PARTICIPATION OF FEMALE QUANTITY SURVEYORS IN THE NIGERIAN CONSTRUCTION INDUSTRY

ABSTRACT

The representation of women in traditionally male dominated jobs in developed countries has greatly increased due to changes in economies and worksite settings. However, women are still a minority group in the Nigerian Construction Industry (NCI), with a participation level of about 0.2% compared to 3.2% for men. Studies on women quantity surveyors' (WQS) participation in the Nigerian construction industry (NCI) in Abuja-FCT area are scarce. This study's aim is to investigate the participation of female quantity surveyors with a view to encourage more women involvement on construction activities. Specifically, it assessed the participation of WQS in key quantity surveying tasks and examined the motivational factors that influence WQS participation in the construction industry. The study employed mixed methods comprising of both questionnaire and interview to reach a total sample size of 188 respondents (78 males and 110 females); 137 questionnaires were retrieved, giving a response rate of 73%. Analysis of the data in relation to the study's objectives was carried out using descriptive analysis. Findings from the analysis of data revealed that the level of participation of WQS in the NCI is within 60-80%; both female and male respondents held similar views regarding the level of women participation. The study also identified the top motivational factors influencing WQS participation which included having a formal education in construction related course such as quantity surveying. Furthermore, WQS were discovered to be most competent in areas such as preparing valuation and quantification of construction works. WQS face a lot of challenges in their work, which include unsociable work hours and access restriction to some locations due to religio-cultural beliefs. It was recommended that: The Nigerian construction industry to include gender-inclusive policies and initiatives which will be instrumental in helping women overcome gender-based stereotypes and barriers, women association of quantity surveyors (WAQSN) should provide training and support to women who want to return to the workforce after a long break. Further research should be appraisal of the impact of unfavourable work hours on WQS participation in the NCI and assessing WQS participation in the construction sectors of different selected States in Nigeria.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

The construction industry provides immensely to the economy of every nation; the industry is in charge of the development of physical infrastructures which ensures that people's economic and social needs are met (Shittu and Shehu, 2010). The industry provides job for about 111 million people and is recognized as the world's largest industrial employer (Babatunde *et al.,* 2012). The construction industry in Nigeria is second to agriculture sector in that it contributes to GDP and the number of persons it employs as workers (Akinsiku and Ajala, 2018).

Since the United Nations' Decade for Women (1975-1985) was established, there has been a strong emphasis on gender equality, fairness, and female empowerment as a way of rising growth and improving a country's socio-economic status. In most developed countries, the proportion of women in the workforce has risen dramatically in recent decades, owing to economic factors and changes in work environments. Women are increasingly entering traditionally male-dominated occupations (Jaafar *et al*., 2014). There is an increasing awareness that women make up more than half of the world's population, and their importance in global economic management cannot be overstated. Female representation in various economic endeavours in both developed and developing countries has become the subject of research because of the need for completely unbiased human resource utilization (Adeyemi *et al.,* 2006). Women, according to Jimoh *et al. (*2016), are a largely untapped resource. Which has given rise to a growing global awareness of the effect of gender issues on education and national growth in recent years, both at the grassroots and at the policy level (Dada, 2017).

Construction industry consists of males and females in various professions. One of such professions is quantity surveying, practitioners with expert knowledge on costs and contracts. Since its inception, the profession of quantity surveying has suffered setbacks (Joel, 2016).

Due to the essential part that women play in the industry and the difficulties they face, Jimoh et al. (2016); Adeyemi et al. (2006); Akinsiku and Ajala (2018) examined obstacles to female participation in Nigerian construction industry. Similarly, Tunji-Olayeni et al. (2018) investigated job satisfaction among female Builders, Quantity Surveyors, and Engineers in the construction industry. Adogbo et al. (2015) devised a strategy for retaining and bringing in female workers in the building industry. According to Odubiyi (2018), the recent trend of female construction professionals diversifying is encouraging and also a welcome development because it will improve profit generation for the women and over time, boost the economy. Since a Quantity surveyor is a cost expert and cost is so crucial to a project's success, a research focussing on the construction professional that is saddled with cost management is vital. Therefore, study on the females in quantity surveying as it affects construction sector is critical and it is on the basis of this background, that this study was carried out to examine the participation of women in the construction sector within FCT Abuja.

1.2 Statement of Research Problem

The construction industry comprises of various professions such as civil engineering, building, architecture, quantity surveying, etc. Each of these professions contributes greatly to the success of construction projects and quantity surveying is one of the

professions having great impact on the success of construction project (Hussin and Omran, 2009).

The challenges being faced by women at work varies and most at- times is far rooted in the process of socialisation that such women have been exposed to from childhood. With such socialisation, women may incline or decline towards a career. Gender stereotyping may directly or indirectly make girls to steer clear of studies and jobs considered to be for males, such stereotyping is strengthened by comments received from childhood which eventually and unconsciously results into barriers, and such barriers have been classified as either 'external' or 'internal' to the person concerned (Adogbo *et al.*, 2015).

Preliminary survey conducted in the study area by the researcher revealed that the Quantity Surveyors (women) who are members of NIQS practicing within Abuja is 110, whose population is far too small compared to that of males (1002). With this figure, it is glaring that the number of women quantity surveyors participating in the construction industry is low. This implies that there are certain factors or barriers responsible for this low involvement and that is yet to be ascertained (Adogbo *et al.*, 2015). Therefore, it is impossible to address or tackle the issue of gender stereotyping without an in-depth study of current participation level of female professionals specifically quantity surveyors. This is the gap in knowledge that this study contributed to filling.

1.3 Research Questions

1. What is the level of participation of women QS on construction sector?
2. What are the main motivational forces prompting the participation of WQS in the Construction Industry?

3. What are the areas of competence of WQS in construction industry?
4. What are the challenges facing WQS while performing their duties in the Nigerian Construction Industry?

1.4 Aim and Objectives

This study's aim is to investigate the participation of female quantity surveyors with a view to encourage more women involvement on construction activities.

In order to accomplish this aim, the study pursued these objectives: -

i. Assess the level of participation of women quantity surveyors in key quantity surveying tasks carried out in the construction industry.
ii. Examine the motivational factors prompting female quantity surveyors participation in the construction industry.
iii. Assess the competency of women quantity Surveyors in discharging quantity surveying services in the construction industry.
iv. Investigate the challenges encountered by women quantity surveyors in the course of participation in the construction industry.

1.5 Justification of the Study

In spite of the contributions of the female quantity surveyors to the male dominated construction industry, they are still being plagued with numerous challenges. Hay and English (2015) affirmed that the challenges facing women professionals' (such as Quantity Surveying professionals) participation in the construction industry scares and prevents them from getting fully involved.

Therefore, this study provides more enlightenment on level female quantity surveyors participation in the Nigerian Construction Industry. Data provided could be used in the

evaluation of the impact of legislation such as the Employment Equity Act (EEA) which seeks to ensure that minorities are equitably represented in paid employment. Since women are minority group in the Nigerian Construction Industry, given that their participation level is about 0.2% compared to 3.2% for men.

This study will be beneficial to quantity surveying profession, policy makers and government in formulating legislation and policies to improve female participation in quantity surveying profession which will be significant for the building industry as a whole. Furthermore, with this study members of the Nigerian Institute of Quantity Surveyors (NIQS) and its affiliate (Women Association of Quantity Surveyors of Nigeria, WAQSN) will be motivated to improve their professional skills and give in their best in the course of delivering their professional duties.

1.6 Scope of the Study

The study is gender-based; it considered the participation of female Quantity Surveyors (both in private and public sectors of the construction industry) who are members of WAQSN based in Abuja. So as to enable me source for sufficient data, Abuja was selected because all ministries, parastatals and professional bodies in the country have their headquarters in the FCT. This study investigated the factors influencing participation of female Quantity Surveyors in the construction sector, their competency and the challenges encountered during the course of practice. The study focused on Quantity Surveyors practising in Abuja, female Quantity Surveyors surveyed was based on the record obtained from WAQSN, an affiliation of Nigeria Institute of Quantity Surveyors. The study is limited to Quantity Surveyors practicing; those in academic institutions were not considered. This study was conducted using mixed method (questionnaire and interviews).

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Nigerian Construction Industry

It is no secret that globally, the construction industry cuts across so many aspects of human living. The industry plays a vital role since the surrounding built environment in which we live greatly influences the quality of life in we adopt. In a developing country such as Nigeria, the industry has long been the main provider of housing, social services and infrastructural facilities. In agreement to this, a report by the World Economic Forum (2016) stated that the construction industry strongly affects the economy, the environment, the society and every economy depends on this industry for revenue, growth and survival.

In a developing Nation such as Nigeria, so much change has happened since gaining independence from the British in 1960. However, in the area of how the construction industry is run, not much difference has been observed. The Nigeria construction industry is run based on the model of the country's former colonial master as there still exist great similarity between the construction industry in the United Kingdom and Nigeria.

A problem reported by The Smith Institute (2016) stated that the problem of staff shortage is an issue in which the UK construction industry is predisposed to. Confederation of International Constructor's Association (CICA, 2002) observed that there are about 111 million employees in the industry and this revealed that the industry is a major agent of global development through jobs creation.

With modern ways of procurement, partnerships, a greater use of design-build, with more coordination between design and development, and a greater use of off-site prefabricated materials, more product skills, as well as customizing standard components and establishing a proper health and safety culture being used instead of trading skills, and there is more specialization. Over the last decade, the building industry has undergone drastic changes (Babatunde *et al.*, 2012).

The construction industry is a large umbrella housing lots of activities and skills which includes oil and gas, design, building, civil engineering, heavy engineering, consulting, manufacturing firms, and companies that fabricate industry components and goods. According to the National Population Commission (2012), Nigeria has a population of 167 million people, with women accounting for 49 percent of the active age group, and according to the National Bureau of Statistics (2006), approximately 70% of Nigerian women reside in rural areas. It is believed that without strongly supporting women, the country's economic growth and development would be affected. According to the report of Gender in Nigeria Study of 2012, investing in women and girls in Nigeria would result in increased productivity in this generation and foster long-term development.

