

# Evaluating the Benefits Experienced by Professional Women Working in the Construction Industry in South Africa

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## Abstract

The construction industry is male-dominated and has been viewed as a hostile environment for women to work and thrive in it. However, despite its hostility towards the female gender, some women have thrived and are successful in the construction industry. Therefore, the aim of this study was to determine the benefits the professional women working in the construction industry in South Africa have experienced while they continue to work in a male-dominated construction industry. To achieve the purpose of this study, a deductive research approach was adopted. An electronic questionnaire survey was used to collect the data. An exploratory factor analysis and reliability analysis was conducted to determine the validity and consistency respectively of the questionnaire. A total of 110 respondents participated in the research study. The findings deduced indicate that the professional women have gained confidence which has enabled them to manage construction projects, gained technical skills and are able to mentor other candidates in the field.

## Keywords

Benefits, Career, Construction Industry, Gaining Skills, Professional Women

## 1. Introduction

The construction industry is an enormous field which includes engineering and the built environment. The professionals can be on-site or office based, working as contractors or consultants in different civil infrastructure and building projects. The professionals that can be appointed to perform relevant construction duties in different project stages are engineers, architects, project managers including construction related, construction managers and quantity surveyors which include women. In Europe, the construction industry employed 15 million people but only 1.5 million women were employed as indicated by Liebus, (2016). Statistics of women who were employed from 2018 data in South Africa indicated that only 32% of women are managers, 49% are professionals, 55% are technicians and the total of women employed in South Africa in all fields was 43,8% (Stats SA, 2018). Statistics SA (2018) also revealed that in the informal sector of the construction industry more men are working in it than women.

Despite professional women working in male-dominated industry, they can still acquire various benefits. Literature suggests a number of the benefits that women in the construction industry can acquire. These are:

*Gaining construction skills and experience:* The construction industry is a fast-growing industry that is advancing technologically, thus, one has to adapt to the change and gain more knowledge through training programmes (Patel and Pitroda, 2016). In spite of the knowledge required due to advancement of technology, construction professionals working in project management division in the construction industry, acquire direct and indirect skills. Hence, women who are project managers can gain technical skills which are direct and indirect skills through managing a project and a project team. These skills have an impact on a construction project's success according to Hwang and Ng (2012). Further, leadership skills in the construction industry is imperative. The women that took part in Wesley (2012) study revealed that leadership development in employees is encouraged by the supervisor and the leader. Furthermore, leadership development classes are encouraged in order for

women to be able to gain skills on how to interact with different types of people. Such leadership classes are said to be helpful to the employees and it boosts their confidence (Wesley, 2012).

*Career advancement:* Although women still face gender inequality in employment opportunities. There are companies that are male-dominated which ensure an equal workplace by providing networking opportunities, support groups, good communication methods, being able to balance work and life and changing the male- domination mindset of the company (Gaines, 2017). It has been established that women network better than men as they concentrate more on creating long term friendships or personal connections, making them want to get advice for professional benefits (Castrillon, 2019), hence advancing their career. Despite the percentage of women in high ranking positions in the construction industry are under-represented according to Fernando, Amaratunga and Haigh, (2014). The implementation of training and development for women in the construction industry could be a solution to increase the representation of women in higher management positions in the industry (Fernando, Amaratunga and Haigh, 2014). In order for women to advance their careers, it is revealed that having educational and professional qualifications that are recognised, for example by Royal Institute of Chartered Surveyors (RICS), is a benefit for the success of career women in the construction industry. This has enabled women to occupy top management positions in the construction industry (Fernando, Amaratunga and Haigh,2014). Thus, career women can consider getting professional qualifications that are an advantage to them in the construction industry, apart from the academic qualifications they have obtained. This may mean a better financial reward.

