

# Women in Construction Boots: The Enabling Factors from the Perspective of Female Adolescents

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**Abstract---** Shortage of local skilled workers still exists in the construction industry of Malaysia and this in general may affect its sustainability in the long term if the problem is allowed to continue. Presently, the main contractors have to employ foreign workers from less developed countries in order to fulfil the needs of manual manpower. However, the employment of foreign workers is not the solution which the country should adopt as their presence brings a lot of socio-economic problems. It is suggested that the industry should not only attract local male youth but start to encourage female to become construction skilled workers to widen up the pool of talents. The present paper reports the findings from a survey conducted among female adolescents in Selangor, Malaysia in order to have some understanding on what is the important factors that may attract female adolescents to consider to become construction skilled workers. A factor analysis has been performed and it is suggested that the policy makers should focus on these six important factors namely conviction, satisfaction, recognition, value, support and qualification factors in order to encourage more female local youth to become construction skilled workers.

**Keywords---** Construction industry of Malaysia, Tradeswomen, Career Decision, Skilled Workers, Female Adolescents.

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## I. INTRODUCTION

Shortage of local skilled workers in the construction industry of Malaysia has occurred since the 1980s<sup>1</sup> and this problem had become a constraint for the sector to sustain<sup>2</sup>. The sustainability of construction is vital to the economy Malaysia due to its significant contributor to the Gross Domestic Product which is around 3.45% to 5% annually, and other roles including stimulating growth in other sectors and providing the infrastructure that is important for national socio-economic development<sup>2</sup>.

In order to address the problem of shortage of local skilled workers, the government and the relevant policy makers need to come out with alternative solution since the present strategies including promoting the use of modern method like Industrialised Building System is showing slow impact<sup>3</sup>. Currently, to fulfil the need for manual manpower, contractors have to employ foreign workers from less developed countries who are generally unskilled. This approach however had caused many socio-economic problem, thus must not be accepted as long-term solution to the present problem<sup>1</sup>.

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Among the various studies conducted to solve the problem, attracting women to become construction skilled workers is one of the strategy which has not being formally implemented in Malaysia, and yet relevant so that the industry has more source for new talents<sup>4</sup>. Historically, women had become the construction skilled workers to fill in the vacancies left by men who had to involve in the world wars<sup>5</sup>. Since the problem has been prolonged, the government and policy makers must start to look into the possibility of attracting females as construction skilled workers establish a workable framework. Nonetheless, there is a lack of studies in understanding what works to attract females to become construction skilled workers. This is exacerbated by the lack of empirical research examining the factors that may attract local females to become skilled workers.

Choosing a career is a process that starts as early as childhood stage<sup>6,7</sup>. It is an evolving process and the decision will usually influence by who and where a child is attached to. So far, researchers concur that adolescent is the stage where important career decision is made. In this study, the term ‘adolescent’ is referred to youngster who are in the age of transition from primary to secondary schools, which is around 12 to 17 years old. This paper seeks to explore the most important factors that may influence female adolescents to consider to become skilled workers for the construction industry of Malaysia.

## II. LITERATURE REVIEW

There has been a substantial growth in research theorizing on career decision making process based on job satisfaction theory. Nonetheless, associating job satisfaction theory with female adolescents may not lead to accurate explanation on criteria that can attract them into a specific field. For example, factor like flexible working arrangement which is important to working women due to her responsibilities towards her family<sup>8</sup> is not applicable to adolescents. Factors like organizational support such as job promotion and requirement for training<sup>9</sup> can only be understood by those who have working experience. Therefore, the Social Cognitive Theory (SCT), Social Career Cognitive Theory (SCCT) and Model of Girl’s Career Choice (MGCC) were explored.

The SCT was developed in 1983 and it explains the behaviour and level of confidence of a person in achieving a career dream is influenced by the environment he is attached to<sup>10</sup>. The SCCT which later developed in 1994 further enhanced the SCT and detailed out that external environment comprises of learning experiences, availability of information and social support from the persons surrounding him<sup>11</sup>. Consistent with both SCT and SCCT, MGCC similarly emphasized the importance influence of external environment but specifically for females. MGCC explained that females’ career decision is affected by four factors as followed<sup>12</sup>:

1. Social factors - the influence of role models, mentors, family, peer group, media and gender stereotyping.
2. Structural factors - the institutional support available to women in pursuit of their careers for example school environment and syllabus, teachers and counsellors, and extent of access to technology either at school or at home.
3. Individual factor - related to individual’s responses based on their traits, experience and socio-cultural environment.
4. Ethnic culture - related to the act socially accepted traditionally from one generation to another.

