### **2.3. Factors Limiting the Participation of Women Construction Professionals (WCPs)**

Women who choose careers in non-traditional occupations such as the construction industry have to face many challenges in order to enter and retain in the industry [18]. Furthermore, the construction industry is still conservative in the recruitment of women [15] resulting into the low participation and involvement of women in the industry. This low participation of women professional in the construction industry is due to certain factors generated from cultural ethics, values existing among the amalgamated ethnic group [21] and nature of the industry [7, 8]. These factors are in form of issues challenging the entering, factors hindering the involvement/participation and barriers confronting the retention of women in the construction industry. In 2010, the construction sector council gave a report on the reason the rate of women's participation in the Canadian construction sector is not increasing more significantly to include gender stereotypes, Weak pathways to careers in construction, need for more public visibility, education and training, discrimination in hiring, gender-based hiring to mention but a few. Another cogent reason the level of participation of WCP is low, according to [15] is that women in construction are seen as the wrong gender for construction occupation due to the physical strength involved. Their study investigated the current level of women participation in construction in EU countries and the barriers preventing the entering of women in the industry. They found out that women are faced with the challenge of balancing between successful career and the family, meeting the demand of the workplace and fitting into the accepted behavior of the workplace. [30] in their study discovered that there are issues concerning the need to have to work long hours which creates difficulties when trying to balance family and career. Also, People felt that maternity leave or working part time was a setback in terms of their progression opportunities.

[6] opined that in UK, numerous schemes have been initiated by government and other professional bodies to encourage more women to join the industry yet there is more room for improvement. The study undertook an in-depth exploration of experiences of female construction professionals using the glass ceiling and the leaky pipeline theories. The ill-treatment of women in the construction industry discourages women from joining but also forces the women in the industry to leave and not return, most especially when starting a family. Furthermore, women struggle to re-enter the industry after embarking on maternity leave, sexism with fear of voicing out this horror, lack of workplace flexibility and looming discrimination are the challenges preventing women professionals from joining the construction industry. In Nigeria, some of the issues on WCPs in the NCS includes the justification of the need to increase the

number of WCPs in the NCS, the challenge of increasing the numbers of WCPs, the low retention of qualified WCPs and subsequent attempts to increase the number of WCPs. women feel forced to make a choice between career and family [3]. Younger female employees in particular leave the NCS because they find that the actual working conditions are less desirable than those they were made to believe. [3] found that some women are not confident to direct, supervise and co-ordinate the work of male subordinates. Some WCPs are not confident of their technical skills, which affects employers' level of confidence in female employees. The study by [18] in their review of literature relating to the barriers faced by women in construction, found out that image of the industry, career knowledge, culture and working environment, family commitments, male dominated training course and recruitment practices are the major barriers to women in construction. [20] assesses the barriers to female participation in the Nigeria's construction industry and suggested strategies that can be adopted to improve the involvement of female in the industry, the study highlighted male dominance of the CI, family commitment, masculine nature of the job, long working hours and so on as the barriers to female participation in the construction industry in Nigeria.

### 3. Methodology

This study adopted the questionnaire-survey to obtain data from the WCPs in the State's professional institutes, developers, construction firms, consulting firms in Ondo and Lagos States, Nigeria. The convenience and purposive sampling techniques was used to sample WCPs at their offices and construction sites, homes and educational institutions. A total of 120 questionnaires were sent to respondents in Lagos and Ondo States. Out of which 70 were retrieved, representing 58.3% return rate. The questionnaire contains 2 sections: section one dwelt on the background information of WCPs while section 2 addressed the level of participation of WCPs in the NCS and how some factors limits their participation level. The questions were rated based on a 5-point Likert scale with weighting factor ranging from 5 (very high) to 1 (very low). Five (5) Hypotheses were formulated to further examine and established the goal of the study. The data was analysed using the percentage distribution, mean score, Pearson correlation and Kendall co-efficient of concordance through Statistical Package for Social Science version 19 (SPSS19). The percentage distribution was used to analyse the years of experience of the respondents and level of participation of WCPs; the mean score was used to analyse the factors limiting the participation of WCPs; Pearson correlation was used to check the relationship between women and men participation in NCS while Kendall co-efficient of concordance was used to test the hypotheses. That is, to check the degree of agreement between the respondents' opinion on the relationship between the level of participation of WCPs and the factors limiting their participation in NCS. In addition, the factors limiting the participation of WCPs were reviewed from literature and from which, the study draw up conclusion on the most limiting factors to the participation of women professional in the construction industry.