2.2 Females in the Construction Industry

The industry comprises of various professionals in which the quantity surveyor is one of them. The Industry is distinct in that it has a significant influence on everyone's life and is one of the few sectors where the value of services been offered increases with time. However, with highly advanced technological development, the industry offers a wide range of challenging employment opportunities (Ginige *et al.*, 2007). considering that the building industry employs the world's greatest number of people, it accounts for seven percent of the total world employment and 28 percent of industrial

employment (Kamaruddeen *et al.,* 2019). Also, it was revealed that for over 20 years females have been actively participating in the paid workforce. They have been known to take up jobs that have been originally held by females (e.g., education, healthcare, and retail) as well as jobs been held by men (e.g., technology and engineering). Although the industry was originally not meant for females, their rate of involvement in the industry has increased over time (Kamaruddeen *et al.,* 2019). It was observed by Jimoh *et al. (*2016) that due to the construction industry's perceived unattractiveness in Nigeria, a small population of women choose careers within the industry. This trend arises because several factors influence job choice, resulting in slow enforcement of the Employment Equity Act's in Nigeria, a lack of female participation, and skills shortage in the construction sector.

Studies undertaken on the informal housing delivery sector have discovered that women make up a small percentage of the construction workforce, this is as a result of varieties of cultural ethics and values that exist within the various ethnic communities that made up Nigeria (Adeyemi *et al.,* 2006, Etzkowtiz *et al.,* 2000). The study revealed that in male-dominated fields such as construction, women face a number of gender-related challenges to success. Therefore, it is clear that from research carried out, the participation of women in the Nigerian construction industry is very low unlike in the developed countries. However, no study has been carried out that addressed the participation of Women Quantity Surveyors in the construction industry.

2.3 History of Quantity Surveying

The profession of Quantity Surveying has been in existence since ages ago which is known to have been practiced by the ancient Egyptians who implored the experts with special skills and knowledge to produce estimates for their historic structures and monuments (Timothy and Olaleke, 2016). The incident of the Great Fire in London created an avenue for the launching out of the profession and this occurred during the 17th century restoration of London. According to RICS , the profession entered a new phase following the completion of the first public contract to be thoroughly evaluated and tendered with detailed financial bills of quantity for transparency. This project was the new Houses of Parliament of Great Britain which was designed by Sir Charles Barry in1836. Although having been in existence since the 1820s, the quantity surveying profession through various construction professional organizations such as Royal Institute of Chartered Surveyors (RICS) and Quantity Surveyors International (QSI) has earned international recognition (Joel, 2016).

In the year 1969 in Nigeria, there was an immediate need for the improvement of the profession by some professionals who were taught and practiced in the United Kingdom which led to a parallel body to the Royal Institution of Chartered Surveyors (RICS) of United Kingdom being established. This group of individuals founded the Nigerian Institute of Quantity Surveyors (NIQS) in 1969; the NIQS is the professional body which helps to regulate the activities of the Quantity Surveyors in Nigeria. While the Quantity Surveying profession was recognized as one of the scheduled professions by the regulated and other Professions (Miscellaneous Provisions) Act 19 78, the profession received legal support and recognition by decree No. 31 of 1986.

The regulatory body known as Quantity Surveyors Registration Board of Nigeria (QSRBN) was then formed to regulate the activities of the Profession

(www.niqs.org.ng). Since this period, the Nigerian Institute of Quantity Surveyors (NIQS) has been a member of the International Cost Engineering Council (ICEC).

Joel (2016) revealed that organisations such as the Royal Institute of Chartered surveyors (RICS) and Quantity Surveyors International (QSI) provide support, protect the character, status, and interests of quantity surveyors in addition to promoting high level of good practice of its members

In Nigeria, Quantity Surveying has followed a similar pattern of practice as that of United Kingdom and other Commonwealth countries (Dada and Jagboro, 2012), Despite having the same functions, the name Quantity Surveyors vary from one place to another. Cost economists and cost consultants are two terms used to describe people who work in this field. Joel (2016), described quantity surveying as a customer-driven career in which quantity surveyors react to clients' needs and must strive to improve their own skills in response to the ever-changing project owners' requirements. The construction industry's changing dynamics have resulted in a number of changes to the profession over time. Olatunde (2006), stated that Quantity surveyors, are primarily responsible to advise on potential costs, prepare tender documents, itemize the work to be completed, discuss design contracts, assess work as it progresses, and prepare final accounts under a standard building contract where architectural drawings are turned over to them to advise on costs and risks. These services are aimed at delivering projects on schedule and within cost limits which is done to prevent project abandonment and boost the industry's contribution to (GNP). The functions of Quantity surveyors have grown significantly in recent years, and they have spread to industries such as banking, agriculture, petrochemicals, automobiles, mining, and telecommunications, shipping and transport.

2.3.1 The roles of Quantity Surveyors

The Nigerian Institute of Quantity Surveyors (NIQS) (2004) described quantity surveying as "the profession concerned with financial accountability and achieving value for money in the planning stage, execution of building, engineering projects and developments". However, the roles of quantity surveyors have evolved over time, allowing today's quantity surveyors to demonstrate their abilities in a variety of settings both within and outside the construction industry (RICS COBRA, 2012). Organizations that deal with a fair amount of building construction or procurement as part of their operations such as Quantity surveying firms, construction companies, land development or estate management firms, are all places where anyone in the sector can work (Shafiei and Said, 2008). Because finance is a major aspect of the quantity surveying profession, it makes Quantity Surveyors to take up careers in insurance and finance positions in banks or other corporate finance entities. Quantity Surveyors thus have available a wide-ranging choice of opportunities. It is evident that there is no difference between the role of a male quantity surveyor and that of a female therefore, the traditional roles of client's quantity surveyor include the following: preparation of Bills of Quantities and the giving of advice on what a project would cost. He/she does cost planning during the design stage of a project, examines tenders, prices quantities negotiate rates with contractors and reports findings. The above listed skills show that it does not involve any physical strength rather it requires mental ability in which the females also possess. Badu and Amoah (2004) believed that the quality of education received by the quantity surveyors has redefined their changing roles. The wide array of the quantity surveyors' responsibilities requires that they are educated, trained, and highly skilled in diverse subjects which make it a distinctive profession which women can be a part of.

These have enhanced the quantity surveyor's responsibilities which have been identified in Fadason *et al.* (2017) as follows:

- Single rate approximate estimates.
- Cost planning.
- Procurement advice.
- Measurement and quantification.
- Document preparation, especially bills of quantities.
- Cost control during construction.
- Interim valuations and payment.
- Financial statements.
- Final account preparation and agreement.
- Settlement of contractual claims.

It is generally believed that because the profession of quantity surveying is gender-biased, female quantity surveyors must experience a high level of dissatisfaction (Joel, 2016). However, Bowen *et al.* (2008) confirmed based on a survey of quantity surveyors in the building industry in South Africa, that the population of male professionals is more than that of the women. Notwithstanding the fact that the profession is dominated by males, quantity surveyors generally appeared to be satisfied with their jobs.

In order to have competitive advantage and follow up with worldwide developing trends, the profession has developed beyond its traditional role to providing certain expert services and has continued to make adjustment in areas such as sustainability in construction, renewable energy system, green technology, building information modelling, etc. Industry developments such as BIM and BIM-related cooperation, as

well as integrated project execution, necessitate quantity surveyors using more than just their conventional expertise. (Fadason *et al.*, 2017).

Quantity surveyors have the ability for strong international links, a strong client network, and a broad understanding of construction processes (Frei and Mbachu, 2010). Their construction roles and strengths provide them with a higher degree of job satisfaction, especially prior to the economic downturn. Low level of supervision, interest in innovation and decision-making, personal happiness in the workplace, and appreciation for accomplishment were all the factors that influenced their job satisfaction.

2.3.2 Characteristics of the Quantity Surveying Profession

This concerns the features peculiar to the quantity surveying profession. Research carried out by Oke *et al.* (2017) described quantity surveying as "a universal profession whose activities are monitored, controlled, and regulated by a number of associations, institutes, societies, and regulatory boards".

As observed by Hackett and Statham (2016), Quantity surveying like other sister professions in the construction industry has evolved over the last few centuries into making innovative contributions to infrastructural development. What makes one a quantity surveyor is not about the job description or the software been used. A Quantity surveyor usually possesses an excellent character which enables them to work in various sectors of the economy. These traits do not exist by chance but however need to be built into the professional's day to day habit to ensure optimal yield. These traits which are not peculiar to any gender include:

- Good communication skill

- Critical thinking
- He/she must be able to pay attention to every little detail
- He/she must possess composure to work under pressure.
- Must be team oriented and organised at all times.
- Must be humble enough to welcome the strengths and perspectives of your client and team workers.

According to RICS (2015), the knowledge base and skills undertaken by the quantity surveyors properly equip him/her to offer various services. As a result of the training received by the quantity surveyor, he/she offers multi-faceted services to his numerous clienteles. To real estate clients, the quantity surveyor's roles involve industrial, leisure, agricultural, residential, commercial, and retail facilities. For infrastructure clients, it includes roads, seaports, coastal defences, railways, waterways, airports, power generation and utilities. Furthermore, advancement in science and technology has led to new innovations, methods and techniques which are impacting the construction industry globally.

2.4 Skills and Competence Required of Women Quantity Surveyors

According to the Gender Equality Index of 2012, Nigeria is rated as the 118th out of 134 countries considered which reveals the large gap that exists between the male and female gender in this developing country. According to Afolabi *et al.* (2018), it was reported that in many areas of life, women remain disadvantaged gender-wise. However, it was noted that the gender unfairness ranges from exclusion from policy making, to labour market discriminations (Afolabi *et al.*, 2018). According to studies, women are thought to have unique abilities which they can apply to the construction industry, and they are involved in and capable of performing a wide variety of tasks

both on and off the job site (example administration offsite, carpentry and project management on site). Shafei and Said (2008) revealed that on completion of the quantity surveying academic programme, the graduates should possess knowledge, and competency skills in the following areas: construction economics, cost and financial management, management of construction project, procurement, measurement, quantification and documentation, construction technology and engineering, information and communication technology, project management principles and practice and should be able to communicate effectively, be innovative with problem solving ability, able to work in team and possess positive thinking ability.

The report from Afolabi *et al.* (2018) stated that investing in female education yields very high socio-economic profit which will provide solution to the perceived skill shortages in the construction industry. According to Dada and Jagboro (2012), it is generally believed that construction site managers are being faced with skill shortages in modern times. The issue of skills expected from female quantity surveyors and understanding the basic dependencies among these competencies persist on the research agenda (Dada and Jagboro, 2012). A study conducted to investigate the level of duties and competencies of female QSs in the Malaysian construction industry by Jaafar *et al.* (2016) revealed that many studies have been performed on women working in the construction industry, but only a small number of these studies have been conducted explicitly to examine their actual participation. The growth and continued relevance of any profession is largely dependent on the extension of appropriate skills and competencies. From the vision of the NIQS, it is evident that the quantity surveyors (both male and female) in Nigeria have a strong desire to rise above just the provision of services on building projects and offer more advanced services.

