

# Women in Sudanese Construction Industry

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## Abstract

Women usually find it difficult to integrate into the Construction Industry (CI); and many leave without achieving their goals and/or utilizing their true potentials. “The Leaky Pipe Syndrome” through which women opt out of CI at different stages of their career is a common scenario around the world. Moreover, a “Glass Wall”, traditional horizontal employment segregation, still persists in Sudanese CI coupled with a “Glass Ceiling Phenomena” which describes a vertical segregation limiting women chances in reaching senior decision-making positions. A previous study by the author highlighted the existence of these phenomena in the Sudanese CI.

As part of a 3-year (2010-2012) research project on women participation in Sudanese CI, two extensive surveys were conducted to examine the current situation of women in CI in Khartoum. The surveys interviewed female employees and their employers in consultancy, contracting, services, material suppliers and entrepreneurs. It investigated aspects dealing with status quo, training, barriers, discrimination, social image and future outlook for the role of women in Sudanese CI. Through in depth analysis of collected data; this paper investigates the underlying factors, their manifestation in the workplace and the way forward towards a more active role for women in Sudanese CI. The research analyses similar literature and attempts to bring a comparative multidisciplinary, social, cultural and psychological perspective to the problem.

The results highlighted certain barriers and constraints facing women in CI. Job retention of CI jobs was found to be particularly problematic for women affecting their professional career prospects. Their progress in the first 5-10 years in the job was found to be more variable than men and their move from junior to middle positions is particularly difficult. However, the results also indicated a positive cultural change towards women employment in general and in CI in particular.

**Keywords:** women, construction industry, leaky pipe syndrome, glass ceiling, constraints and future prospects.

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## مستخلص:

غالباً ما تجد النساء صعوبةً في الاندماج في صناعة البناء مما يضطر الكثير منهن دون أن يتحقق أهدافهن وتوقعاتهن. تناقض الورقة هذه الظاهرة كما تناقض ظاهرة وجود حاجز أقصى "حائط زجاجي" يقسم المهن إلى رجالية ونسائية بالإضافة إلى حاجز رأسي "سقف زجاجي" يمنع وصول النساء للوظائف العليا في صناعة البناء.

جزء من مشروع بحثي دام ثلاث سنوات (2010-2012) عن وضع النساء في صناعة البناء السودانية، تم عمل دراسة ميدانية واستبيان واسع جمع معلومات من العاملات وأرباب عملهن في قطاعات الاستشارات والمقاولات والخدمات وتوريد مواد البناء والاستثمار العقاري. تناول البحث الميداني الوضع الحالي والمعوقات والتفرقة والصورة الاجتماعية وأفاق المستقبل لعمل النساء في صناعة البناء السودانية. ومن ثم تعمق التحليل في معرفة أسباب الظاهرتين آعلاه وانعكاسهما في بيئة العمل وما ينبغي عمله لتحقيق دور أكثر فاعلية لمشاركة النساء في صناعة البناء. ناقش البحث الدراسات المماثلة من مختلف المجالات ليقدم دراسة مقارنة ونظرة اجتماعية وثقافية ونفسية شاملة للمشكلة.

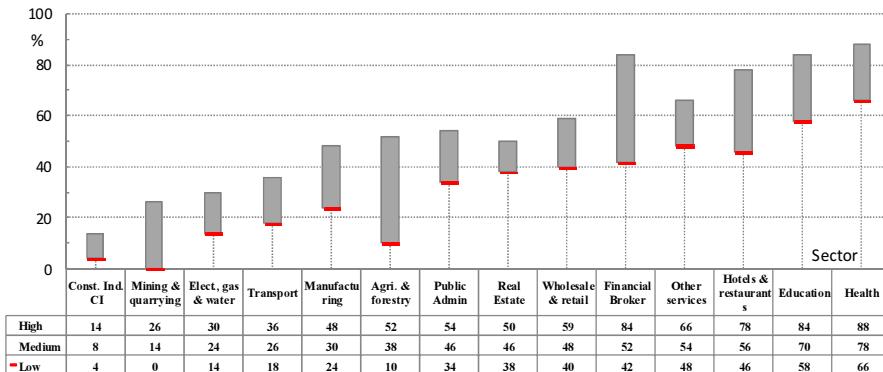
خلصت الدراسة إلى تحديد أهم المعوقات التي تواجه النساء وتؤخر تقدمهن في مهن قطاع البناء والتشييد. كما خلصت إلى أن العامل الأهم في سبيل تقدم النساء في القطاع هو المحافظة والاستمرار في الوظيفة، إذ أن تقميمهن المهني في السنوات الأولى من العمل متذبذب ويجدن صعوبةً واضحةً في الانتقال إلى وسط السلم الوظيفي. إلا أن الدراسة أشارت إلى أن هناك تغيراً إيجابياً تدريجياً في نظرة المجتمع تجاه عمل النساء في قطاع التشييد.