Kendall co-efficient of concordance is used to test the degree of agreement among raters/respondents in the ranking of some factors identified with the determination of coefficient of concordance [32, 33]. In this study, the authors grouped the respondents (WCPs) based on their working area/offices i.e developers, construction firms, consulting firms, professional institutes, to check for possible degree of agreement. The responses was subjected to Kendall coefficient of concordance and the formula given by [33] was adopted. This is given in equation 1;

$$W = \frac{12S}{p^2(n^3 - n) - pT} \text{----- eqn 1}$$

Where  $S$  is the sum-of-square,  $n$  is the number of objects,  $p$  is the number of judges and  $T$  is a correction factor.

The decision for the degree of agreement  $W$  was made based on the rule of thumb or interpretation of value given by [34]. That is, the value of  $W$  from 0.100 - 0.199 representing very weak agreement; 0.200 - 0.299 representing weak agreement; 0.300 - 0.399 representing moderate agreement; 0.400 - 0.499 representing strong agreement while above 0.500 representing unusually strong agreement.

## 4. Results

### 4.1. Characteristics of Respondents

The result from the analysis of respondents' background information showed that women construction professionals (WCPs) in the study area have averagely 9years working experience in the NCS. 44% of WCPs are surveyors (quantity surveyors /land surveyors /estate surveyors), 29% are

engineers, 16% are planners, 7% are builders while 4% are architects. Also, 66% of WCPs are married, 25% are single while 9% are neither married nor single. This implied that the WCPs that responded to the questionnaires have sufficient experience in the construction sector and that larger percentage of them are married (see Table 1).

**Table 1.** Background Information of Respondents

Years of experience		Profession		Marital status	
0-5	28.3%	Architects	4.3%	Married	66%
6-10	32.1%	Builders	7.1%	Single	24.5%
11-15	18.9%	Engineers	28.6%	Other	9.4%
16-20	11.3%	Planners	15.7%		
Above 20	9.34%	Surveyors	44.3%		
Average – 9years					

Source: Authors' Compilation (Field work)

#### 4.2. Level of Participation of WCPs

The level of participation of WCPs is shown on Table 2. The result revealed that out of the total percentage 61.94percent was male staff including non professionals while only 38.06percent were female staff including non professional's staff. 33.24percent were Men Construction Professionals (MCPs) staff while only 5.67percent were represented by WCPs. Also, at the management level of the organization, 8.27percent were the total number of management (Mgt) staff and only 2.13percent were women. This indicated that the level of participation of female in the NCS compared to male is very low i.e. male dominated the NCS.

**Table 2.** Level of Participation of Women

S/No	Staff Male/Female	Percent
1	Male Staff	61.94
2	Female Staff	38.06
3	MCPs	33.24
4	WCPs	5.67
5	Mgt staff Male	6.14
6	Mgt staff female	2.13

Source: Authors' Compilation (Field work)

The result was further subjected to Pearson correlation analysis to determine the relationship between the total number of staff in the organization and total number of female staff. Also, the relationship between total number of MCPs staff and total number (no.) of WCPs, and finally the relationship between total number of management (Mgt) staff who were men and total number of management staff women were women (see Table 3).

The result showed a significant and positive relationship between total number of staff in the organization and total number of female staff (Pearson  $r = 0.609$ ;  $p$  value = 0.000). The result also showed a positive and significant relationship between total number of MCPs and WCPs (Pearson  $r$  of 0.952;  $p$ -value of 0.000). Finally, there is a positive and significant relationship between the total number of management staff and total number of management staff that are women (Pearson  $r$  of 0.756;  $p$ - value of 0.000) (see table 3). The implied that the ratio of women to men discovered through this study is valid.

**Table 3.** Relationship between WCPs and MCPs

S/No	Relationship	Pearson Correlation	p-value
1	Total no. of male staff and Total number of female staff	0.609**	0.000
2	Total no. of MCP and Total no WCP	0.952**	0.000
3	Total no. of Male Mgt staff and Total no. Female	0.756**	0.000

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### 4.3. Limiting Factors/Challenges to Women Participation in the NCS

The factors limiting the participation of Women Construction Professionals (WCPs) in the Nigerian Construction Sector (NCS) were reviewed from literature. Based on the comparative review of the limiting factors, the study identified occupational hazards/risks, matrimonial/family of professional

women, sexist attitude, expecting/nursing mother and nature of construction industry are the most significant (very high) factors limiting the participation of WCPs in the NCS.