*Financial reward:* The construction industry is known to pay its employees well, although women and men are still not paid the same. Male-dominated occupations are considered to pay more than female- dominated occupations. Therefore, women choose careers that are male-dominated (England, 2010). Remuneration in the construction industry certainly differs based on position, experience and qualification. It is deemed that female project managers that have more construction experience get paid more salary compared to those with little experience in construction (Bilbo *et al.*, 2014). In the United States of America, Bilbo *et al.*, (2014) found that project managers who are women earn more than \$95000 per year depending on their experience level. In South Africa, according to CareerJunction (2018) in the building and construction field, an individual who is in a senior position in building project management, can be paid between R40,465 to R53,527 per month, in civil engineering they can be paid between R50,525 to R65,621 per month and in quantity surveying they can be paid between R31,417 to R43,083 per month. In a research study by Worku (2017), it revealed that civil engineers that work in the local municipalities in South Africa are paid R15,000 to R45,000 per month, some were also able to negotiate their own salary instead of getting a fixed one that has been set. Project managers are usually rewarded with a salary that is high in order for them to move around and want to relocate (Bilbo *et al.*, 2014). However, from South Africa point of view it is not clear what women professionals are paid compared to their male counterparts.

Apart from getting a salary, work benefits have a big impact on the goals of an employee, and this can also attract good and competent employees (Song, Wang and Cheng, 2018). Some organisations have employee benefits which include pension funds, medical aid, housing allowance, insurance, vacation, lunch, transport and entertainment for employees (Song, Wang and Cheng, 2018). However, the benefits the construction professional women have acquired in the South African context has not been adequately researched. Therefore, the aim of this paper is to empirically determine these benefits and inform the construction industry stakeholders the benefits construction professional women have attained in this male dominated industry, despite the challenges they encounter.

## **2. Methodology**

The epistemology of the research is a positivist philosophy approach used to determine the benefits that professional women who have worked for five and more years, experience in the construction industry in South Africa. A positivism philosophy study relates to a quantitative study (Saunders *et al.*, 2016). The approach of the study is deductive as the data found, explored a known theory and answered questions of the research. A quantitative methodological choice was used, and an electronic questionnaire survey was used to collect the data. The questionnaire was distributed using LinkedIn (social media tool) and the website of South African Council for the Project and Construction Management Professions (SACPCMP) professional council.

The number of participants who responded were 110 professional women working. They completed the survey using Google Forms survey link provided to them. The professional women are professionally registered either as: professional construction manager (Pr. CM) or professional construction project manager (Pr. CPM) with the South

African Council for the Project and Construction Management Professions (SACPCMP). Furthermore, registered as professional engineer (Pr. Eng.) with the Engineering Council of South Africa (ECSA) or professional quantity surveyor (Pr. QS) with the South African Council for the Quantity Surveying Profession (SACQSP). The data analysis was undertaken using Stata version 17.

The results are presented using descriptive and inferential statistics. The descriptive statistics are presented using the mean values and the standard deviation. The inferential statistics was determined using construct validity and internal reliability of the questionnaire items based on the 5 point Likert scale. To achieve the construct validity, the exploratory factor analysis (EFA) was used to determine the factor loadings of each item in the construct. The factor loading accepted should be equal to or greater than 0.30. The reliability of the study was established using Cronbach's alpha at a cut-off point of 0.70. The section below represents the discussion of the analysed data of the study.

### 3. Discussion of Results

The validity and the reliability results were discussed before the descriptive statistics results were presented. The following section discusses the results of the benefits professional women attained in the construction industry despite the challenges they encounter.

#### 3.1. Exploratory factor analysis (EFA) for benefits

The exploratory factor analysis (EFA) is usually used when a research has a sample size that is large. Factor loading measures what a variable makes on a factor. Therefore, a factor loading that is high will show that the variables need to account for the factors (Yong and Pearce, 2013). The EFA on this research was based on the factor analysis, Eigenvalue, factor loadings and Kaiser-Meyer-Olkin (KMO) measure of the benefits experienced by professional construction women for persevering in the construction industry. The Eigenvalue cut off is set at 1, therefore Eigenvalue in the data had to be less than 1 (Eigenvalue < 1). During data analysis, the Varimax rotation blank used was 0.30 for factor loadings. Thus, the EFA for each benefits has been discussed below.