**كلمات مفتاحية:** النساء، صناعة البناء، ترك المهنة، السقف الزجاجي، المعوقات و فرص المستقبل.

## 1. Introduction

*"Women account for roughly half the world's population, perform two-thirds of the hours worked, receive one-tenth of the world's income, and have less than one hundredth of the world's property registered in their names."* [1].

Women worldwide increasingly play an important role in various academic and professional arenas. They have proven themselves in fields such as law, accountancy and medicine, all of which require high-level qualifications and are considered attractive because of the perceived high level of social status. Today, the numbers of women and men are almost equal in these sectors. Moreover, they are a majority in public administration, health and basic education jobs [2] [3]. But occupational sectors such as engineering and construction have not seen a corresponding change in the make-up of the workforce as seen in the first bar from the left in Fig. 1.



**Fig. (1) Percentage of women employment by sector [4]**  
**(Range from max to min - data from 24 countries – some figures are rounded)**

During the last few decades the proportion of economically active women has increased dramatically in both developing and developed countries. According to World Bank estimates, from 1960 to 1997, women have increased their numbers in the global labour force by 126% [5]. Today, women make up about 47% of the estimated global working population, making them indispensable as contributors to national and global economies [6]. This increased representation may be attributed to the following reasons:

- Advances in technology made historically male jobs accessible to women
- Increased life expectancy and having few children
- Rising cost of living generating a need for a second income in the family
- Rising levels of females educational attainment and expectations towards self-achievement

However, gender inequality remains an issue within labour markets globally. Women suffer multiple disadvantages in terms of recruitment practices, job selection and career development. Gender differences in labour force participation rates and unemployment rates are persistent issues in global labour markets [4].

## **1.1 Women employment in Africa**

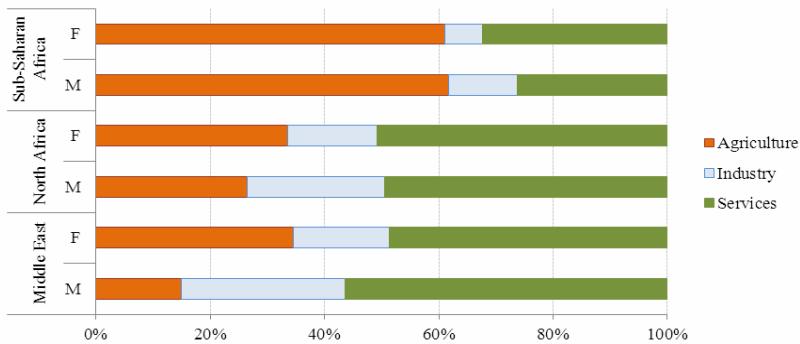
Construction plays an important role in less developed countries. Its contribution to the total output and employment is substantial, even in the absence of any real economic growth [7]. This fact, coupled with the reality that women have a key role in production and workforce in Africa, highlights the importance of the untapped resource of women in general and in CI in particular.

The UN Food and Agriculture Organization (FAO) found, in a survey of nine African countries in 1996, that women's contribution to the production of food crops ranges from 30% in Sudan to 80% in the Republic of Congo, with estimates for other countries tending toward the higher end of the scale. Women are responsible for 70% of food production, 50% of domestic food storage, 100% of food processing, 50% of animal husbandry and 60% of agricultural marketing [8].

In Sub-Saharan Africa, employment-to-population ratios for women rose faster than the corresponding ratios for men, resulting in a narrowing of the gender employment gap. Employment-to-population ratio among women rose by 5 percentage points between 2002 and 2011 [9].