Findings from Jaafar *et al*. (2016) indicated that the following six mandatory competencies are required of quantity surveyors; teamwork, conduct rules, ethics, and professional practice, communication and negotiation, client care, data management, and conflict avoidance, management, and dispute resolution procedures. However, female QSs are less competent in them. Female QSs are fairly competent in the following six core competencies: procurement and tendering, quantification and costing of construction works, project financial management or reporting, contract practice, design economics and cost planning, and construction technology and environmental services. In terms of technical responsibilities, female QSs are extremely qualified in conducting conventional QS tasks, as shown by their high levels of skills. Female QSs are often thought to be documentation experts, particularly with regard to drafting bills of quantities and measurements. Female QSs are also knowledgeable in performing evolved activities but not to the point of experts. In general, female QS performance is above the low end of the scale in all 36 QS duties. As a result, female QSs have a basic understanding of the duties that straddle conventional and evolved QS duties.

Table 2.1: Required Competencies for Quantity Surveying

S/Nr	Mandatory Competencies	Core competencies	Optional Competencies

1	Conduct rules, ethics and professional practice.	Design economics and cost planning or building commercial management	Building information modelling (BIM) management
2	Client Care	Contract practice	Capital payments
3	Communication and negotiation	Construction technology and environmental services	Construction commercial administration or design economics and cost accounting (whichever is not selected as a core competency)
4	Health and safety	Procurement and tendering	Contract administration
5	Accounting policies and concepts	Regulation and monitoring of project finances	Corporate recovery and insolvency
6	Business scheduling	Measurement and costing of construction works	Due diligence
7	Procedures for avoiding, managing, and resolving conflicts		Insurance

8	Data management	Planning and programming
9	Sustainability	Project evaluation
10	Team work	Risk management
11		Procedures for conflict prevention, negotiation, and dispute resolution or Sustainability

Source: Excerpt from Royal Institution of Chartered Surveyors, (RICS) (2015)

2.5 Challenges of Female Quantity Surveyors Participation in the Nigeria Construction Industry

According to Hay and English (2015), challenges to women participation exists and can be categorized as having Less industry knowledge, a negative perception, the effects of the society's roles and cultural values, traditional roles, and unavailability of role models. On the industry's hand, there is poor renumeration, discrimination, hostile workplace environments, and a male-dominated society. Regarding constraints and opportunities faced by women, there still exist several gender barriers. However, several literatures on gender discrimination in the labour market focused on the lack of education, societal perceptions, the glass ceiling, the queen bee syndrome and work–life balance issues especially for women aspiring to positions of leadership (Hay and English, 2015).

Further findings of a survey of industry stakeholders conducted by Hay and English (2015), revealed that most construction firms employed few women per year and those who were engaged were given secretarial and administrative positions. Only 10% of

the 100,000 chartered surveyors worldwide are female, according to the Royal Institute of Chartered Surveyors (RICS) 2015). As a result, it is clear that the underrepresentation of women in the construction industry is not limited to South Africa or Nigeria.

The underrepresentation of women in the construction industry is due to the industry's perceived male-dominated nature and family responsibilities such as marriage and childbirth (Akinsiku and Ajala, 2018). It was found that both men and women have equal opportunities in the construction industry, that is 66 percent of construction companies give women the same opportunity as men in office work, 48 percent give women the same opportunity as men in site work, and 22 percent have separate facilities for women. Furthermore, while 48 percent of organizations have a distinct and consistent policy on non-discrimination on the basis of sex when collecting information, recruiting and training, 96 percent of organizations provide females with opportunities to advance within the company's structure, a lack of flexibility in working conditions is still a barrier to female entrants into the industry.

According to Akinsiku and Ajala (2018), if both male and female construction workers have equal opportunities, why is there such a large disparity in the percentage of participation of female construction workers compared to their male counterparts? This was discovered in the study because women in the construction industry have little flexibility in their working hours. Discrimination that occurs during hiring does not promote equality because even employers are conscious that if a woman is more skilled or performs as well as a man during recruitment, women will need to take maternity leave during childbirth. Nevertheless, the topic of non-discrimination based on gender during recruitment would help to increase female representation in the construction industry as more people perceive women to be equal to men. Past research revealed

that, women are not employed based on marital status, but the tight schedule in working hours for female professionals can be responsible for the shortage in female participation.

Some females are wives and mothers hence there should be flexibility allowed because apart from the normal maternity leave, women will work during pregnancy and while breastfeeding a baby. As a result of this, women may be inspired to work in construction. Dada (2017) investigated the factors that influence Nigerian women's involvement in construction education. The study found that the absence of a female role model to imitate is the major factor affecting women's enrolment in construction education. This finding is unsurprising given that previous study has shown that only less than 5% of Nigerian women are managers. Another significant aspect is the belief that construction is unsuitable for women and is always intended for men. This conclusion is in agreement with Loosemore and Galea (2008) assessment of the construction industry as a male-dominated and dangerous world characterized by masculinity, dispute, and crisis. Dada (2017) revealed that one of the factors stopping women from reaching their full economic potential as was found in developed countries, is the difficulty of juggling their work and family responsibilities; a work-family conflict was a major concern in the history of female engineers.

2.6 Motivational Factors Influencing Women Quantity Surveyors Participation in the Construction Industry

The construction industry's current reputation is a significant deterrent to women entering the industry. As a result, there is a need to improve the image to reflect the industry's positive aspects. It is necessary to increase the supply of positive news from the market to the general public. There is a lot of good news in the building industry. It

is a technological and engineering powerhouse that offers exciting career opportunities, it also plays a significant role in the national economy. In a study conducted by Kamaruddeen *et al*. (2019) to identify the factors influencing females' work in the construction companies operating in Malaysia, it was observed that although construction is a non-traditional industry for females in Malaysia, the number of females employed has increased over time. Past research revealed that in comparison to males, the number of females employed in the sector is lower. Therefore, findings from the research reported that if the current number of females working in the construction sector is to be increased, the male-dominated nature of the industry and gender-based harassment faced by females employed in the industry are obstacles that must be addressed.

Despite the growing technology level, Construction is still seen as a largely male-dominated industry. After years of image-building campaigns, the industry is still linked with bricklaying, dangerous and harmful environment, physically challenging tasks, and masculine. The industry is regarded as boring, filthy, nontechnical, unprofessional, dangerous, cyclical, and synonymous with harsh working conditions. (Ginige *et al.,* 2007).

Further findings opined that the Construction industry is still regarded as a mostly male-dominated operation There is little or no recognition that the sector is increasingly high-tech, needing mental strength, dedication, and motivation to excel rather than only physical strength. Therefore, it is necessary to take the required steps to positively change the construction industry's image in order to attract more women (Ginige *et al.*, 2007). To ensure efficient management, sustainability, environmental friendliness, and higher product quality, construction teams should follow good practice guidelines. To

maintain a positive image, it is important to publicize the industry's accomplishments, especially its excellent products and high-quality standards. In this regard, special attention should be paid to girls, as female recruitment has been described as a major solution to the industry's skill shortage. It is important to emphasize that the industry is no longer a macho environment in which women have trouble dealing, and that the industry needs diversity through women's participation. In the industry, there is a strong need for better infrastructure, which women can take into account when deciding on a career path.

Jimoh *et al.* (2016) stated that creating awareness to young women about construction opportunities, improving women representation, and expanding women's presence are the best methods for ensuring women's continued participation in construction. This supports the observations of Dainty et al. (2000), who found that when a definite pathway for work openings is provided, regardless of gender, women will take advantage of it and are more likely to stay in the industry. It's worth noting that the young women's knowledge of construction opportunities is ranked first among both employers and women professionals, showing the importance placed on this strategy by the respondents. According to study, flexible work schedules and providing scholarship opportunities for involvement in construction can also be increased by encouraging girls, especially secondary school and university students, to obtain degrees in the built environment are also good strategies to increase women's participation in construction. Previous studies (such as Aulin and Jingmond, 2011) have found that allowing a flexible work schedule and work hours, as suggested by the Swedish Construction Federation, is a good way to encourage female participation in construction. Mentoring programs are now being considered as methods for retaining female workers in construction related fields. This type of peer reinforcement, also

known as a mentor-protégé partnership, is thought to be important in recruiting and maintaining female construction workers. (Wangle 2009; Aulin and Jingmond, 2011). Jimoh *et al.* (2016) conducted a research titled 'Women professionals' participation in the Nigerian construction industry: finding voice for the voiceless' which looked into the current state of female participation, the challenges encountered by female professionals, and the issues that affect them as they pursue construction careers. According to the findings, increasing the number of qualified women in the building industry requires increasing young women's knowledge of construction industry opportunities right from secondary school. It is also suggested that career development programs, such as preparation and mentoring, be included in order to maintain career path progression.

Ling and Poh (2004) in the paper motivating a greater number of female quantity surveying graduates to work in Singapore's construction industry, whose aim was to determine the factors that influence female quantity surveying (QS) undergraduates' decision to join the construction industry and recommend ways to recruit more female QS graduates discovered that the biggest implication for construction firms is that if they wish to attract female graduates, they must boost the industry's reputation. They must perform glass ceiling audits in order to discover the problems that are unique to their company that are preventing females from being hired. There is also a need for companies to also have mentors for undergraduates and recent graduates who choose to work in the building industry. Women that can act as role models for females in the industry are preferred. While increased contact between new female recruits and Male mentors will serve to lessen some of management's bias assumptions.

2.7 The Future of Women Quantity Surveyors in the Construction Industry

Taking into consideration that when the quantity surveying profession first came into existence, it faced several challenges in its development; however, if it is to thrive and stay relevant, it must undergo an immediate and very high strategic transformation (Frei and Mbachu, 2013). In response to the ever-changing global economic environment, any profession that want to survive must experience advancement and the female Quantity surveyors (QSs) are not invulnerable to these changes. Therefore, in order to maintain global relevance and significant improvement, Quantity surveyors (both male and female) must work in operating landscapes to capture and respond to impending changes in areas such as professional ethics, procedures, and overall level of expertise (Frei and Mbachu, 2010).The profession can only make positive advancement based on its capacity to respond to the variations in the international construction business environment because without adequate perusing and discerning future directions and vigorously preparing for any impending changes, the profession stands a risk of receiving changes as threats, rather than opportunities.