A total number of five (5) hypotheses were tested to determine the degree of agreement between the responses of women on associating/relating significant limiting factors to the level of participation of WCPs in the Nigerian Construction Sector (NCS). The hypotheses include: the relationships between WCPs participation and occupational hazards/risks; the relationships between WCPs participation and matrimonial/ Family; the relationships between WCPs participation and sexist attitude; the relationships between WCPs participation and expecting/ nursing mother and the relationships between WCPs participation and Nature of Construction Industry. All the relationships are significant (see table 4).

Based on the rule of thumb for Kendall coefficient of concordance, the result on Table 4 showed that there is weak agreement on the association of occupational hazards/risks with participation level of WCPs. Secondly, there is moderate agreement between respondents on the association of matrimonial/family, sexist attitude and expecting/nursing mother challenges with the level of participation of WCs. Lastly, there is strong agreement between the respondents' opinions on the association of the nature of the construction industry on the level of participation of WCPs in the NCS. This implied that the nature of the construction industry negatively influences the level of participation of WCPs in the NCS.

**Table 4.** Hypotheses Test Results

Hypothesis	Agreement/Association	W	X <sup>2</sup>	P Values
1	Participation VS Occupational hazards/risks	0.219	64.669	0.000
2	Participation VS Matrimonial/ family	0.372	65.812	0.000
3	Participation VS Sexiest attitude	0.312	56.097	0.000
4	Participation VS expecting/ nursing Mother	0.333	67.104	0.000
5	Participation VS Nature of construction industry	0.410	106.634	0.000

Source: Authors' Compilation (Field work)

#### 4.4. Discussion of Findings

The finding from the study revealed that the current level of participation of women in the Nigerian Construction Sector (NCS) is still very low since Women Construction Professional (WCP) represents only 5.67% of the professionals while 2.13% of the professional women are in management position in the NCS. With more than 30years of awareness in Nigeria to engage women in construction, the participation level is still alarming. The finding of this study slightly supports the finding of [24] which stated that women constitute less than 6% of the construction staff who are professionals. However, this is in contrast to the study of [18] which found out that women represented only 0.2% of the construction professionals in Nigeria. The difference is largely due to the increasing awareness on gender equality in Nigeria to employ more women professionals in the NCS.

Also, the study found out that occupational hazards/risks, matrimonial/family of professional women, sexist attitude, expecting/nursing mother, nature of construction industry and cultural bias are the most significant limiting factors to the participation of WCPs in the NCS. The finding of this current study is not in agreement with the findings of [15] which highlighted challenge of balancing between successful career and the family, meeting the demand of the workplace and fitting into the accepted behavior of the workplace as the challenges of women's participation in construction. However, [20] discovered through their study that the male-dominated nature of the construction industry is the highest barrier to women participation in the Nigeria construction industry, which supports this current finding. Also, the finding of [6] corroborates the finding of this study, which revealed that the construction sector is hazardous and risky and therefore affect WCPs participation. Also, WCPs find it difficult to combine their career with matrimonial/family responsibilities; the NCS exhibits one of the greatest degree of vertical segregation by sex when compared with other sectors i.e. sexist attitude; expecting/Nursing mothers in most cases find it difficult to cope because of the stressful and demanding nature of the sector; the culture of the Nigerian people is overtly biased against women education and professional practices; the poor image of the NCS undermines women participation.

Lastly, this study investigated the degree of agreement in the perceptions of women working in different construction organizations on the challenges that most influences their participation level. It was revealed that there is a strong agreement between Women Construction Professionals' opinions that the nature of the construction industry significantly influences the level of their participation in the Nigerian Construction Sector.

## 5. Conclusion and Recommendations

In the Nigerian Construction Sector (NCS), there has been focus on the challenges and problems facing the attraction and retention of women in the sector. This is because there is need to provide the NCS with a greater pool of available human resources. Hence, this study presented a review of literature on women in construction and the factors limiting women who are professionals in the construction sector. From the analysis of the responses received from women working in different organizations in the NCS on the level of participation of women in construction sector and, the relationship between participation level and the limiting factors. The findings of the study revealed that the current level of participation of WCPs is still very low because women in construction represents only 6% of the professional in NCS. Also, five factors such as occupational hazards/risks, matrimonial/family of professional women, sexist attitude, expecting/nursing mother and nature of construction industry were discovered to significantly limit the participation of WCPs in the NCS.