## **1.2 Women employment in the Middle East**

Female labour force participation is low in the Middle East (ME), North Africa (26%) and South Asia (35%), compared to more than 60% in East Asia, the Pacific and Sub-Saharan Africa. ME women employment-to-populations ratio has risen to 24.7% in 2008 compared to 20.5% in 1998 [4]. On ILO estimates, female youth labour force participation rates in North Africa in 2010 ranged from not more than 8.9% in Algeria to 26.9% in Sudan [9]. Moreover, the share of females in upper management positions is quite low (less than 2% in Bahrain, Jordan, Qatar, Saudi Arabia, and the United Arab Emirates). In the ME the majority female workforce works in agriculture and services-related sectors as seen in Fig.2 [4].



**Fig. (2) Female participation in industry, services and agriculture [4]**

### 1.3 Women employment in Sudan

#### 1.3.1 Women in engineering education

Females represent 50% of Sudan population with almost equal numbers to males in all age groups [10]. In engineering education, women progressed remarkably through the years. From no women in higher education 1902-1945 gradually increasing up to more than 60% of all intakes at the present time [11]. However, an overall view and observation reveals that the engineering professional arena is male-dominated in all public/private academic/professional work fields. Moreover, men also dominate engineering unions and professional organisations.

#### 1.3.2 Women in Sudanese CI; field survey

In Sudan, women play various roles in construction in different regions. In some areas, they carry out unpaid family work and are a majority in the informal sector (Kurdufan and Darfur), while in others they contribute to the professional practice by being involved in design, supervision, construction, building materials manufacture and supply, etc.

To investigate the representation of women in Sudanese CI, an extensive 3 year project was conducted between 2010 and 2012. As part of the project, a questionnaire was carried out in which more than 240 female engineers in around 60 companies in Khartoum were interviewed. The survey investigated aspects dealing with status quo, barriers, discrimination, social image, training and future outlook for the role of women in Sudanese CI.

The field survey found that women constitute around 15% of the Sudanese CI workforce. They tend to work predominantly in consultancy, contracting and services. Their duties are mostly design and office-related works. This is in agreement with scenarios in UK, USA, South Africa and some Asian countries. The survey also highlighted the existence of a “Glass Ceiling” phenomenon. It also identified a tendency of women to drop off the CI career ladder at different stages for different reasons - “leaky Pipe” syndrome [12].

## **2. Leaky pipe syndrome**

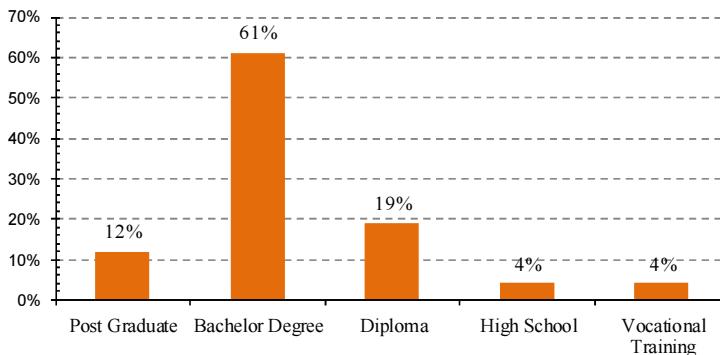
Age distribution of females in the CI in Khartoum is a clear indicator of what is called a leaky pipe syndrome (dropping off the industry at different stages). The field survey data showed that most of those actively working in CI are in their twenties (75%). Around 19% are in their thirties and only 6% are above 40. This reveals that a large percentage do not go on with their careers and opt out for a variety of reasons. In the literature, the problem is usually traced to one or more of the following:

▪ Qualification	- getting the qualifications
▪ Translation	- of qualifications into employment
▪ Persistence	- retention of the job
▪ Advancement	- career progress

In Sudan, females are adequately qualified, as seen in Fig. 3 below. However, they seem to have problems in getting the job, sustaining it and advancing in their careers. Barriers and constraints to women advancement in CI can be summarised in:

1. Image of the industry; as demanding work sometimes exceeding women physical abilities
2. Culture and religious aspects; introducing women into a male dominated industry
3. Family commitments; having children, household responsibilities, etc.
4. Work environment; discrimination, side-lining and poor promotion prospects

These main barriers are investigated in more detail below. The list is by no means exhaustive, but these four categories were the ones most quoted by both employees and employers in the above mentioned surveys.