Changes such as the arrival of new innovations will modify and improve the profession thereby making its development faster, more accurate, more efficient and less tedious for the female quantity surveyors. This advancement of technology creates more room for quantity surveyors to expand their skills and competences. The quantity surveyors have roles to play at different stages of the project: In the construction phase, quantity surveyors play the role of handling payment of contractors, suppliers and sub-contractors. They perform the role of evaluating the impact of the changes in the ongoing project. At post construction phase, they prepare final account. Therefore, with the rapid change in the industry due to technology innovations, certain specialists and experts for the improvement of the current situation of the profession is required.

2.8 Requirements for Sustaining the Future of Women Quantity Surveyors

According to Fadason *et al.* (2017), there is the need for the quantity surveyor to possess in-depth knowledge and experience of some of the roles such as risk management, value management, facilities management, whole life costing. While accepting all consequences that come with the changing roles as a requirement to be on equal level with his colleagues globally, it is then necessary to consider the following:

I. Research and Development: Ashworth *et al.* (2013) stated that there should be a positive approach in terms of research, by all stakeholders in expectation of future changes that could likely affect quantity surveyors and the profession in Nigeria vis-à-vis global practice.

II. E-Business: Information and Communication Technology ICT: Globally, the construction industry is developing at a faster pace with the acceptance of Information Technology (IT) (Fadason *et al.*, 2017). It revealed that ICT can improve the services offered by the quantity surveyors because it gives access to mobile technologies which provides important information in a timely manner.

III. Building Information Modelling (BIM): Building Information Modelling (BIM) It is one of the most recent innovations in ICT. According to Hackett and Statham (2016), there was an argument that it isn't just about buildings because, it applies equally to all built assets, it also uses stretches right through the project lifecycle and it relates equally to management of the process and of the completed asset. Fadason *et al.* (2017) identified the benefits of BIM to quantity surveyors as:

- When costing and tendering, a visualization of the project will help in the scoping of gaps in knowledge.
- Real-time costing would allow for rapid decisions, reducing the design/cost program timeframe and eliminating abortive design.
- Cutting the time, it takes to produce quantities would give you more time to evaluate the proposal for value for money and other important client goals.
- Carbon estimating software can be linked to the model to support embodied carbon calculations, therefore supporting the client's sustainability agenda.
- Preliminary evaluations, valuations, and claims for delays can all be aided by program review.
- high-quality project details will be obtained as a result of clash identification and enhanced teamwork thereby reducing the number of instructions and minimizing unforeseen delays and costs.
- The ability to save money over the life of the building is increased because BIM data can be designed to help asset management.

IV. Sustainability in Construction: Sustainability in construction is an area that could offer the Nigerian quantity surveyor an opportunity to compete globally of he/she obtains the required skills needed to announce him as a key player in global infrastructural development.

V. The quantity surveyor as a project team member according to Ashworth *et al.* (2013) needs to:

- Understand sustainability drivers and how they relate to the client's core long-term goals.

- Environmental considerations, corporate accountability, waste management, and other topics associated with environmental impact assessment should all be understood.
- Provide cost information as design proposals progress, on alternative sustainability technology, this will imply a thorough understanding of renewable energy technologies such as solar technology, ground source heat pumps, wind power, biomass generators e.t.c
- Measure items relating to sustainability within measured work rather than using provisional sums and prime cost sums.
- Reflect sustainability issues in the documents for pre-qualification and selection requirements
- Explain how the tenderer is dealing with sustainability problems, risks, and benchmark comparisons in the tender study.
- Evaluate any changes as the project progresses in terms of the client's sustainability goals.

From the following with adequately developed capacity in this regard the Nigerian quantity surveyor will be properly positioned to compete globally.

In the research by Fadason *et al.* (2017), which was aimed at highlighting the knowledge-base and skill-base of the Nigerian quantity surveyors, the traditional roles they play, their advanced roles which need to be strengthened and the developing roles of quantity surveyors they must acquire knowledge of, in order to remain relevant globally revealed that the rapid increase in demand for infrastructure globally has necessitated quantity surveyors to acquire new skills and build competencies in keeping with current trends and innovations. It is therefore recommended that

i. All stakeholders; government, institutions, practitioners and other organisations should be proactive and engage in research that will help navigate and “elevate the profession”.

ii. Quantity surveyors should adopt ICT tools that promise to improve their service delivery and to gain competitive advantage.

iii. Considering the rapid growth of BIM in construction globally and its benefits quantity surveyors should acquire this skill and work at being proficient.

iv. They should come to terms with the subject of sustainability as one that has come to stay and therefore should understand its concepts and application vis-a-vis their core services.

v. Stakeholders should identify key challenges confronting the profession today with the future in view, while also identifying likely future trends and challenges.

In a study conducted by Joel (2016) who aimed at determining the future of the quantity surveying profession by studying the trend of growth, stated that despite of the future developments of the profession, the study has concluded that quantity surveying is a profession dominated by males judging from the few female respondents (5%). However, quantity surveyors believe that there is hope for the profession in the future and its progress could be credited to the expectations of future development from economic downturn that would provide ways for improvement in areas such as construction, information technology and sustainable design.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

The participation of women quantity surveyors (WQS) in the Nigerian Construction Industry (NCI) is the major focus of this study. The study employed mixed methods comprising of both quantitative and qualitative (questionnaire and interview). The questionnaire survey is adopted because it is cheap in that it provides a wider reach and it requires less time and effort. The interview phase of this study permitted the researcher to tap the deeper contextual issues that underlie the minority status of WQS in the NCI in a way that questionnaires cannot.

Mixed method research designs help to make up for the mistakes in single-method designs which is either qualitative or quantitative methods. When the two methods are combined in the same analysis, the strong points of one will make up for the drawbacks of the other. This method helps to boost the researcher's confidence in the findings and helps to achieve a greater understanding of the topic been researched upon (Dunning *et al*., 2008). The variables for the analysis were gathered thorough examination of existing literature. In this study data used to achieve under listed objectives were collected through quantitative and qualitative means:

1. The information on WQS participation in quantity surveying tasks
2. Competence of women QSs in the NCI;
3. The key motivators that influence WQS participation in the NCI;
4. The challenges encountered by WQS in the NCI;

3.1 Required Data Types and Sources

In research, different types of data are required from numerous sources. Data from various sources are used in this analysis. Data gathered from both primary and secondary sources were made available for researcher. Data for the study was obtained mainly from primary sources, which are the quantity surveyors (both male and female) within the study area comprises of QS in public and private organisations.

Primary data for the research was obtained using a mixed method research design that included a questionnaire survey and an interview. This means that quantitative data was collected using structured questionnaires, while qualitative data was gathered using semi-structured interviews. After that, the data collected from both of these processes was triangulated**.**

3.2 Research Population and sample frame

There are 110 female QSs and 235 male QSs based on the list of financially up to date members gotten from the Abuja chapter of the NIQS. Therefore, the population of QS in Abuja is 345. (WAQSN/NIQS Abuja Chapter, 2019).

3.3 Sample Size

This study surveyed the entire female QSs and 33% of the total male QSs within the study area. This implies that 110 females and 33% of 235 male were surveyed. Summed up to 188 respondents QSs in the study area.

3.4 Sample Technique

All the female QSs in the study area were sampled because of their small size. While the male QSs were randomly selected. Purposive sampling was used for selecting those respondents interviewed; Ten QSs interviewed were selected based on their years of experience and the willingness shown during questionnaire survey.

3.5 Design of the Research Instruments

Data was collected from two different sources which are; primary and secondary sources. Quantitative data was gotten with the aid of structured questionnaires while qualitative data was gotten through semi-structured interview conducted. Before the questionnaire was drafted, excessive literature review was conducted.

3.5.1 Questionnaire

The questionnaire for this study is divided into five parts, from A to E. Part A focused on the respondent's general information, which was intended to collect data on the respondents' general characteristics in order to ensure data consistency before review and interpretation. Years of work experience, employer, child obligation, gender, and level of education of the respondent are all items included in this first part.

The second part focused specifically on the research work. Sections B-E are organized according to the study's objectives. On a 5-point Likert scale, questions were asked in each of these parts. Section B was concerned with the participation of WQS in the NCI. Section C focused on key motivational factors influencing WQS participation in the NCI; Section D focused on the competence of WQS in the NCI and Section E dealt with challenges encountered by WQS during participation in the NCI.

3.5.2 Interview

Warren (2003) posited that in-depth personal interview is often an appropriate method to use in qualitative research. In order to collect qualitative data from 10 selected QSs in Abuja, comprising of male and female in equal size. An interview procedure was set up in accordance with the research of Jimoh et al. (2016). It is made up of well-structured questions that led to in-depth conversation with the respondents who were

selected. All interviewees were properly notified and a suitable time for the interview was set. The agreement and permission of the interviewees to record their entire conversation using a digital recorder was requested at the start of the interview.

3.6 Questionnaire and Interview Administration

The interview was conducted personally while a large number of the questionnaires were self-administered; others were administered through the help of some recruited persons. The respondents were given a total of 188 questionnaires, but only 137 were returned, yielding a response rate of 73 percent, which was considered satisfactory for the analysis. Table 3.l presents numbers of questionnaires administered to quantity surveyors both in the private and public sectors categorised into male and female quantity surveyors.

Table 3.1: Response rate of distributed questionnaire

Categories	**Nomenclature**	**Gender**	**Questionnaire Issued**	**Questionnaire Retrieved**	**Response Rate**
A	Private Establishment	Male	30	23	77%
		Female	45	33	73%
		Total	75	56	75%
B	Government Agencies	Male	48	35	73%
		Female	65	46	71%
		Total	113	81	72%
Grand Total			188	137	73%

Source: Researcher survey, 2019

3.7 Pilot Study

Before distributing the survey to a wider population, there was a pilot survey done by subjecting the research instrument to a critical review by selected experts to ensure it serve the functioning it was designed for. Therefore, the initial questionnaire was pilot tested with 10 respondents for the purpose of examining the questionnaire to spot any issue that respondents may have interpreting or answering the questions, and to find out what's causing them. This allowed us to evaluate the questionnaire's ease, clarity, and duration, as well as make any necessary adjustments that might affect the instrument's quality.

3.8 Data Analysis Techniques

In this study, information obtained from the questionnaire was analysed using descriptive statistic and t–test. The interview was analysed using content analysis. The information obtained from the questionnaire survey was first entered into Microsoft Excel. The data was analyzed in relation to the study objectives using descriptive analysis via the Statistical package for the Social Sciences (SPSS). The summary of the methods of analysis is shown in Table 3.2.

