A STUDY OF WOMEN CAREER IN CONSTRUCTION INDUSTRY

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A STUDY OF WOMEN CAREER IN CONSTRUCTION INDUSTRY

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Thesis submitted in fulfilment of the requirements for the award of the
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DEDICATION

This thesis is dedicated to my parent, Salahuddin bin Sahab and Salmah binti Hasan who are always praying and fully support for my success, struggle to give me enough education and always loving me with full of their hearts. Special thanks to all my friends who give me advice, support and help all the way during my study. I would like to dedicate this thesis to my supervisors, Dr. Doh Shu Ing who give me a lot of ideas, suggestion and advice throughout my study.

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ABSTRACT

The achievement of women in different field in Malaysia is no more hesitating which they can compete with men in the construction industry field. There are misconceptions that women are weak and unable to be good leader or workers as compared to men. Other than that, there are many obstacles that exist for women who want to work in the construction industry. Women need to be prepared in terms of profound knowledge, expertise, work encounters and the willingness to comply at the work environment. The main problem that encountered by women when they are involved in the construction industry is risk and conflict. Besides that, the scope of appropriate work for women in construction industry or field is identified. In addition, this research was carried out through a literature review of the topics that related to the factors that led to the liability and conflict that come upon by women as workers in the construction industry or fields. The masculinity and feminization of construction engineering, sex discrimination and harassment on site, work environment and work hours and intellectual and physical capability is the main factors that led to challenges and risks for women working in the construction field are. In this research the 100 questionnaires were distributed to women and men who working in the construction industry which is currently developing construction project such as Kuala Lumpur, Johor, Penang and Pahang and were selected through simple random sampling method but only 68 questionnaires have been completed by the respondents. All data was analysed using software Statistical Package for Social Science 22 (SPSS) to acquire min statistic and standard deviation. From the questionnaire, it found that female and male have different levels or agreement with all factors of risk and conflict that encountered. This research will be supportive to any women in identifying the most suitable careers for themselves in construction industry or field and also to know the factors that cause fewer women working in the construction industry or field.

ABSTRAK

Pencapaian wanita dalam bidang yang berbeza di Malaysia adalah tidak teragak-agak lagi di mana mereka boleh bersaing dengan lelaki dalam bidang industri pembinaan. Terdapat tanggapan mengatakan bahawa wanita adalah lemah dan tidak mampu menjadi pemimpin yang baik atau pekerja berbanding dengan lelaki. Selain daripada itu, terdapat banyak halangan yang wujud bagi wanita yang mahu bekerja dalam industri pembinaan. Wanita perlu bersedia dari segi ilmu pengetahuan yang mendalam, kepakaran, pertemuan kerja dan kesediaan untuk mematuhi di persekitaran kerja. Masalah utama yang dihadapi oleh wanita apabila mereka terlibat dalam industri pembinaan adalah risiko dan konflik. Selain itu, skop kerja yang layak bagi perempuan dalam industri pembinaan atau bidang dikenalpasti. Di samping itu, kajian ini telah dijalankan melalui kajian literasi daripada topik-topik yang berkaitan dengan faktor-faktor yang membawa kepada liabiliti dan konflik yang dihadapi oleh wanita sebagai pekerja dalam industri pembinaan atau bidang. Maskuliniti dan feminiti dalam kejuruteraan pembinaan, diskriminasi jantina dan gangguan seksual di lokasi, persekitaran kerja dan waktu bekerja dan kemampuan intelek dan fizikal adalah faktor utama yang membawa kepada cabaran dan risiko bagi wanita yang bekerja dalam bidang pembinaan adalah. Dalam kajian ini 100 borang soal selidik telah diedarkan kepada wanita dan lelaki yang bekerja dalam industri pembinaan yang kini sedang membangunkan projek pembinaan seperti Kuala Lumpur, Johor, Pulau Pinang dan Pahang dan dipilih melalui kaedah persampelan rawak mudah tetapi hanya 68 soal selidik telah disiapkan oleh responden. Semua data dianalisis menggunakan perisian Pakej Statistik untuk Sains Sosial 22 (SPSS) untuk memperoleh min statistik dan sisihan piawai. Dari soal selidik ini, ia mendapati bahawa lelaki dan wanita mempunyai tahap yang berbeza atau persepsi dengan semua faktor risiko dan konflik yang dihadapi. Kajian ini akan memberi sokongan kepada mana-mana wanita dalam mengenal pasti kerjaya yang paling sesuai untuk diri mereka dalam industri pembinaan dan juga untuk mengetahui faktor-faktor yang menyebabkan wanita kurang untuk bekerja dalam industri pembinaan.

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CIDB	Construction Industry Development Board
EOC	Equal Opportunities Commission
MSD	Musculoskeletal Disorder
SPSS	Statistical Package for Social Science

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

As of today the construction industry with its extreme gender stratification is still conservative in its recruitment of women. The involvement of women in construction industry has grown, women are observed as minority in this field. The increasing demand for qualified engineers will soon reach a critical level. The prevalent common social conditions the employment occupational segregation of the labour market into masculine and feminine employment is like an imperforate today as it was at the beginning of the century, with construction as the prime example. The percent of women working in the construction industry which are perform in an administration, technical and professional work while the intake at the operative level is very low and the data are intimidating to non-exist which is only 1% of the workforce (Clarke et.al 2005). This is an avoidable where it can be concluded that the construction is not only dominated by men, but is does not have of female participation. On the other hand, there have been few studies focusing on factors influencing women entry into construction fields and what their expectation are (Bennett et.al, 1999).