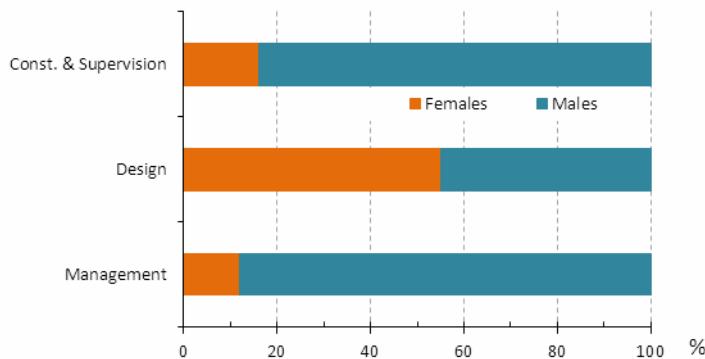
**Fig. (3) Qualifications of women in the interviewed sample (author)**

## 2.1 The image problem

Sudanese CI is gradually becoming synonymous with high cost, low quality and chaotic working practices. It has always been viewed as a male-dominated industry requiring brute strength and substantial tolerance for harsh outdoor conditions and bad language. Gender-based notions of the construction workplace and some perceived apprehensions of men towards women entering the working environment are quite commonplace all over the world. Issues of women inability to use certain tools and/or do certain tasks are sometimes coupled with employer's fear of distraction at the job site, sexual harassment litigation and overreaction [13].

The “macho image” and ingrained culture of masculinity of the industry is deeply rooted in Sudan. In Sudanese CI, work is clearly divided into men and women jobs. Hard work and risky tasks are male domains whereas design, office work and site finishing works are open for women. As seen in Fig.4, females are now majority in all design jobs (around 55% of all working in design) and female site engineers are gradually becoming a normal scene (around 15% of all working on site), it's still unheard of to see females as paid labourers doing lifting and risky jobs in Khartoum.

However, trades like painting, plastering, tiling, joinery and electrical fitting are usually quoted as “potentially suitable for women”. These occupations do not necessarily require a lot of strength; they require aptitudes of attention to detail, a sense of colour, design and finesse usually associated with women.



**Fig. (4) Women jobs in Sudanese CI (author)**

## 2.2 Cultural and religious aspects

There is a widely-held belief that women's labour force participation is greatly influenced by religious and cultural norms however, recent studies suggested that the level of economic development is equally relevant as a determinant of female labour force participation levels [14]. The cultural and religious aspects of women participation in CI is directly linked to its image and rough character. At the same time it relates to what is expected of females in an Arab Muslim country. In Sudan, women's work, in most fields not just in CI, is sometimes considered of lesser value. From childhood women are raised to become future housewives. Local custom and traditions could sometimes limit the contribution of women to home or at least in some sphere related to home. For many women, having careers meant an additional job to their original job as housewives.

In some Arab countries, women with suitable qualifications may in reality find their job opportunities unequal to those of men. In Sudan and Egypt, for example, women's work in the private sector is perceived as unreliable for they are expected at some point in the future to put their role in the family first.

From a religious point of view, women are allowed to work in Islam, subject to certain conditions, such as if a woman is in financial need and her employment does not cause her to neglect her important role in the family. It has been claimed that it is the responsibility of the Muslim community to

organize work for women, so that she can do so in a Muslim cultural atmosphere, where her rights (as set out in the Qur'an) are respected [15].

On the positive side, this protective attitude towards women, encouraged by religion and culture, could sometimes help to ameliorate the notoriously bad language and hostile environment common in CI.

### **2.3 Family commitments**

Family commitments demand time and effort that can be difficult to meet for career women. This creates a universal problem for women with career aspirations. Women in Sudan are usually put in a situation where they have to choose between a career and a family oriented lifestyle. Construction works, particularly site-based jobs, are demanding, time-consuming and often have negative effect on social activities and family responsibilities. Accordingly, these jobs are sometimes categorized as men jobs as they may require travel, long working hours, night-time shifts, remote locations and family-unfriendly work environments. In some cases, inability to cope with these work conditions may adversely impact women promotion prospects and even their future job security

Most organizations tend to treat family and work as completely separate. Work and family balance was the number one issue for females in Khartoum when looking for jobs (40% of the votes) followed by salary (24%). It is believed that those who pursue a CI career will eventually adopt a male attitude, with domestic/familial responsibilities taking a back seat to work responsibilities.

In Khartoum, the survey revealed that, the majority of women working in CI is unmarried (70%) and young (75% are 20-30 years old). Marriage is generally associated with a decline in female labour force participation, followed by further reductions once children are born. It is estimated that recently-married women are 25-35% less likely to participate in the labour market. However, some women re-join the labour force several years after marriage when the children are old enough. Moreover, the increase in the age of marriage and decline in fertility rates is expected to result in higher women participation in CI, which goes in line with the projections of World Development Report 2012 [16].