##### *Gaining skills and experience exploratory factor analysis (EFA)*

The EFA for gaining skills and experience in **Table 1** has shown that an Eigenvalue greater than 1 is depicted by Factor 1 (2.68196), the other Factors (2-4) were less than 1. Further, the factor loadings for gaining skills and experience variables (GSE-1, GSE-2, GSE-3 and GSE-4), were all above 0.30 using varimax rotation, as 0.7222 was the minimum value. The overall Kaiser-Meyer-Olkin (KMO) of 0.6448 was greater than 0.50 suggesting that the data was suitable for factor analysis (Alabdulkarim, 2021). The results infers that gaining skills and experience is a one factor model and the measures are valid in measuring this construct.

**Table 1:** Gaining skills and experience EFA

Gaining skills and experience					
Item	Factor	Eigenvalue	Factor loadings		KMO
			Variable	Factor 1	
Working with different stakeholders improved my soft skills	Factor 1	2.68196	GSE-1	0.8261	0.6516
I achieved technical skills	Factor 2	0.73566	GSE-2	0.8744	0.6124
I am able to manage a project and project team	Factor 3	0.40621	GSE-3	0.8447	0.6608
I gained confidence through leadership training	Factor 4	0.17617	GSE-4	0.7222	0.6693
<b>Overall</b>					<b>0.6448</b>

##### *Career advancement EFA*

The EFA for career advancement in **Table 2** has shown that an Eigenvalue for Factor 1 (2.09596) is greater than 1, and the other Factors (2-4) were less than 1. The factor loadings for the career advancement variables (CA-1, CA-2, CA-3 and CA-4), were all above 0.30 using varimax rotation, as 0.6467 was the minimum factor loading value. The overall KMO of 0.7033 was greater than 0.50, indicating that the data was suitable for factor analysis (Alabdulkarim, 2021). The results deduce that career advancement is a one factor model and the measures are valid in measuring this construct.

**Table 2: Career advancement EFA**

Career advancement					
Item	Factor	Eigenvalue	Factor loadings		KMO
			Variable	Factor 1	
I was able to mentor other women in their career	Factor 1	2.09596	CA-1	0.7981	0.6733
I was recognised of my achievement in the workplace	Factor 2	0.77338	CA-2	0.7348	0.6819
I created friendships in the workplace with colleagues to get professional advice	Factor 3	0.65817	CA-3	0.7077	0.7617
I was able to register as a professional	Factor 4	0.47249	CA-4	0.6467	0.7223
<b>Overall</b>					<b>0.7033</b>

**Financial reward EFA**

The EFA for financial reward in **Table 3** infers that one Eigenvalue is greater than 1 i.e. Factor 1 (2.73686) which indicates that the component is a one factor model. The other Factors (2-4) were less than 1. The factor loadings for the financial reward variables (FR-1, FR-2, FR-3 and FR-4), were all above 0.30 using varimax rotation. The overall KMO of 0.6180 was greater than 0.50, indicating that the data was suitable for factor analysis (Alabdulkarim, 2021). The results deduce that career advancement is a one factor model and the measures are valid in measuring this construct.

**Table 3: Financial reward EFA**

Financial reward					
Item	Factor	Eigenvalue	Factor loadings		KMO
			Variable	Factor 1	
I received performance bonus	Factor 1	2.73686	FR-1	0.7836	0.7183
I am paid a salary that equates to my experience	Factor 2	0.69137	FR-2	0.8770	0.5795
I received benefits in my package: medical aid, pension fund, bonus, etc	Factor 3	0.46455	FR-3	0.7375	0.6249
I am paid a salary that matches my qualification	Factor 4	0.10722	FR-4	0.8999	0.5953
<b>Overall</b>					<b>0.6180</b>

**3.2. Reliability analysis for benefits**

After attaining the construct validity of the factors describing benefits, the reliability analysis was conducted to determine the internal consistency of the data using Cronbach  $\alpha$ . The acceptable coefficient of internal reliability was 0.70 and higher as per literature by (Heale and Twycross, 2015). **Table 4** represents the results of the internal consistency using Cronbach's  $\alpha$  of the statements (items) describing benefits the construction professional women have experienced working in the construction industry. The reliability exceeded the minimum acceptable Cronbach's  $\alpha$  result required of 0.70 apart from career advancement. The 0.6763 – career advancement test scale was below 0.70 which is suggested to be moderately acceptable. A Cronbach's  $\alpha$  that is 0.60 - 0.70 shows a reliability that is moderately acceptable (Ursachi, Horodnic and Zait, 2015).