The study concludes that the NCS currently fails to address issues of family commitment, sexist attitudes, maternity, gender bias, image and, health and safety leading to the low participation of women in construction. This is on the premise that the limiting factors have reasonable degree of association with the level of participation. The implication is that the limiting factor significantly influences the level of participation of WCP in the NCS. Therefore, this study recommends that NCS as an employer, needs to find ways to prioritise and balance its requirements, if it wishes to get the best out of people with family commitment. Furthermore, the NCS should endeavour to replace the working hour's culture with flexible working hours. The NCS must eliminate the notion of glass ceiling and glass wall against WCPs and young women with childcare responsibilities. Finally, the NCS as progressive employer must development strategies against harmful cultural practices detrimental to the female gender and of course work tirelessly to improve its image among young people particularly women.

## 6. Acknowledgement

The authors are very grateful to Ms Sodunke, A for her immense contributions to this paper.

## References

- [1] N. L. Othman and M. Jaafar, "Personal Competency of Selected Women Construction Project Managers in Malaysia," *Journal of Engineering, Design and Technology*, vol. 11, pp. 276-287, 2013.
- [2] D. Amaratunga, R. Haigh, A. Lee, M. Shanmugan, and G. Elvitigala, "Construction Industry and Women: A Review of the Barriers. Research Institute for the Built and Human Environment. The University of Salford, Salford, M5 4WT," 2006.
- [3] A. R. J. Dainty, B. M. Bagilhole, and R. H. Neale, "A Grounded Theory of Women's Career Underachievement in large UK Construction Companies," *Construction Management and Economics*, vol. 18, pp. 239-250, 2000.
- [4] S. Gurjao, "Inclusivity: The Changing Role of Women in the Construction Workforce," in *Proceedings of the Construction in the XXI Century: Local and Global Challenges in the Joint International Symposium of CIB Working Commissions*, 2006, pp. 23-24.
- [5] S. L. Fielden, M. J. Davidson, A. W. Gale, and C. L. Davey, "Woman in Construction: The Untapped Resource," *Construction Management and Economics*, vol. 18, pp. 113-121, 2000.
- [6] E. Aboagye-Nimo, J. Collison, H. Wood, R. Jin, and K. Wyche, "Women as Construction Professionals: Modern Day Challenges," in *Proceedings of the Joint CIB W099 and TG59 Conference Coping with the Complexity of Safety, Health, and Wellbeing in Construction Salvador, Brazil*, 2018.
- [7] V. Ahuja and S. Kumari, "Issues and Challenges for Women in Construction Industry: Global as well as Indian Perspective," in *Proceedings of the Regional Conference of 'The International Network of Women Engineers & Scientists (INWES)*, New Delhi, India, 2012.
- [8] V. Ahuja and S. Kumari, "Women Professionals' Participation in the Construction Industry – Indian Scenario," in *CIB Proceedings 2015: Going North for Sustainability: Leveraging Knowledge and Innovation for Sustainable Construction and Development*, 2015, p. 152.
- [9] Equal Opportunity Commission (EOC), "Plugging Britain's Skills Gap: Challenging Gender Segregation In Training and Work. Report of Phase One of the EOC's Investigation Into Gender Segregation and Modern Apprenticeships. (Retrieved November 19, 2020)," 2004b.