## 2.4 Work environment

### 2.4.1 Workplace discrimination

An extensive online survey by YouGov and Bayt.com in May 2012, reviewed the status of working women in the MENA region (Middle East and North Africa) [17]. The survey found that more than two thirds of female employees work in un-segregated workplaces. Almost 70% were comfortable with this arrangement, whereas 30% expressed varying degrees of discomfort. Moreover, 54% felt that they were treated equally as their male colleagues, with 24% feeling that men received a preferential treatment.

Gender discrimination in job interviews, workplace, pay and promotion is also reported in Sudan. However, it's always difficult to obtain an accurate assessment of how big is the problem. Most reports tend to be on the low side as some of the cases usually don't get reported and/or documented. Female employees in Khartoum were asked if they ever felt discriminated against and about one third reported being discriminated against in their workplaces; 58% felt no discrimination and 9% were not sure [survey results].

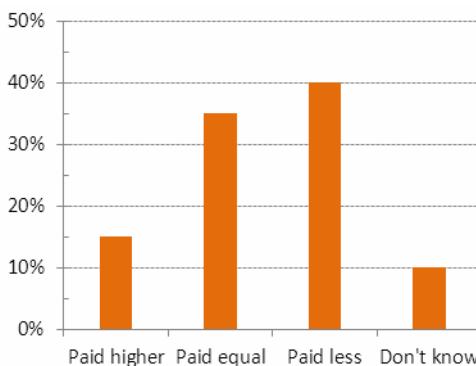
Work environment could be quite stressful for women. It could put a lot of pressure on their life especially if they are trying to balance it with other responsibilities. Women in Sudanese CI listed main issues about their workplace in table (1) below. Work overload seems to be their main complaint followed by excessive supervision and being put down in front of other colleagues in the workplace.

**Table (1): Women main complaints about their workplaces  
(field survey data)**

Work Environment Issues	Percentage
Excessive criticism in front of others	18
Excessive supervision	19
Overloaded with work	44
Unrealistic targets and goals	5
Tasks without proper training	11
Not given enough/suitable tasks	3

## 2.4.2 Pay

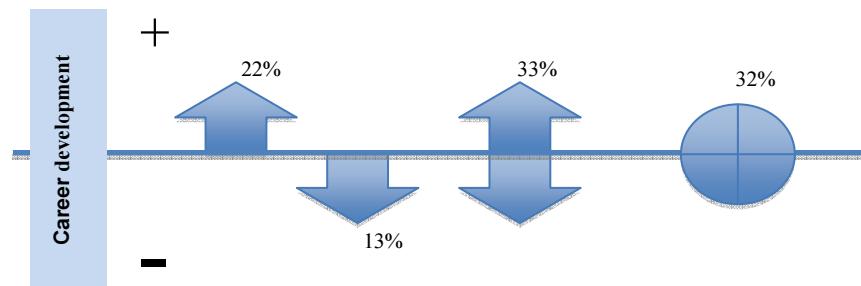
Women in CI usually seek part-time or informal jobs that offer flexible working arrangements in order to combine work and family commitments. These jobs often pay lower hourly/monthly wages than full-time and formal jobs. Even when working full-time, many studies found that women generally earn 10-20% less than their male counterparts [3] [18]. This is especially true of the construction industry in Sudan, where 40% reported that they were being paid somewhat less than their male equals (Fig. 5).



**Fig. (5) Women's pay compared to men – as perceived by female employees (author)**

## 2.4.3 Career development

The lack of employment opportunities and limited and/or slow career development prospects drives women out of the industry [2] [19]. Career development includes training opportunities, job security and promotion. The effect of gender on females career development in Sudanese CI is investigated and the result revealed that 22% of those interviewed felt that being females actually helped their careers, 13% felt it had a negative effect while 33% felt it affected them both ways (the rest felt it had no effect) as seen in Fig. 6.