Table 3.2: Data Analysis Techniques

s/n	Objectives	Tools	Analysis Tool
1	To assess the current level of women QS involvement in the construction industry.	Questionnaire	Frequency & Percentile
2	To examine the factors driving women QS in the construction industry.	Questionnaire	Mean score and t test

3	To examine the competence of women QS in the construction industry.	Questionnaire	Mean score and t test
4	To examine the challenges to of women QS participation in the construction industry.	Questionnaire	Mean score and t test

Source: Author (2019)

Objective 1 was analysed using descriptive statistics (such as frequency and percentile analysis) which are found in the Statistical Package for Social Science (SPSS) Version 20. Objectives 2, 3 and 4 were also analysed using descriptive statistical method (Mean score and then ranked) and inferential statistical analysis (t-test) was conducted on the data to test agreement on the ranking of the variables by the female and male QS.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

This present statistical analysis of valid data collected during the survey. This research data was obtained from selected quantity surveyors practising firms in the Nigerian construction industry, specifically in Abuja. The quantity surveying practitioners considered are those in government agencies and the private establishment in Abuja. Analyses of the obtained data assisted in arriving at valid conclusions and making adequate research recommendations.

4.1. Demographic Profiles of Questionnaire Respondents

The demographic profile of respondents in their respective companies was presented in Table 4.1, which are categorised into four thus the descriptor, participant, frequency and the percentage analysis. The data in the table revealed that 42.33% of respondents surveyed were male quantity surveyors with a frequency of 58 in both government agencies and private establishments. The balance of 57.66% of the respondents was female quantity surveyors with a frequency of 79 in both government agencies and private establishments. Both male and female quantity surveyors were surveyed to prevent bias response that might occur if only females were surveyed.

Similarly, information on academic qualification of the respondents shows that 61% of the respondents have first degrees or its equivalent (either Higher National Diploma or Bachelors) with a frequency of 84; 27% of them have master's degree with a frequency of 34 and 12% of them have doctorate degrees with a frequency of 16. This implies that the respondents are educated enough to respond to the needs of the study. The work experience of the respondents was also examined; 5% of respondents have worked for

less than 5 years with a frequency of 7, 36% of them have worked for more than 5 years but not more than 10years with a frequency of 49. A further 41% of them have been working for 10 - 15years with a frequency of 56 while 18% of them have worked for more than 15years with a frequency of 25. These findings indicate that most of respondents have sufficient work experience to respond to the questions.

Table 4.1 Analysis of Demographic Profiles of Respondents

Descriptor	Participant	Frequency	Percentage
Gender	Male	58	42.33%
	Female	79	57.66%
	Total	**137**	100%
Academic	PhD	16	12%
Qualification	MSc/MTech	37	27%
	HND/BSc/BTech	84	61%
	Total	**137**	100%
Working Experience	Below 5 Years	7	5%
	5-10 Years	49	36%
	10-15 Years	56	41%
	15 Years Above	25	18%
	Total	**137**	**100%**
Child Responsibility	Yes	86	63%
	No	51	37%
	Total	**137**	**100%**
Marital Status	Single	42	31%
	Married	95	69%
	Divorced	0	0%
	Widowed	0	0%
	Total	**137**	**100%**

Source; researcher's survey, 2019

Further analysis of the respondents' child responsibility status revealed that 63% of the respondents with a frequency of 86 are saddled with the responsibility for at least a child. This was compared with 37% of the respondents with a frequency of 51 who have no child responsibility. The concluding part of Table 4.1 examined the rate of married respondents to be 69% with a frequency of 95 with respect to the rate of unmarried respondents to be 31% with a frequency of 42.

4.2 Women Quantity Surveyors Level of Participation in Nigeria Construction Industry

The participation level of WQS in the Nigerian construction industry is presented in Figure 4.1; 12% of the respondents affirmed that women level of participation is very low (below 20%) with an overall frequency of 17. The male respondents ranked the women participation level as 12% while the females ranked it 21% with a frequency of 7 and 16 respectively.

15% of the respondents believed that the level of participation of women in construction activities is low (within 21 to 39%) with an overall frequency of 21. Male respondents ranked the participation level at 14% while the females ranked it at 16%, with frequencies of 8 and 13 respectively. A further 26% of the respondents believed that the level of participation of women on construction activities is at an average level (within 40 to 59%) with an overall frequency of 35. The male respondents ranked the participation level 26% while the females ranked it 25% with frequencies of 15 and 20 respectively.

Still further, 30% of the respondents affirmed that women level of participation is high (60-80%) with an overall frequency of 41. The male respondents ranked the participation level at 34% while the females ranked it at 26% with frequencies of 20

and 21 respectively. The balance of the respondents (17% of the sample) affirmed that women level of participation is very high (80-100) with an overall frequency of 23. The male respondents ranked the participation level at 12% while the females ranked it at 21% with frequencies of 7 and 16 respectively. These findings are reported in Table 4.2.

Table 4.2 Participation of WQS in Construction Related Activities

Participation level	**Male Qs**		**Female Qs**		**Overall**	
Level	*f*	%	*f*	%	*f*	%
100-81%	7	12	16	21	23	17
80-60%	20	34	21	26	41	30
59-40%	15	26	20	25	35	26
39-21%	8	14	13	16	21	15
Less than 20%	8	14	9	12	17	12

Source: Researcher's survey (2019)

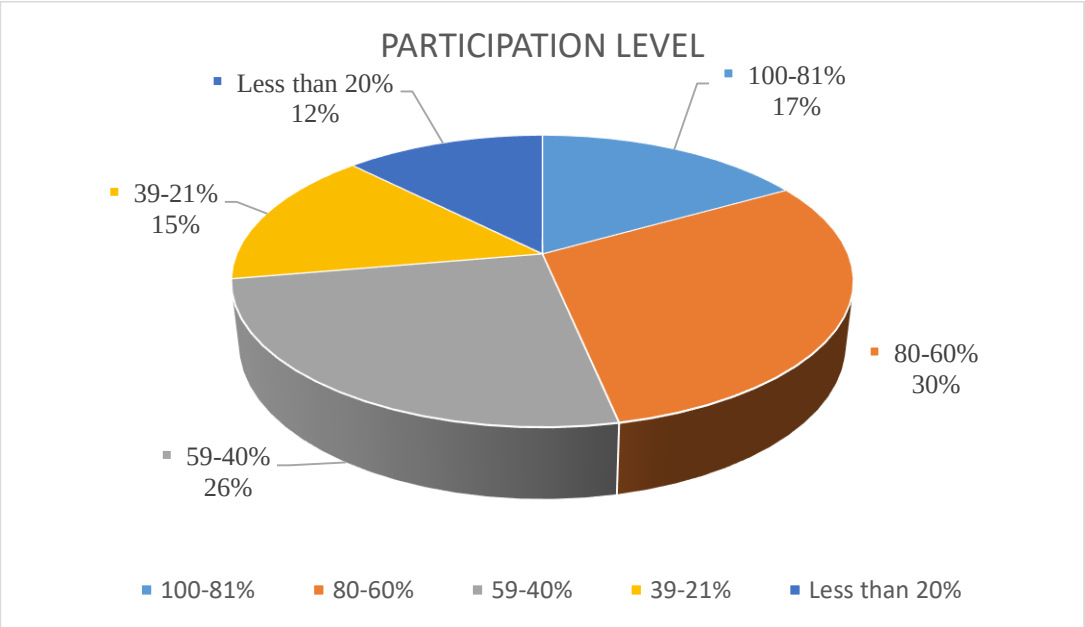

Figure 4.1: participation of Women QS in the construction related activities
Source: Researcher's survey (2019)

4.3 Key Motivational Factors Influencing WQS Participation in the Construction Industry

Table 4.3 shows the factors that influence the involvement of women quantity surveyors in construction activities, as rated by the respondents. Most of the respondents were of the opinion that studying construction courses in a tertiary institution is the top driver of women quantity surveyors' participation in construction activities; this was rated 1st having an overall mean score of 3.31. The male respondents rated the same factor 1st while female respondents ranked it 2nd, with a mean score of 3.34 and 3.29 respectively. The enjoyment of daily work tasks, as a driver of WQS participation, was ranked 2nd with overall mean score of 3.11. The male respondents ranked the same factor 8th while the female respondents ranked it 1st with a mean score of 3.72 and 3.39 respectively. The desire to help the household by augmenting the income of a spouse was rated 3rd with overall mean score of 2.96. The male respondents ranked it 5th while the females rated it 4th with a mean score of 2.90 and 3.00 respectively.

Table 4.3 Key Motivational Factors Influencing WQS Participation in Construction Industry

S/N	Participation Influencing Factors	QS (Male)		QS (Female)		Total	
		Mean	Ranking	Mean	Ranking	Mean	Ranking
1	Studying construction related course.	3.34	1st	3.29	2nd	3.31	1st
2	Augmenting Spouse's income.	2.72	8th	3.39	1st	3.11	2nd
3	Enjoyment of daily work schedules.	2.9	5th	3.00	4th	2.96	3rd
4	Been offered a job or opportunity in construction.	2.98	3rd	2.73	6th	2.93	4th
5	Prestige of the career.	2.79	7th	2.89	5th	2.85	5th
6	Opportunity to be a role model.	2.52	9th	3.04	3rd	2.81	6th
7	Employment rules and procedures.	3.24	2nd	2.59	8th	2.79	7th

8	Nature of the construction industry orientation.	2.88	6th	2.72	7th	2.72	8th
9	Lack of alternative employment.	2.91	4th	2.32	9th	2.56	9th

Source: Researcher's survey (2019)

The factors that motivate women quantity surveyors participation in Nigeria construction industry was investigated further in order to test the level of agreement between the female and male respondents on the ranking of those drivers. The results of T-test analysis of the factors that influence women participation in construction activities is presented in Table 4.4. The findings showed that there is a substantial degree of agreement between female and male views of the factors' relevance.

This was deduced from the fact that the obtained t-statistic (t-cal) value was lower than the t0.05 critical value (t-tab). The t-cal value was 0.245, while the t-tab value was 2.306, indicating that there was no substantial difference between the parties sampled. In other words, the parties that were sampled are in agreement. The P-value of 0.813 was also higher than the acceptable threshold (LOS) of 0.05. Arroyo et al. (2018) found that majority of men when compared to women believe that gender bias is not a problem. In this study, there was no disparity in perceptions regarding men and women on the factors that influence women participation.