The MGCC has been accepted widely and discussed in various contexts in attracting women into health and engineering fields<sup>13</sup>. Accordingly, literature pertaining to women in the construction industry has been explored and their experiences have been analysed from various angles. Subsequently, it was found that there is a consistency on the factors that had encouraged women to become skilled workers in the construction industry with the MGCC. Finally, 23 factors were identified and used as the variables for this study.

### **III. METHODOLOGY / MATERIALS**

Female adolescents within Year 9 to Year 11 of schooling were chosen as the respondents. Next, the samples chose for this study will only be limited to female adolescents schooling within the state of Selangor. This is due to some limitations which include the period allowed to do the survey by the Ministry of Education since the activity may interrupt teaching and learning processes. Selangor is ought to be the best choice since the highest construction output is in this state with 41.4%<sup>14</sup>. Therefore, the exposure of female adolescents towards the job in the construction industry can be assumed as higher in Selangor as compared to other states. Thus, their opinion would be more significant rather than the opinion of students in other states whereby the construction activity is low.

In general, the population of Year 9 to Year 11 female students in Selangor is around 186,000 (N= 186,000). Using Yamane formula, the sample size required is 392 ( $n = 392$ ). To gather 392 required respondents, a total of 1000 questionnaires were distributed to 10 selected schools.

#### ***The Questionnaire Design***

Demographic information collected from respondents included; level of study, type of school, race, selection of streaming, general academic achievement, availability of family members working in the construction industry and level of understanding on job as skilled workers

To achieve the research objective stated earlier, a survey was carried out to explore the important factors that may influence female adolescents to consider to become skilled workers for the construction industry of Malaysia based on 23 sub-questions. Respondents were asked to indicate their opinions for each statement based on a seven-point Likert-style scale, where 1 = very low importance; and 7 = extremely important.

#### ***Analysis***

Scores for the factors that will influence female adolescents to consider to become skilled workers were analysed using Principal Components Analysis with varimax rotation. Owing to the clarity of the factors, items loading on these factors were grouped in order to come out with the most important factors. To identify and interpret factors, the criteria for each item should load .50 or greater on one factor<sup>15</sup>.

### **IV. RESULTS AND DISCUSSION**

A 375 complete and usable questionnaires were returned which equal to 95.66% response rate. Of the total responses, 367 (97.9%) responses were from government schools and the balance were from private schools (2.1%). Majority of the respondents are Malay ethnic (77.3%), and there is almost balance composition of students across level of study and choice of streaming.

Majority of the respondents do not have a family member working in the construction industry and only 37.4% stated that they have somehow high understanding on job as construction skilled workers. In general, the level of academic achievement of the respondents are relatively good due to low percentage of students obtaining 'D' score and below.

The Factor Analysis procedures has been performed to all 23 items and the result is presented in Table 1. Accordingly, the values which exceed and close to 1.0 will be rotated in the next analysis<sup>16</sup>. Next, the rotated component matrix analysis has been performed and the result is presented in Table 2. Each factor was treated as distinct variables to be considered as inputs for further discussions. The factors have been extracted and presented in Table 3 for further interpretation and discussion.

Table 1: Total Variance Explained for Factors Affecting Decision to become Construction Skilled Workers

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	<b>8.678</b>	37.729	37.729	8.678	37.729	37.729
2	<b>1.430</b>	6.217	43.946	1.430	6.217	43.946
3	<b>1.159</b>	5.040	48.986	1.159	5.040	48.986
4	<b>1.114</b>	4.844	53.830	1.114	4.844	53.830
5	<b>.937</b>	4.072	57.902			
6	<b>.915</b>	3.978	61.879			
7	.822	3.573	65.453			
8	.748	3.252	68.705			
9	.706	3.070	71.775			
10	.670	2.911	74.687			
11	.637	2.769	77.456			
12	.580	2.524	79.979			
13	.569	2.476	82.455			
14	.526	2.287	84.742			
15	.499	2.172	86.914			
16	.477	2.074	88.987			
17	.465	2.022	91.010			
18	.405	1.760	92.770			
19	.387	1.683	94.453			
20	.354	1.538	95.991			
21	.345	1.502	97.493			
22	.300	1.306	98.799			
23	.276	1.201	100.000			

Table 2: Rotated Component Matrix Analysis

Variables	Components					
	1	2	3	4	5	6
1. Family Support					.765	
2. Advertisement			.712			
3. Government support					.572	
4. Information on benefits						
5. Information on application process	.578					
6. Offer from companies as apprentice			.659			
7. Scholarship			.548			
8. Hands-on workshop	.714					
9. Tools and facilities for women	.616					
10. Promotion and briefing from construction practitioners	.680					
11. Women construction academy	.538					
12. Ample job opportunities			.501			
13. Women's Welfare benefit		.565				
14. High wage		.722				
15. Individual's ability to perform construction work		.595				
16. Minimum academic requirement						.890
17. Individual's confidence level to perform construction work		.523				
18. Personal belief that women is as capable as men		.528				
19. Interest in manual and practical tasks		.535				
20. Belief that machinery will simplify task						
21. Passion to provide shelter for homeless people				.674		
22. Family tradition				.729		
23. Changes in culture				.775		