- [10] L. Clarke, C. Wall, B. M. Bagilhole, Nelson, Reynolds, Davis, *et al.*, "Building the Future: Women in Construction. Smith Institute Publication, UK," 2014.
- [11] D. T. Moyanga, A. A. Agboola, and T. F. Adegbembo, "Innovativeness of Quantity Surveying Firms in the Nigerian Construction Industry," *Journal of Construction Project Management and Innovation*, vol. 9, pp. 136-144, 2019.
- [12] J. D. Owolabi, E. E. Eshofonie, P. F. Tunji-Olayeni, and A. O. Afolabi, "Barriers and Drivers of Innovation in the Nigerian Construction Industry," *International Journal of Mechanical Engineering and Technology (IJMET)*, vol. 10, pp. 334-339, 2019.
- [13] F. O. Ezeokoli, K. C. Okoli, P. U. Okoye, and C. C. Belonwu, "Digital Transformation in the Nigeria Construction Industry: The Professionals' View," *World Journal of Computer Application and Technology*, vol. 4, pp. 23-30, 2016.
- [14] CIOB, "Inclusivity: The Changing Role of Women in the Construction Workforce," 2006.
- [15] R. Aulin and M. Jingmond, "Issues confronting Women Participation in the Construction Industry. In Mwakali, J. & Alinaitwe (Eds), Makere University, Uganda," pp. 312-318, 2011.
- [16] R. A. Jimoh, L. O. Oyewobi, A. N. Adamu, and P. A. Bajere, "Women Professionals' Participation in the Nigerian Construction Industry: Finding Voice For the Voiceless," *Organization, Technology and Management in Construction*, vol. 8, pp. 1429-1436, 2016.
- [17] S. T. Ayegbokiki, O. C. Ogungbemi, and A. A. Atoyebi, "Assessment of Female Professionals' Low Participation in Building Construction Industry (Case Study of Osun State, Nigeria)," presented at the International Conference of Science, Engineering & Environmental Technology (ICONSEET), 2019.
- [18] M. A. Akomolafe and M. A. Mohammed, "Gender Barrier in Construction Industry: A Review of Women Involvement," *International Journal of Modern Management Sciences*, vol. 4, pp. 1-10, 2015.
- [19] A. Afolabi, O. Oyeyipo, R. Ojelabi, and P. Tunji-Olayeni, "Balancing the Female Identity in the Construction Industry," *Journal of Construction in Developing Countries*, vol. 24, pp. 83-104, 2019.
- [20] O. E. Akinsiku and N. O. Ajala, "An Investigation of Barriers to Females' Involvement in the Nigeria Construction Industry," *Nigerian Journal of Environmental Sciences and Technology*, vol. 8, pp. 85-93, 2018.
- [21] A. Y. Adeyemi, S. O. Ojo, J. Aina, and O. Emanuel, "Empirical Evidence of Women Under-Representation in the Construction Industry in Nigeria," *Women in Management Review*, vol. 21, pp. 567-577, 2006.
- [22] Human Development Report (HDR), "Human Development Report 2015, United Nation Development Programme," 2015.
- [23] United Nations Development Programme (UNDP), "The Next Frontier: Human Development and the Anthropocene. Briefing Note for Countries on the 2020 Human Development Report," 2020.
- [24] C. Greed, "Women in Construction Professions: Achieving Critical Mass," *Gender, Work and Organization*, vol. 7, pp. 181-196, 2000.
- [25] A. Powell, T. Hassan, A. Dainty, and C. Carter, "Strengthening Women's Participation in Construction in Europe. In: Boyd, D (Ed) Procs 23d Annual ARCOM Conference, 3-5 September 2007, Belfast, UK, Association of Researchers in Construction Management," pp. 347-356, 2007.
- [26] EOC, "Facts About Men and Women in Great Britain 2005, (Retrieved November 19, 2020)," 2005a.
- [27] EOC, "Then and Now: 30 Years of the Sex Discrimination Act. How Has Life Changed For Women and Men Since 1975? (Retrieved January, 2021)," 2005b.
- [28] Construction Industry Training Board (CITB), "Employers Skills Needs Survey 2002. Trainee Numbers Survey, CITB, Bircham Newton," 2004.
- [29] New York Times, *New York's Construction Boom Puts More Women in Hard Hats*. Annie Correal, 2007.
- [30] N. Naismith, S. Robertson, and J. Tookey, "Identifying Barriers to Retaining Female Professionals in Engineering and Construction Organizations," presented at the Australasian Universities Building Education Association Conference (AUBEA), 2017.
- [31] K. Kumar and R. Chaturvedi, "Women in Construction Industry: A Work-Life Balance Perspective," *International Journal of Civil Engineering and Technology*, vol. 9, pp. 823-829, 2018.

- [32] A. Gearhart, D. T. Booth, K. Sedivec, and C. Schauer, "Use of Kendall's Coefficient of Concordance to Assess Agreement Among Observers of Very High Resolution Imagery," *Geocarto International*, vol. 28, pp. 57-526, 2013.
- [33] S. Siegel, *Nonparametric Statistics for the Behavioural Sciences*. New York: McGraw Hill, 1956.
- [34] R. C. Schmidt, "Managing Delphi Survey using Nonparametric Statistical Techniques," *Decision Sciences*, vol. 28, pp. 763-774, 1997.