Table 4.4 Independent Samples T-Test

Variables		**Model Type**	**Observations**					
X_1	**X_2**		**Mean Values**	**T_{cal}**	**T_{tab}**	**P_{value}**	**Significance**	**Remark**
Male Qs	Female Qs	Paired Sample	X_1 =2.9200 X_2 = 2.8833	0.245	2.306	0.813	0.05	NSSD

Source: The researcher's survey (2019)

KEY:

NSSD: Not Statistically Significant Different.

LOS: Level of Significance

4.4 Competence of WQS in discharging QS services

This section discussed the analyses conducted in order to meet the study's third objective. The results presented in Table 4.5 had to do with determining the professional competence of female quantity surveyors in the industry. The respondents ranked 'Conduct rules, ethics and professional practice' 1st with overall mean score of 2.91. The male respondents ranked the same factor 5th while the female respondents ranked it 1st with mean scores of 2.07 and 4.79 respectively.

Secondly, 'Valuation' was ranked 2nd with an overall mean score of 2.83. The male respondents ranked the same factor 1st while from the female respondents ranked it 3rd with an overall mean score of 2.45 a mean score of 4.24. Thirdly, 'Quantification and Costing of construction works was ranked 3rd with an overall mean score of 2.74. The male respondents ranked the same factor 4th while the female respondents ranked it 2nd with an overall mean of 2.16 and 4.34 respectively.

Table 4.5 Competence of WQS in Discharging QS Services

S/N	Professional competency skills	QS (MALE)		QS (FEMALE)		Overall	
		Mean	Ranking	Mean	Ranking	Mean	Ranking
1	Ethics, Conduct rules, and professional practice	2.07	5th	4.79	1st	2.91	1st
2	Valuation	2.45	1st	4.24	3rd	2.83	2nd
3	construction works, quantification and costing.	2.16	4th	4.34	2nd	2.74	3rd
4	Team work	2.26	2nd	4.19	5th	2.73	4th
5	Financial control and Project reporting	2.02	7th	4.05	6th	2.57	5th

6	Commercial management, Design economics and cost planning	1.76	12th	4.21	4th	2.53	6th
7	Facilities Management	1.98	8th	3.95	9th	2.51	7th
8	Procurement and tendering	2.24	3rd	3.64	12th	2.49	8th
9	Health and safety	1.98	8th	3.81	10th	2.45	9th
10	Environmental services and Construction technology	1.81	11th	3.97	8th	2.45	10th
11	Contract administration	1.91	10th	3.74	11th	2.39	11th
12	Contract practice	2.07	5th	3.98	7th	2.34	12th
13	Conflict management, avoidance and dispute resolution procedures	1.69	14th	3.59	13th	2.23	13th
14	Risk management	1.57	16th	3.41	15th	2.11	14th
15	Building information modelling (BIM) management	1.4	17th	3.43	14th	2.04	15th
16	Conflict avoidance, management and dispute resolution procedures or Sustainability	1.69	14th	3.12	16th	2.04	16th
17	Arbitration & Other Dispute Resolution Procedures	1.71	13th	3.05	17th	2.01	17th

Source: The Researcher's survey (2019)

Further study conducted on the professional competency of female quantity surveyors in the Nigerian construction industry to see whether there was any understanding between female and male respondents on the level of professional competency. T-test analysis results on the level of professional competence of women quantity surveyors in construction activities as presented in Table 4.6 reveals a significant level of

disagreement between males and females. The results reveal that while males view WQS as 'less capable' (Mean Score = 1.93), female perceive themselves as 'fairly competent' (Mean Score = 3.85). This was inferred from the fact that the t-statistic value obtained was higher than the critical value of $t_{0.05}$, which can be either negative or positive (i.e., two tailed test). Since this was a two-tailed test, if the t-cal is lower than the t-tab, there is significant difference between the variables.

The t-cal value of -22.692 was smaller compared to the t-tab value of -2.120; this indicated that the difference between the parties sampled was significant. In other words, there is no agreement between the parties sampled. Furthermore, the P-value of 0.000 was lower than the acceptable threshold (LOS) of 0.05.

These results agree with the findings of Gyasi (2012) that more men had certificates in construction related courses than women, leading to women being engaged in marginal roles like labourers and secretaries. This could be the basis of perceptions of lower professional competencies ascribed to females.

Table 4.6 Independent Samples T-Test

Variables		**Type of Model**	**Observations**					**Inferences**
X_1	**X_2**		**Mean Values**	**T_{cal}**	**T_{tab}**	**P_{value}**	**LOS**	**Remark**
Male Qs	Female Qs	Paired Sample	X_1 =1.9276 X_2 = 3.8535	-22.692	+/-2.120	0.000	0.05	SSD

Source: Researcher survey (2019)

KEY:

SSD: Statistically Significant Difference

LOS: Level of Significance

4.5 Challenges Encountered by WQS in the Construction Industry

Table 4.7 shows the challenges encountered by women quantity surveyors in the course of involvement in the building industry. The respondents ranked 'unsociable work hours' 1st as one of challenges encountered by women quantity surveyors with overall mean score of 2.59. The male respondents ranked the same factor 6th while the female respondents ranked it 1st with mean scores of 2.1 and 2.95 respectively.

Table 4.7 Challenges Encountered by WQS in the Construction Industry

S/N	Challenges encountered	QS(MALE)		QS(FEMALE)		Overall	
		Mean	Ranking	Mean	Ranking	Mean	Ranking
1	unfriendly work-hours.	2.1	6th	2.95	1st	2.59	1st
2	Restriction to some locations due to religio-cultural belief.	2.17	3rd	2.82	3rd	2.55	2nd
3	Denial of professional activity by colleagues due to family commitment.	2	7th	2.9	2nd	2.52	3rd
4	Labour situations such as extreme weather.	2.22	1st	2.63	6th	2.46	4th
5	physical incapability due strenuous job activity.	2.17	3rd	2.66	5th	2.45	5th
6	Denial of equal opportunities to perform compared to male.	1.97	8th	2.8	4th	2.45	6th

7	Challenge in balancing work and family commitments.	2.21	2nd	2.38	8th	2.31	7th
8	Masculine nature of the industry	2.16	5th	2.34	9th	2.26	8th
9	Denial of professional duties from clients due to your marital status?	1.97	8th	2.32	10th	2.17	9th
10	sexual discrimination/ harassment by male colleagues.	1.45	11th	2.61	7th	2.12	10th
11	Difficulty in getting back to work after a job break or childbirth.	1.76	10th	2.13	12th	1.97	11th
12	Male subordinates refuse to cooperate.	1.31	14th	2.18	11th	1.81	12th
13	Sexual harassment by male employer/superiors.	1.45	11th	2.05	13th	1.8	13th
14	sexual harassment.	1.34	13th	1.85	14th	1.64	14th

Source: The researcher's survey (2019)

Also, with an overall mean score of 2.55, access restriction to certain locations due to religio-cultural beliefs was ranked second. With mean scores of 2.17 and 2.82, male and female respondents ranked the same factor third

Furthermore, with an overall mean score of 2.52, respondents rated 'denial of professional activity due to family involvement (marriage, pregnancy, child responsibilities)' third. With a mean score of 2 and 2.9, male respondents ranked it seventh, while female respondents ranked it second.

Further research was conducted on the challenges encountered by female quantity surveyors in the NCI to see how well female and male respondents agreed on the

ranking of the challenges faced by women quantity surveyors in the industry. Males consider challenges encountered by women QS as being ‘less frequent' (Mean Score = 1.93), while females experience such challenges ‘fairly frequently' (Mean Score = 3.85). This was deduced from the fact that the t-statistic calculated value was greater than the t0.05 critical value, which can be negative or positive (i.e., two tailed test). Since this was a two-tailed test, if the t-cal is lower than the t-tab, then the variables are significantly different. The t-cal value of -7.570 was lower than the t-tab value of -2.120, indicating that there was a large difference between the parties sampled. In other terms, the parties sampled have not reached an agreement. The P-value of 0.000 was also less than the appropriate threshold (LOS) of 0.05

Table 4.8 Independent Samples T-Test

Variables		**Model**	**Observations**					
X_1	**X_2**	**Type**	**Mean Values**	**T_{cal}**	**T_{tab}**	**P_{value}**	**LOS**	**Remark**
Male Qs	Female Qs	Paired Sample	X_1 =1.9276 X_2 = 3.8535	-7.570	2.160	0.000	0.05	SSD

Source: The researcher’s survey (2019)

KEY:

SSD: Statistically Significant Difference

LOS: Level of Significance

These results confirm Gyasi's (2012) findings that, due to issues such as a poor educational and technical certification, more women are working in low wage jobs such as laborers and secretaries. Women view their gender as a justification for not being hired, being delayed in promotion, or not getting their ideas taken seriously, according to Arroyo *et al.* (2018).

4.6 Analysis of Interview Responses

4.6.1 Demographic Profile of Interview Respondents

Table 4.8 shows demographic profiles of interviewees in their respective companies which are categorised into four thus the position, qualification, gender and work experience. Ten (5 male and 5 female) quantity surveyors who have had a work experience of 10 years and above were interviewed. Four out of the 10 interviewees which is made up of 2 males and 2 females have first degrees or equivalent (HND/BSc/BTech); 3 male interviewees have obtained post graduate diploma (PGD), 2 female interviewees have Masters degrees while only one female interviewee has a PhD degree. In the area of working experience, it shows that out of the 10 interviewees, 2 females have a working experience of 10 years which falls within the 5-10 years range, 5 of them have a working experience of within 10-15 years which comprises of 2 female and 3 male interviewees while 3 of them have worked for more than 15 years. The details available in table 4.8 implied that the interviewees are educated enough and experienced to respond to the need of the study.

Table 4.9 Demographic profile of interviewees

S/no	Position	Qualification	Gender	Experience
1	Qs	HND/BSC	Female	10-15years
2	Qs	PhD	Female	10-15 years
3	Qs	MTech/MSc	Female	5-10 years
4	Qs	MTech/MSc	Female	Above 15 years
5	Qs	HND/BSC	Male	Above 15 years
6	Qs	HND/BSC	Male	10-15 years
7	Qs	PGD	Male	10-15 years
8	Qs	HND/BSC	Female	5-10 years
9	Qs	PGD	Male	Above 15 years
10	Qs	PGD	Male	10-15 years

Source: Researcher's survey (2019)

4.6.2 WQS Participation in the Construction Industry

Question 1: How well do WQS participate in the Nigerian Construction Industry?