**Fig. (6) Effect of gender on overall career development (promotion, job security, pay, etc.)**  
**(author)**

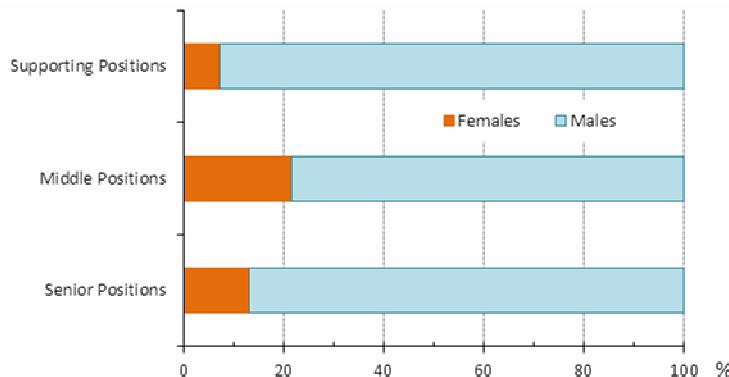
### 3. Glass ceiling phenomenon

Many studies found that there are significant and systematic differences between men and women's jobs, whether across sectors, industries, occupations, types of jobs, or types of firms. These differences are usually referred to as "employment segregation by gender". Moreover, in some industries, similar to the CI, it is difficult for women to gain promotion and enter higher-level occupations. This phenomenon has been called 'the Glass Ceiling' describing situations where female workers could see but not reach higher managerial levels [19]. The CI in Sudan has both a "Glass Wall" - employment segregation - and a "Glass Ceiling". The glass wall segregation of women into traditional roles has persisted for some time, with women being more likely to work in administrative and secretarial, personal services, and sales occupations, and men more likely to work in manufacturing and production.

Many studies suggest that gender is fundamental to the culture of different organizations within different sectors. Masculinity seems to form a key element in many corporate cultures [19]. These cultures tend to be hierarchical, patriarchal, sex-segregated, sex-stereotyped, resistant to change, and to contain gendered power structures [20].

However, with increasing pressure, many corporate structures are gradually changing to include more women while some are engaged in what is called "gender tokenism" - where at least one woman director is appointed to paint a more positive picture of the specific corporate structure.

In Sudanese CI, The percentage of women in senior level jobs was about 14% of the interviewed sample (Fig. 7). This percentage is quite similar to those reported in some Asian and European countries [16].



**Fig. (7) Women employment ranking in Sudan CI (author)**

Lack of part-time quality work reinforces the “glass ceiling”, leading women to seek employment in low paid, under-valued occupations. Women are doubly discriminated by the loss of earnings they face for taking time out of the labour market, and the pay penalty for part-time work.

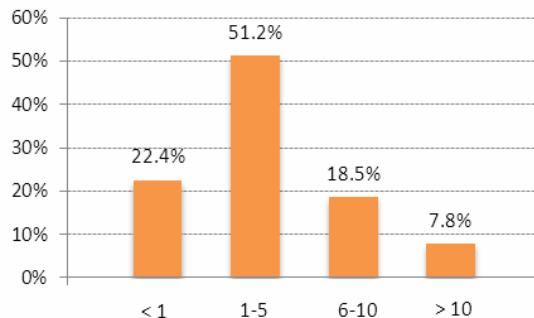
Commenting on the glass ceiling phenomenon, employers argued that females do not stay around in the industry long enough to become senior professionals and they lack certain leadership qualities. These two aspects are investigated further below.

### 3.1 Job retention

The length of service seems to be a stepping-stone towards career advancement. Studies indicate a loss of earning power that relates to the length of break (e.g. maternity leaves). Moreover, the biggest step in career progression is the challenge of re-entry into the industry.

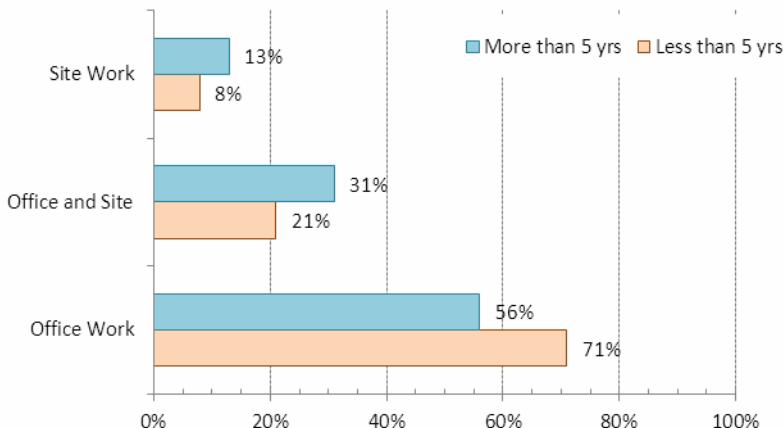
Women in Khartoum CI tend to leave the industry after few years of work (what is sometimes called the revolving door syndrome). This throws away education and experience gained and end careers of good potential. It was found that only around one quarter (26%) of all females entering the industry retain their jobs after the first 5-6 years (Fig.8). Moreover, it was also found that only 15% continued to work in the same institution for more than 5

years. This could adversely affect any chances of promotion and restrict the majority in junior to middle level jobs.