Table 3: Extraction of Factor based on Analysis

Component	Variables
1	<ul style="list-style-type: none"> <li>• Information on application process</li> <li>• Hands-on workshop</li> <li>• Tools and facilities for women</li> <li>• Promotion and briefing from construction practitioners</li> <li>• Women construction academy</li> </ul>
2	<ul style="list-style-type: none"> <li>• Women's welfare benefit</li> <li>• High wage</li> <li>• Individual's ability to perform construction work</li> <li>• Individual's confidence level to perform construction work</li> <li>• Personal belief that women is as capable as men</li> <li>• Interest in manual and practical tasks</li> </ul>
3	<ul style="list-style-type: none"> <li>• Advertisement</li> <li>• Offer from companies as apprentice</li> <li>• Scholarship</li> <li>• Ample job opportunities</li> </ul>
4	<ul style="list-style-type: none"> <li>• Passion to provide shelter for homeless people</li> <li>• Family tradition</li> <li>• Changes in culture</li> </ul>
5	<ul style="list-style-type: none"> <li>• Family support</li> <li>• Government support</li> </ul>
6	<ul style="list-style-type: none"> <li>• Minimum academic requirement</li> </ul>

After careful consideration, each component in Table 4 were renamed as follow:

**Component 1:** These variables exhibit a dimension of female adolescents need to be informed on the process and the ability plus viability for women to become skilled workers. Hence, the component will be named as “**Conviction Factor**”.

**Component 2:** These variables capture the sense of psychological and physiological requirements and therefore is best to be named as “**Satisfaction Factor**”.

**Component 3:** The component will be referred as “**Recognition Factor**” since the variables reflects the need for the job to be acknowledged as suits for both gender and offering equal opportunities as the factors that may attract female adolescents to become construction skilled workers.

**Component 4:** The component will be named as “**Value Factor**” as the variables denote appreciation on added value which the job may offer.

**Component 5:** The variables are about receiving support. Hence, this component will be named as “**Support Factor**”.

**Component 6:** There is only one variable in this component which is about entry requirement that only required minimum academic achievement. Therefore, this component will be named as “**Qualification Factor**”.

First, conviction factor is a common factor quoted by women who have been involved in the construction industry across countries<sup>17,18</sup> and even since the 13<sup>th</sup> century<sup>19</sup>. Hence, it is not surprising if the same factors applied to the local scene. It is suggested that there should be an effort to can provide female adolescents in Malaysia with meaningful support from high school through to the workplace.

Second is satisfaction factor. The factor suggested that local female adolescents view excellent wages, good working conditions, and room for advancement as motivating factors. Therefore, satisfaction factor is an aspect which require attention should the industry wish to attract females to become construction skilled workers.

Next, it was found that recognition is another important factor. This factor emphasize that sexism should be avoided in order to attract more females as construction skilled workers.

The fourth factor is value. One of the compelling aspect of the skilled trades is the pleasure in seeing the results of their work. It is suggested that the industry must initiate to promote the value associated with possessing the skills.

Support factor is numerously quoted and it is undeniable will become the important factor in the attraction of female adolescents to become construction skilled workers in Malaysia. It is suggested that there must be more government and non-governmental programs that support females such as females’ apprenticeship programs<sup>20</sup>. Besides that, the policy makers need to step up the efforts on promoting that females can make up a greater segment as construction workforce and fill the skilled labour gap.

Lastly, is qualification factor. From the findings, it is suggested that there is not much effort being done to disseminate the information on how to become skilled construction trainees. Hence, the policy makers must execute

more promotion programs including establishing free workshops for high school girls so that they can have hands-on experience and build interest in trade works.

## V. CONCLUSION

The paper emphasized the need for the industry to diversify and widen up the search for new talent and include women as potential construction workforce in order to address the problem of shortage of local skilled workers. Accordingly, this study investigated what works to attract women to become skilled workers. Based on the findings from the survey and analysis of the findings, the paper suggested six important factors which are conviction factor, satisfaction factor, recognition factor, value factor, support factor and qualification factor. Some suggestions have also been put forward on how these factors should be addressed. Nonetheless, these are only initial findings and the results need to be validated by expert i.e. personnel who have sufficient experienced in managing skilled workers at sites. Further, a framework needs to be established for the policy makers to work on in attracting female adolescents to become construction skilled workers in Malaysia.

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