The interviewees' responses to the above question about WQS participation in the construction industry were as follows:

Responses:

Interviewee 1: “Over the years, globally, the involvement of women in the construction industry has witnessed some setbacks as the construction landscape is seen as a male-dominant industry. Currently there is change of tides in participation of the WQS”; it is quite impressive compared to their involvement in the industry in the previous years. Although not satisfactory enough, women are rising to the task ahead of them in the industry with relevant skills to hone the industry through their knowledge and abilities owning to sensitization to awaken general interest of women.”

Furthermore, three (3) out of the ten interviewees (2, 7, 8) stated respectively that “Women Quantity Surveyors have an association in Nigeria called WAQSN-Women Association of Quantity Surveyors in Nigeria. This association was established in November 2004 primarily to encourage the continued involvement of women in the quantity surveying profession. WAQSN is celebrating 15 years of existence on the 20th November 2019 under the leadership of the current Chairperson QS Aderonke Oyelami FNIQS, FRICS. To date Women Quantity Surveyors are fully entrenched in the practice of quantity surveying. Wherever you turn to, be it in the consultancy or contracting sector or even in the academia, female quantity surveyors are contributing effectively in the industry. With all humility they are found to be very dependable, very meticulous

about details and more approachable to provide records that proffer solutions to problems arising on projects".

"The involvement of WQS in Nigeria construction industry cannot be over emphasized. WQS participate largely like their male counterpart in the industry and they have contributed significantly to the growth of the industry".

"Women had held many high positions in the industry like deputy directors, chief Qs in public services at both state and federal levels and have also shown their strength as of the president of the professional body."

Also, Interviewees 4 and 5 stated that "the participation level to be considered as 46% stating that the Nigerian Institute of Quantity Surveyors (NIQS) has not given much room for participation at both lower and higher level. She made reference to history of having a female chairperson heading a state chapter in Abuja and Lagos".

Two (2) out of the ten interviewees (6 and10), stated that "the level of involvement WQS in the Nigerian construction industry is slightly below average". They gave a percentage of between 48-49% compared to that of the men".

Two other interviewees (3 and 9) affirmed that "there has been a slight increase in the participation level of Women Quantity Surveyors in the NCI stating that women quantity surveyors have been raised from the below average position where they were before to slightly above average".

4.6.3 Key Motivational Factors Influencing the Participation of WQS in the Nigerian Construction Industry

Question 2: What are the factors influencing the participation of WQS in the Nigerian Construction Industry?

The interviewees' response to the above question about the factors influencing WQS participation in the Nigerian construction industry is as follows:

Response

According to interviewee 1, “the major factor influencing the WQS's involvement in the Nigerian construction industry is sensitization and empowerment programmes. Also, many journals have been written by scholars and passionate researchers as regards the participation of WQS as a medium to sensitize women and bridge the gap of low participation in NCI”.

Also, two (2) out of the ten (10) Interviewees (6 and 3) further stated respectively that although “no enabling environment, religion, gender inequality, and culture” women quantity surveyors’ practice in other to earn a living, assist their family and be financially independent”. “As women, God has gifted us with special a skill which includes the ability to endure in the face of challenges. So, I believe a woman quantity surveyor in practice has been able to identify her own driving force and has decided to stick to it. It may be in other to earn a living to cater for the family or just enjoying the job generally not minding what challenges she come across”.

Furthermore, interviewees (7, and 10) stated that “although I didn’t initially have interest in the profession, I was encouraged by friends and family members to take up a job instead of sitting idly at home and I have not had any regret so far. Family and

friends are the most important factors that influenced my participation in the Nigerian Construction Industry".

Interviewee 2 said that "a major influencing factor is the natural inbuilt ability of a woman to multitask. Ability to lead a team and manage human, material and other resources committed in their care. A rare and uncommon desire in a woman to be her best wherever she is placed to perform especially if given the right and upright environment. A good manager and planner".

Interviewee 8 revealed that "majority does participate in other to supplement spouse income that is for those with spouses while those without have to take care of their households all by themselves".

Two (2) other interviewees (5 and 9) stated that "the participation of Women Quantity Surveyor is due to the fact that they studied construction related courses and feels its best they practice to build a career path".

According to Interviewee 4, "like every other profession, seeing some very highly influential people in the society and who are silent achievers that are quantity surveyors, has been a great encouragement to our teeming youth especially women in the into the construction industry. Being a cost expert, anyone who cares about a successful project in terms of cost savings and making profits looks for a quantity surveyor and this makes them highly influential in the society".

4.6.4 Competence of WQS in Discharging QS Services in the Construction Industry

Question 3: From your years of practice, how competent are WQS in handling duties assigned to them?

In response to the above question on the level of competence of WQS to handle duties assigned to them in the Construction Industry, the interviewees' response goes thus:

Response

In response to this question, interviewee 1 revealed "of course, yes. Even though the NCI is dominated by male counterpart, the industry is not a gender restricted technical profession as all the professionals pass through the same learning process to emerge as a successful practitioner. Women are improving in balancing family responsibilities and professional career, most especially in contractor, consultant and developer companies".

Furthermore, interviewee (4 and 9) stated that "Women Quantity surveyors are Competent enough to handle tasks been assigned to them, making reference to the performance of past president of Nigerian institute of Quantity surveyors (2015-2017) by name Qs Mercy Torkwase Iyortyer. FNIQS, MAPM".

Likewise, interviewee (5 and7) in their statement "they made reference to history having a female chairperson heading a state chapter in Abuja and Lagos while affirming that women show high level of competence in whatever task they are assigned as they are always open to learn from their superiors or their male counterparts".

Also, three (3) interviewees (3,6 and 8) said that the "women are competent enough if properly trained and assigned duties in the Construction Industry", "based on the trainings acquired over time on the jobs and their academic prowess, Women are highly competent to handle any duties assigned to them".

Similarly, Interviewee 2 clearly stated that "women quantity surveyors are professionally qualified. They are academically prepared by undergoing the training in

tertiary institutions across the globe and thereafter they are professionally prepared by the NIQS to undergo stages of professional tutelages backed up with examinations and issuance of appropriate certifications. By the time they are found on the field, they are the most sought out".

4.6.5 Challenges Encountered by WQS in the Course of Participating in the Nigerian Construction Industry

Question 4: What are the challenges facing WQS while performing their duties in the Nigerian Construction Industry?

In response to the above question on the challenges facing WQS while performing their duties in the Nigerian Construction Industry, the interviewees' response goes thus:

Response

Interviewee 3 stated that "marital challenge is a setback to women quantity surveyors during the period of raising children. Women quantity surveyors are limited to their work stations only and may not be able to travel out of their state to oversee jobs and also, not every husband could allow their wives travel far let alone spending some days or weeks outside as most journeys would involve them travelling with other men. Another challenge is sexual harassment from male counterpart".

Likewise, interviewee 5 stated that "unequal opportunities with their male counterparts, lack of confidence, and lack of competence in some cases, economic factors and social factors" constitutes the challenges facing women quantity surveyors while performing their duties in the Nigerian Construction Industry".

Two out of the ten (10) interviewees (6 and 4) revealed that “low self-esteem which is caused by male-dominance in the Construction Industry, sexism, blending motherhood (family responsibilities) together with career and employer’s predisposition with regards to women performance on field constitute the challenges been faced by women quantity surveyors in the Nigerian construction industry. Although, only some women that are affected by these challenges”.

Furthermore, Interviewee 8 stated that “one of the major challenges encountered by the women quantity surveyors is the fact that they tend to get intimidated by the predominance of male counterparts in the industry, and they tend to consider another career part thereby making quantity surveying a supplementary career”.

Interviewee 10 stated that “many women quantity surveyors face the challenges of non-conducive work hours which have led to improper time management and also failure to meet up with work duration.”

Likewise, Interviewee 7 stated that “gender inequality is a challenge faced by WQS in the construction industry. Some women believe that a male quantity surveyor will perform better in practise compared to a female quantity surveyor.”

In response to this question, interviewee 1 stated that, “lack of support and creation of awareness from the professional body is another challenge facing women quantity surveyors while performing their duties in the Nigerian Construction Industry”.

Also, interviewee (3 and 9) stated that “another challenge faced by women quantity surveyors is difficulty in getting accustomed to work after career break or childbirth. They further stated that after child birth, they tend to shift focus and might not be able to maintain a balance between family and career”.

In conclusion, interviewee 2 revealed that “The factors challenging women quantity surveyors in performing their duties effectively is majorly a factor of what I call gender bias. This can lead to intimidation or discouragement of women quantity surveyors. Women are believed not to be as naturally strong as a man which is the major factor that is believed to hinder the effectiveness of women quantity surveyors on a project. Contrary to the notion that attention maybe divided, level of commitment may be low and teamwork may not be at top gear, women are naturally equipped to multitask. Hence, you only need to provide or create the opportunity for women quantity surveyors in the industry and this notion will be proved wrong.

Another is religious and cultural or traditional bias. In some cultures, it is almost a taboo to find a woman in a profession like quantity surveying. Although termed lucrative, it is best imagined to find a woman climbing heights and its likes. You have to be practically involved in the construction industry to make a professional impact. Any woman on a project is very proactive and highly committed to professionalism. More so, women are erroneously termed incompetent. Whoops!! That’s a very untrue notion. Just provide the opportunity on a project. In no time, light of the truth will shine”.

4.7 Discussion of Findings

The results of objective one shows that 4 of out of the 10 interviewees revealed that the level of female participation is below average. These 4 comprises of interviewee 6,10,4 and 5. However, the remaining 6 revealed that the level of women participation is good and it was rated to be above average. Therefore, in relation to the results from the questionnaire analysis on the level of female participation, the highest number of the respondents revealed that the female level of participation is within 80-60% and it shows that both the interview and the questionnaire results show a level of agreement.

The result of the push forces influencing the participation of WQS in the Nigerian Construction Industry showed that interviewees (5 and 9) stated that studying quantity surveying at degree level is one of the factors that influence WQS participation. This factor was ranked 1st from the result of the questionnaire analysis. Also, interviewee 3, 6 and 8 revealed that working to earn a living and support the home is the factor that influences the WQS participation. This factor was also ranked 2nd from the questionnaire data analysis. Enjoyment of daily work tasks as an influencing factor was ranked 3rd from the questionnaire data analysis, however, none of the interviewees made mention of it. The other interviewees 1, 4 and 2 respectively stated that sensitization and raising awareness about the women involvement, presence of female high achievers in the profession and the ability of a woman to multi task on any given project are the influencing factors to WQS participation.