**Fig. (8) Duration of employment of females in CI (author)**

Looking at the work duties of those who worked for less than 5 years (73% of the sample) one could easily notice a gradual shift in duties towards less office work and more site work after the first 5 years as female employees gain more experience and confidence (Fig.9). This highlights the need for persistence and perseverance to gain experience and increase women chances in reaching senior positions.



**Fig. (9) Females gradual shift from office to site work with time (author)**

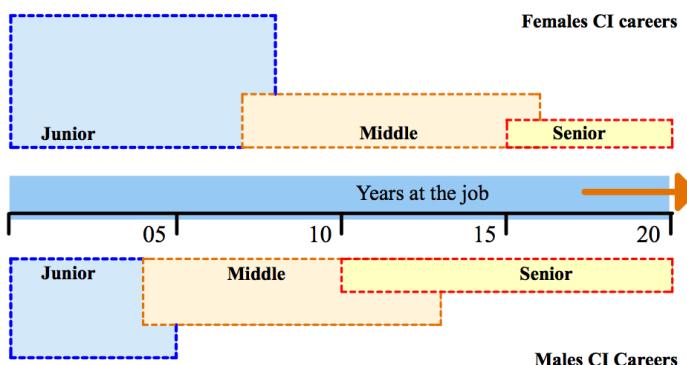
Job satisfaction (in terms of pay, training, development and promotion) is more likely to retain staff. For women in older age groups the main attraction is the possibility of balancing work and family life, just like other industries.

### 3.2 Promotion

Research in many African countries show women have slightly lower chances at promotion compared to their male equals [21]. The reasons range from limited chance to prove their competence and abilities to shortage of proper training and career development programs.

In Sudan, 32% feel that their promotion chances were in a way harmed because of their gender, 28% were satisfied with the status quo and 40% did not feel strongly either way.

Analyzing the survey data revealed that females in Sudanese CI, progress at a rate of one hierarchical level (sometimes more) behind their male equals. Moreover, in their first 10 years at the job, their progress seems to be more variable than men's. The long time they remain in junior positions is an indication that their move from junior to middle management is particularly problematic (Fig. 10). However, beyond this stage, women - aged above 30 years - progress at a similar pace to their male peers. This could probably be due to diminishing childcare responsibilities for married women or priority given to career development for unmarried ones.

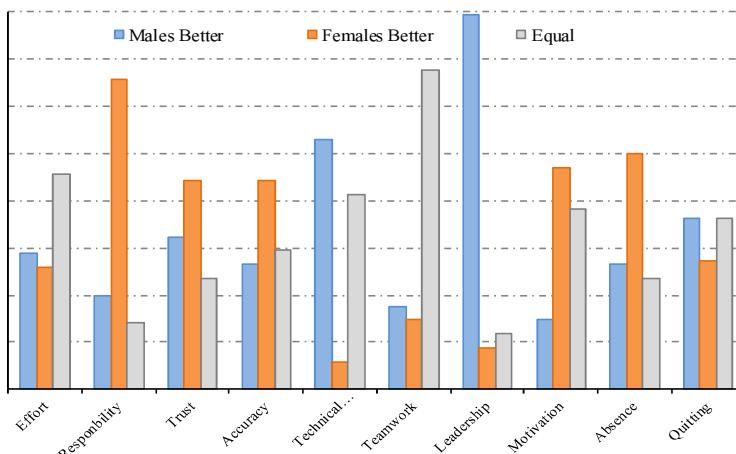


**Fig. (10) Females careers as opposed to males. Notice the decrease in numbers as women move from junior to middle positions (quitting the job), as well as the long time they stay at junior levels (author)**