**Table 4: Reliability statistics of benefits**

Items	Observe	Benefits			Cronbach's $\alpha$
		Item-test correlation	Item-test correlation	Average inter-item covariance	
<b>Gaining skills and experience</b>					
GSE-1	110	0.7952	0.6483	0.417181	0.7794
GSE-2	110	0.8349	0.7143	0.3933834	0.7534
GSE-3	110	0.8506	0.7159	0.3566861	0.7450
GSE-4	110	0.7823	0.5564	0.3960523	0.8351
<b>Test scale</b>				<b>0.3908257</b>	<b>0.8234</b>
<b>Career advancement</b>					

CA-1	110	0.7592	0.5741	0.3074507	0.5480
CA-2	110	0.7391	0.4610	0.312844	0.6115
CA-3	110	0.6704	0.4633	0.383792	0.6164
CA-4	110	0.7113	0.3917	0.347206	0.6700
<b>Test scale</b>				<b>0.3378232</b>	<b>0.6763</b>
<b>Financial reward</b>					
FR-1	110	0.7870	0.6192	0.990165	0.8178
FR-2	109	0.8527	0.7312	0.8804837	0.7714
FR-3	110	0.7715	0.5737	0.9963196	0.8438
FR-4	110	0.8816	0.7749	0.822358	0.7517
<b>Test scale</b>				<b>0.9222679</b>	<b>0.8399</b>

### 3.3. Benefits of persevering in the construction industry

The construct validity (section 3.1) and reliability (section 3.2) results found that the factors describing benefits i.e. gaining skills and experience, career advancement, and financial reward were valid and reliable. This empirical finding enabled the central tendency of the descriptive statistics i.e. mean and standard deviation (Std. Dev) of these benefits to be computed, interpreted and the findings discussed to determine the main benefits obtained by construction professional women.

In order to discuss the mean value results appropriately, a scale with ranges used by Renault, Agumba and Ansary (2018) was adopted, where 1 = Strongly disagree ( $\geq 1.00$  and  $\leq 1.80$ ), 2 = Disagree ( $\geq 1.81$  and  $\leq 2.60$ ), 3 = Neutral ( $\geq 2.61$  and  $\leq 3.40$ ), 4 = Agree ( $\geq 3.41$  and  $\leq 4.20$ ), and 5 = Strongly agree ( $\geq 4.21$  and  $\leq 5.00$ ). The variables are ranked using mean value and to some extent, considering the standard deviation. These results are presented and discussed herein.

#### *Gaining skills and experience*

The results in **Table 5** shows that the overall mean value for the benefit of gaining skills and experience was ranked first with a mean value of 4.08. This suggests that the respondents agreed that they gained skills and experience while working in the construction industry. To buttress this result, GSE-1 measure (working with different stakeholders improved my soft skills) was ranked first and rated as agreed with a mean of 4.18 and a standard deviation (SD) of 0.77. GSE-2 (I achieved technical skills) was rated as agree and ranked number 2 with a mean score of 4.15 and a SD of 0.75. To support this finding technical skills are significant in construction for project management in planning phase, which can also make an individual to provide knowledge and expertise in the construction industry (Hwang and Ng, 2012). Construction professional women are able to oversee a project and different teams as they have been working in construction industry for more than five years and are registered as professionals with the built environment councils in South Africa. They are able to ensure that a construction project is successful throughout its duration. Therefore, GSE-3 (I am able to manage a project and project team) resulted in agreed rating of the mean and ranked number 3. The mean score was 4.13 and a SD of 0.86.