The result of the level of competence of WQS while handling duties assigned to them showed interviewees (1, 3, 6 and 8) stated that the women are competent enough to handle duties assigned to them because they undergo the same academic and professional training as the men. Therefore, if duly assigned professional duties and trained on the job, they will accomplish the tasks assigned to them. Similarly, interviewees (4, 5, 7 and 9) upheld that women are competent to handle duties assigned to them if given the chance because the profession has seen women take up leadership roles both at national and state chapter. However, result of the questionnaire analysis shows the three skills in which women perform best. They are conducting rules, ethics and professional practice, followed by preparing of valuation and lastly construction work measurement and costing. There is a level of agreement between the interviewees

The major challenges discussed by the interviewees are religio-cultural or traditional belief, gender inequality because the quantity surveying profession is male dominant which makes some people doubt the ability of the women and which may lead to low self-esteem and lack of confidence on the part of the woman quantity surveyor. Unsociable work hours and balancing marriage and the profession were stated to be a challenge also most especially during the child bearing years of the woman quantity surveyor. However, from the result of the questionnaire analysis, the three major challenges been faced by the women are unsociable work hours, access restrictions to some locations due to religio-cultural beliefs, and colleagues' refusal to engage in professional activity due to family obligations are just a few examples. This illustrates a link between the interviewee's responses and those of the respondents.

4.8 Summary of Findings

The conclusions from the data analysis for each of the research's four objectives are summarized as follows.

1. The percentage of women who work as quantity surveyors in the building industry is within 60-80%. ‘Judging from various quantity surveying practices and skills, male and female respondents held similar views regarding the level of women participation.
2. The top 3 of 9 key motivational factors influencing women QS work in the Nigerian construction industry for a variety of reasons, including having studied a construction-related course, such as quantity surveying; (ii) supplementing their partner's income; and (iii) Taking pleasure in their everyday work assignments.

3. The top 3 of 17 professional skills and competence been carried out by WQS in the construction industry are (i) Conducting rules, ethics and professional practice; (ii) Preparing Valuation; and (iii) Measurement and costing of construction works.
4. The top 3 of 14 challenges encountered by women quantity surveyors while participating in the construction industry are (i) unfriendly work hours; (ii) restrictions to some sites due to religious or cultural beliefs; and (iii) colleagues denying professional activity due to family commitments.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study looked at WQS's involvement in the Nigerian construction industry. The study's questions were posed and responded to. The following conclusions were reached based on the findings: the participation of women quantity surveyors has appreciated over the years and will continue to increase if women quantity surveyors are given the required motivation needed to function effectively in the construction industry. The key push force influencing the involvement of women quantity surveyors in the industry is because they studied quantity surveying in the tertiary institution. In the construction industry, women quantity surveyors demonstrate a high degree of competence in conducting law, ethics, and professional practice. of all the challenges confronting women quantity surveyors in the Nigerian construction industry, unfriendly work schedule (unsociable work-hours) was the major challenge.

5.2 Recommendations

The following recommendations are made in light of the results and conclusions reached:

1. The Nigerian Institute of Quantity Surveyors (NIQS) and the Women Association of Quantity Surveyors (WAQSN) should work together towards creating capacity building for the women quantity surveyors by providing training opportunities for the women just entering into the profession to grow and develop new skills in quantity surveying.
2. The professional body (NIQS) should endeavour to include gender-inclusive policies and initiatives which will be instrumental in helping women overcome gender-based stereotypes and barriers.

3. Women association of quantity surveyors (WAQSN) should provide training and support to women who want to return to the workforce after a long break, allowing them to get back up to speed with the help of coaching and mentoring, as well as the freedom to try out new ideas, make decisions, and take initiative in their assigned roles.
4. Women quantity surveyors who have attained high positions career wise should be of help in changing the company standards by playing a crucial role in helping to eliminate the challenges which young women colleagues face.

5.3 Contribution to Knowledge

The study's findings add to knowledge in the following areas:

1. This study has revealed that there is an increase in the participation of women quantity surveyors in the Nigerian construction industry.
2. The study has identified that studying quantity surveying in the tertiary institution is the key motivational factor influencing the participation of women quantity surveyors in the Nigerian Construction Industry.
3. The study also confirmed that women quantity surveyors are competent enough to handle tasks been assigned to them in the construction industry if given the proper training academically and on the job.
4. The study has helped to point out unfavourable work hours as the major challenge encountered by the women quantity surveyors in the Nigerian construction industry.

5.4 Suggested areas for further study

The research findings revealed the following possible areas for further studies:

i. Comparative appraisal of the impact of unfavourable work hours on participation of women quantity surveyors in public and private sectors of the Nigerian construction industry.

ii. Assessing women quantity surveyors' participation in the construction sectors of different selected States in Nigeria.

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APPENDICES

QUESTIONNAIRE

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF QUANTITY SURVEYING

Dear Respondent,

I am an Mtech student of the above-named university, writing a thesis on **Participation of Female Quantity Surveyors in the Nigerian construction Industry"** as part of the requirement for the award of Master of Technology degree in the quantity surveying department of the above-named institution. Your responses and opinion shall be of great importance and will be treated confidentially.

Thank you.

Chioma Nnamoko

Please tick (√) the option that best fits your situation.

Section A: Respondent particulars

1. Education qualification (a) HND/B. Sc ☐ (b) M. Sc ☐
   (c) Ph.D ☐ (d) Other ☐

2. Works for: (a) Contractor ☐ (b) Consultant ☐
   (c) Client /Government ☐

3. Work experience: ` (a) Less than 5 yrs. ☐ (b) 5 yrs. – 10 yrs☐
   (c) 11 yrs. – 15 yrs. ☐ (d) More than 15 yrs☐

4. Professional Qualification: (a) Yes ☐ (b) No ☐

Section B: participation of WQS in the NCI

Please tick appropriately, to provide answers to the level of participation of WQS in the NCI

1. What sector of the construction Industry are you working with? (a) Government agency (b) Private establishment
2. In respect to question 1, are you working in a unit relevant to your study (QS)? (a) Yes (b) No
3. Are you engaged in the same level with your female counterpart in professional activities (QS)? (a) Yes (b) No
4. If No to Q3, state reason why_____
5. Do you have female professional colleague as a boss in your working place? (a) Yes (b) No
6. Do you have female mentor(s) in the profession? (a) Yes (b) No
7. Have you experienced females decline professional activity due to family commitment (marriage, pregnancy, child responsibilities)? (a) Yes (b) No

Section C: Key Motivational Factors Influencing WQS Participation in the NCI

Factors influencing female quantity surveyor's participation in the construction industry have been obtained from literature and are presented in Table below.
Please use this 5 point's Likert scale to rate your level of agreement on how these factors have influenced you into practice as a female Quantity surveyor. Scale 1, "Strongly disagree"; 2, "Disagree"; 3, "Neutral"; 4, "Agree"; and 5, "Strongly agree."

S/No	Factors Influencing participation	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
		5	4	3	2	1
1	Supplementing Spouse income					
2	Lack of alternative employment					
3	Prestige of the career					
4	Studied construction related course					

S/No	Factors Influencing participation	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
		5	4	3	2	1
5	Opportunity to be a role model					
6	Enjoyment of daily work tasks					
7	Nature of the construction industry orientation					
8	Recruitment policies and procedures					
9	I was offered a job or training opportunity in construction					

Section D: Competency of WQS in discharging QS services in the NCI

Competency of WQS in discharging QS services in the NCI

Based on the level of competence of women quantity surveyors that you have worked with, rank each of these identified professional competency skills expected of quantity Surveyors in delivering their services on a 5 point's Likert scale 1, "Least competent"; 2, "Less competent"; 3, "moderately competent"; 4, "fairly competent"; and 5, "very competent'' according to their level of competence.

S/No	Professional skills	Very competent	Fairly competent	Moderately competent	Less competent	Least competent
		5	4	3	2	1
1	Conduct rules, ethics and professional practice					
2	Conflict avoidance, management and dispute resolution procedures					

S/No	Professional skills	Very competent	Fairly competent	Moderately competent	Less competent	Least competent
		5	4	3	2	1
3	Health and safety					
4	Team work					
5	Commercial management of construction or Design economics and cost planning					
6	Contract practice					
7	Construction technology and environmental services					
8	Procurement and tendering					
9	Project financial control and reporting					
10	Quantification and costing of construction works					
11	Building information modelling (BIM) management					
12	Contract administration					
13	Risk management					
14	Conflict avoidance, management and dispute resolution procedures or Sustainability					

S/No	Professional skills	Very competent	Fairly competent	Moderately competent	Less competent	Least competent
		5	4	3	2	1
15	Valuation					
16	Arbitration & Other Dispute Resolution Procedures					
17	Facilities Management					

Section E: Challenges confronting WQS in Participation in the NCI

The following are the identified challenges being encountered by WQS in the NCI. Please rank each of these identified challenges confronting the Participation of WQS that you have worked with in the NCI on a 5 point's Likert scale 1, "Strongly disagree; 2, "disagree"; 3, "neutral"; 4, "agree"; and 5, "Strongly agree."

S/No	Challenges encountered by women quantity surveyor.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
		5	4	3	2	1
1	sexual discrimination/ Intimidation by male counterparts					
2	sexual harassment					
3	Labor conditions such as extreme weather					
4	unsociable work-hours					
5	Lack of cooperation					

S/No	Challenges encountered by women quantity surveyor.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
		5	4	3	2	1
	From male subordinates					
6	Access restriction to some location due to religio-cultural believe?					
7	physical incapability due strenuous activity required by a job?					
8	Denial of professional duties by colleagues due to your marital status?					
9	Difficulty in getting accustomed to work after career break or childbirth					
10	Denial of professional activity by a client due to family commitment (marriage, pregnancy, child responsibilities)?					
11	Sexual harassment by male employer/superiors					
12	Masculine nature of the industry					
13	Difficulty in balancing work and family commitments					
14	Not being given equal opportunities to perform as compared to male					

INTERVIEW QUESTIONS

Question 1: How well do WQS participate in the Nigerian Construction Industry?

Question 2: What are the factors influencing the participation of WQS in the Nigerian Construction Industry?

Question 3: From your years of practice, how competent are WQS in handling duties assigned to them?

Question 4: What are the challenges facing WQS while performing their duties in the Nigerian Construction Industry?