### 3.3 Leadership qualities

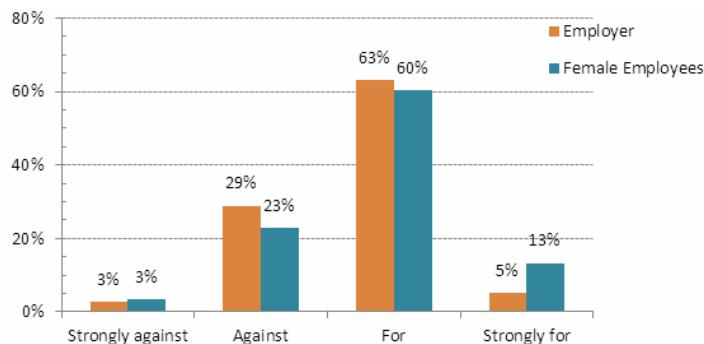
Various studies have highlighted that there are differences between male and female leadership behaviour [22]. Male managers usually concentrate on performance orientation, collectiveness, assertiveness and future orientation while female managers focus on follower-leader commitment and interactive relationships. The female leaders encourage collaboration, participation, intuition, empathy, support, empowerment, self-disclosure and more subtle forms of control [22].

Employers in around 50 companies in Khartoum were asked to give an overall assessment on some qualities of male and female workers. These included; effort, trust, leadership, engineering understanding, responsibility, etc. The result revealed that employers think females are more responsible, trustworthy, accurate and motivated than their male colleagues. However, females were thought to lack leadership qualities and technical understanding of engineering problems. They also seem to ask for leaves of absence more often than males (Fig. 11). These characteristics, coupled with the preconceived image of the industry resulted in the direction of more females towards office jobs in all sectors of CI. For some, this seems to strike a good balance between the need for work and preservation of cultural/religious values of the society.



**Fig. (11) Women image in CI from their employers' point of view (field survey data)**

Nevertheless, the majority of both employees and employers in Khartoum stressed the need for more females in CI (68% of the sample). On the other hand 32% expressed reservations and were against the introduction of more women in CI for reasons relating to cultural/religious aspects, family commitments and the lack of training in certain fields (Fig. 12).



**Fig. (12) Attitude towards women's work in CI – Both employees and employers' responses are plotted on the same chart for comparison (field survey data)**

#### 4. Conclusions and the way forward

##### 4.1 Barriers and constraints

Sudanese CI is one of the industries where women are underrepresented. Most of them work in the service sector of CI or as designers, structural engineers or project managers. It's extremely rare to see them in construction sites as labourers as these jobs may require travel, long working hours, brute strength and a good tolerance for outdoor conditions and bad language.

Women in Sudan face many challenges that could drive them out of the construction industry before achieving their professional aspirations (Leaky Pipe Syndrome). Their under-representation in CI is also manifested in both a "Glass Wall" of traditional horizontal gender segregation in employment and a "Glass Ceiling" or vertical segregation that makes it difficult for them to advance to senior positions.

The main challenges that face women include:

- A male-dominated environment that could be hostile, unaccommodating and demanding.
- Underestimation of the role of women in CI through job stereotyping
- Discrimination in pay, sidelining and poor promotion chances
- Inconsideration of women special needs (maternity, flexible working hours, childcare, etc.)
- Difficulty in striking a balance between work and social and/or family commitments
- A lack of knowledge of professional roles and career opportunities available for women, and a lack of public awareness.

#### **4.2 The way forward**

From the previous analysis, it's obvious that women will continue to thrive in office environment. Their gradual increase in site and manufacturing jobs depends on improving their leadership qualities and ability to balance work and family commitments.

The first 5-10 years at the job is quite crucial in determining the success of women's careers. The longer they stay in junior positions the harder it becomes for them to move up to middle positions. Accordingly, the retention of CI jobs is the main factor to women's career development and promotion prospects. Flexible working hours and other benefits could reduce the numbers of those leaving the industry. Taking breaks also poses a problem of re-entry into the industry. Institutions keen on harvesting the accumulated experience of their female employees need to implement creative solutions, such as re-training to update skills, flexible time, part-time working, working from home, and job sharing in order to recruit and keep female employees across all levels of construction work.

Most professionals agree that, with time, the number of females in CI will increase as they continue to be a majority in all engineering education programmes in Sudan. This increase is welcomed by a sizeable majority of employers and employees in Khartoum. However, it may raise a question of whether the industry will allow women into traditionally male domains (labourers and manufacturers) and whether the women themselves will consider these physically demanding jobs.

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