The measure GSE-4 (I gained confidence through leadership training) was ranked fourth with a mean of 3.82 and a standard deviation of 1.01. The result suggested that the respondents agreed they gained confidence through leadership training. From previous studies leadership is a project management requirement of making sure that a project is completed on time (Hwang and Ng, 2012). Leadership is a significant soft skill that is required in project management (Zuo et al., 2018). When training women in construction, it helps them to come up with new ideas which can assist them to get promoted in their positions (Fernando, Amaratunga and Haigh, 2014). Career success can be enhanced when a person is able to lead (Fernando, Amaratunga and Haigh, 2014).

#### *Career advancement*

**Table 5** indicates that the overall mean value for career advancement was ranked second with a mean value of 3.83. The respondents agreed that they had benefited in relation to career advancement while working in the construction industry. Furthermore, the measures defining career advancement were agreed upon by the respondents as benefits. The mean values were in the range of agreed ( $\geq 3.41$  and  $\leq 4.20$ ). CA-1 (I was able to mentor other women in their career) was ranked 1<sup>st</sup> and rated as agreed with a mean of 3.90 and standard deviation of 0.86. Fouad et al., (2017) revealed that participants required a female mentor whom they would be able to talk to about the difficulties they experience while working in a male-dominated industry such as engineering.

In addition, a good mentor enhances the success of an individual's career (Fernando, Amaratunga and Haigh, 2014) and can provide a good working environment (Moncaster and Dillon, 2018). CA-4 (I was able to register as a professional) was ranked 2<sup>nd</sup> with a mean of 3.90 and a SD of 1.16, resulting in agreed rating. CA-4 was to find out if registering as a professional with the built environment councils was indeed a benefit the women attained during the years they had been working in construction, although this is a requirement for the study. It is important to be registered as professional in South Africa's construction industry in order to work in certain types of projects, which enhances the career success of one.

CA-3 (I created friendships in the workplace with colleagues to get professional advice) was ranked 3<sup>rd</sup> and resulted in agreed rating, with a mean of 3.88 and SD of 0.80. Creating friendships at work is like networking internally which can be seen as an advantage for increasing career success. Creating friendships at work helps with creating a personal and professional support network (Bicer and Buyukyilmaz, 2017). Good friendships at work can increase the performance of employees and the goals of a company (Bicer and Buyukyilmaz, 2017). Recognition greatly enhances the success of an individuals' career. Employees expect to usually be given feedback, wherein their efforts are appreciated (Coffey, 2013). When an employee is recognised in the workplace it also motivates them to perform their job better and this increases productivity in the organisation (Coffey, 2013). Therefore, CA-2 (I was recognised of my achievement in the workplace) was ranked 4<sup>th</sup> and rated as agreed. This measure had a mean of 3.62 and SD of 1.10.

### **Financial reward**

**Table 5** also indicates the responses with regards to financial reward are in the neutral range ( $\geq 2.61$  and  $\leq 3.40$ ) including the overall mean value which was established as 2.89. In relation to the individual measures FR-1 (I received performance bonus) was ranked 1<sup>st</sup> with a mean of 3.06 and a SD of 1.24, however the respondents were neutral on their response. Literature indicates that it is perceived that receiving a reward for performance at work enhances the job performance of an employee. Hence an employee is recognised in the workplace. Employees that perform well as stated by Jongo *et al.*, (2019) are the ones that get more rewards and makes them to be satisfied, unlike those with low work performance.

Benefits that employees get are attached to the values a company has to the employee skills. When the employees do not receive benefits they see it as a company not valuing them (Song, Wang and Cheng, 2018). The civil engineers that work in South Africa's municipalities stated that they had no interest in registering as a professional, due to insufficient benefits they get from the workplace when they are registered as professionals. In addition, the public sector had insufficient benefits compared to the private sector (Worku, 2017). Based on the aforementioned FR-3 (I received benefits in my package: medical aid, pension fund, bonus, etc.) was ranked 2<sup>nd</sup> with a mean of 3.02 and a SD of 1.36, resulting in a neutral feedback from the respondents.

Improving knowledge through improving qualifications is found to be a career enhancement by getting a work promotion (Fernando, Amaratunga and Haigh, 2014). Participants in (Fernando, Amaratunga and Haigh, 2014) revealed that having a qualification had increased their career success. Therefore, FR-4 (I am paid a salary that matches my qualification) was ranked 3<sup>rd</sup> with a mean of 2.77 and a SD of 1.26, which was rated as neutral. FR-2 (I am paid a salary that equates to my experience) was asked in order to find out if the construction professional women are paid a salary that equates to their experience. In relation to the results, FR-2 was in the neutral range and was ranked 4<sup>th</sup> with a mean of 2.73 and a SD of 1.23.

**Table 5:** Benefits experienced by construction professional women participants

Code	Benefits	N	Min	Max	Mean	Std Dev	Rank
<b>Gaining skills and experience</b>		<b>110</b>	<b>1</b>	<b>5</b>	<b>4.07</b>	<b>0.69</b>	<b>1</b>
GSE-1	Working with different stakeholders improved my soft skills	110	1	5	4.18	0.77	1
GSE-2	I achieved technical skills	110	1	5	4.15	0.75	2
GSE-3	I am able to manage a project and project team	110	1	5	4.12	0.86	3
GSE-4	I gained confidence through leadership training	110	1	5	3.82	1.01	4
<b>Career advancement</b>		<b>110</b>	<b>1</b>	<b>5</b>	<b>3.83</b>	<b>0.71</b>	<b>2</b>
CA-1	I was able to mentor other women in their career	110	2	5	3.90	0.86	1
CA-4	I was able to register as a professional	110	1	5	3.90	1.16	2
CA-3	I created friendships in the workplace with colleagues to get professional advice	110	2	5	3.88	0.80	3
CA-2	I was recognised of my achievement in the workplace	110	1	5	3.62	1.10	4
<b>Financial reward</b>		<b>109</b>	<b>1</b>	<b>5</b>	<b>2.89</b>	<b>1.05</b>	<b>3</b>

FR-1	I received performance bonus	110	1	5	3.06	1.24	1
FR-3	I received benefits in my package: medical aid, pension fund, bonus, etc	110	1	5	3.02	1.36	2
FR-4	I am paid a salary that matches my qualification	110	1	5	2.77	1.26	3
FR-2	I am paid a salary that equates to my experience	109	1	5	2.73	1.23	4

#### 4. Conclusion

The soft skills and technical skills of the professional women's have been enhanced while working in the construction industry. This also enables them to be able to be in charge of a project, supervise a project team and work with other stakeholders. The soft skills they gain are beneficial to their everyday lives and interactions with other people. The self-esteem of professional women whom have attended leadership skills training through the construction industry has increased. This could perhaps allowed them to be confident while in being charge of construction projects, even though they are in a male-dominated field.

The professional women working in the construction field for more than five years are able to mentor other construction candidates. This has been revealed by the empirical data which indicated that the women are able to improve the construction careers of other construction women through offering mentorship. Mentorship and networking in the construction industry can assist with forming meaningful friendships that are beneficial to the women professions and growth of the career. Thus, more construction women should seek mentorship from their seniors or colleagues. It can further be indicated that some of the professional women in construction are recognised for the work they do in their workplaces and construction projects they work in.

The literature has revealed the significance of being registered as a professional in the construction industry. The construction professional women in the study were able to register as professionals throughout the years they have been working in the construction industry. Registering as a professional, for example: Pr. Eng, Pr. QS, Pr. CM or Pr. CPM with either ECSA, SACPCMP or SACQSP (one of the three built environment councils) in South Africa has assisted the construction professional women to move in different work positions. Furthermore, it has made the women to gain more skills required in their construction positions and projects. In relation to the individual measures results discussed above. The overall benefits results indicated that gaining skills and experience, and career advancement were benefits for this cohort of construction stakeholders. They were found to be the main benefits that the professional women had obtained while working for five years and above in the construction industry. However, financial reward was not deduced as a benefit as the respondents were neutral in their response.

#### 5. Recommendation

Any female who wants to venture into the construction industry should bear in mind that they are rewards gained while working in the construction despite the challenges women experience. These benefits are career advancement and, gaining skills and experience. Furthermore, companies that are in the engineering and built environment should revise their financial reward structures towards construction women employees.

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