Besides that, this study research is focused on the category of women who work in technical fields in part of construction industry in Malaysia. This research is essential which is to identify the extent of the level of women categories of work in the aspects of technical knowledge, skills and work experience to qualify them to occupy a high position in the industry nowadays. Some of the men assume that women are not able to perform in a construction company until they prove themselves to be capable. However, the situation changed todays where the women were found to compete and achieve a

high social status in their lives. In certain field, women are found to be more competent that their male counterparts (Barnabas et al., 2009). Thus, women are encouraged to participate actively in all stages of the construction industry to increase competition for deployment and also increase the needs of participants in the industry. Besides that, increasing the participation of women in this industry is important for the construction industry where it need to have a sustainable growth through a regular supply of labour. However, women still can work as men in construction fields without any hesitate.

The industry of construction needs to encourage women to participate it and grow forward as a leader. These leaders will be an example or roles model who would attract other women for working in construction fields. With more women attracted in construction industry, this sector would be in a better position to deal with the talent crisis that encountered currently. Also, the social image of the industry can be improved from time to time. Madikizela and Haupt (2010) revealed that an organization that seeks to release the potential of women and to take the advantage of the soft part of the leadership necessary to formulate a strategy where they can develop the next generation of women leaders in construction fields or industry. Now, by this modern time and sophisticated women is part of an important resource for achieving the country's development especially in the glorious 2020. Therefore, there is no doubt where the fact that happen about the contribution of women in construction field. And also women have the right and role in providing services and contributions to family, community and also country.

In Malaysia, women are able to work intelligently by using time efficiently, good workforce management and emphasizes productivity in managing the priority either in career and personal life. Women are now able to develop their potential to the optimum and take all the advantage of every opportunity to develop themselves. An achievement of women in various fields is no longer in doubt, even if women be able to compete with men. However, women is still regarded as weak because of the perception of women cannot be able to a be a leader as well as men and it causes them to received very little opportunity for advancement especially for the higher positions which requires them to lead. Disproportion of women often happen in jurisdiction or chance of women neglected from the employment sector. However, in Malaysia is rarely occur the

discrimination of gender in employment, this is because women can also do the job as good as a men (Tajul Ariffin, 1992). Unlike men, a women's career decision does not depend on them but need to think about responsible to family also.

Currently, especially women in Malaysian dealing with challenges associated with life, and also their life. When asked whether the woman is ready to held important positions, the question is not about the entitlement, but focuses on the factors around them. Because of women is a part of the actuators of national development, women need environments, the appropriate opportunities and also choices were given so that they can took over the responsible as a wife, mother and also best worker. Accordingly by the year 2020, women should be equal partners and significantly to a man, where powerful and independent and also able to make a choice, does not afraid to speak up, have their own financial resources and able to contribute to global development.

1.2 BACKGROUND OF THE STUDY

The construction workplace is the challenging nature and its will impact on the careers of women which has formed on the basis of several studies. The recommendation will be stated to address the barriers to the improvement of women in their careers in the construction industry. Dainty et al. (2001) stated that careers in construction would create comparison between the women and men experience. Haupt and Smallwood (2004) cited that construction industry is normally dominated by men at all levels. Enrolment at senior and management levels by construction has been similar, with a marked tendency for companies to attract, recruit and select men. Dainty et al. (2001) revealed that it has led to an obvious under-representation of women. Less than 10% of percentage of women those were employed in the construction industry. The percentage is more less when the women who were registered as professional or act as model and leaders by managing their own construction firm (Geerstemar, 2005). The implication of the individual, industry and all the community will be suffer from only fully utilising one sex if the number of women in construction industry is low.

Thompson (1996) stated that many young men still believe that women are physically and psychological not suitable at the construction work. A large sector of

economy can be defined to construction industry. It may strongly influence by the level of professionalism and working practices based on the size and market of the construction firm. Women participation in construction industry is particularly very low, both for those employed in the industry and for those engaged in training. One of the most male dominated industrial sectors has equal opportunities present a challenge in the construction industry. It is not only male dominated in the construction industry of all the industries in the world, but it also exhibits the greatest degree of vertical segregation.

The women general experience is the barriers in their career development where it apply particularly to women who choose non-traditional occupations as a career such as construction industry such an example, the representation of women were found in all industrial sectors (Bennet et al, 1999). Anecdotal evidence suggests that huge gender inequalities exist in many jurisdictions of life. Thus, more women than men are untrained and innumerate and besides that, girls receive less formal education. There were limited of women access to and income control and also assets. Then, the proportion of women in wage is lower than for men. Women are incredibly under-represented in policy and decision making at all levels.

Currently, various scenarios that can we refer to these issues for women. In western countries, most of all women are able to get the opportunities to lead the development that have been given. According to Ashrige Management College (1998), almost 3% of directors for the 1500 major companies in the United Kingdom are women. In fact, women are accounted for 45% of the total employment of the country. Golzen and Garner (1994) consider demographic trends in some western countries clearly indicate that women will have a greater role in the management of the future. In Malaysia, it was found that the contribution of women to country which are accounting in fields of politics, business, trade, agriculture, education, industrial and administration. In addition, the community also require a woman services, especially in the field of professional and also social services and it also can changes the roles and status of women where can make their lives better. A sense of isolation is another reason for high defections with women having almost no chance of meeting other women working in the industry and therefore lacking of support structures they need.

The role of women in Malaysia development clearly showed that the important role in determine the future direction and development of the country is increasingly. Furthermore, the involvement of women in industrial sector is increasingly due to government incentives and opportunities. It is not surprising to say that there are number of women in certain career fields especially in science and engineering field where it can emphasize to improve the government and also get the high demand of the industry for engineering fields. As we know, the science is generating a new knowledge while the engineering knowledge as idea that we get from what we design that used to satisfy human needs in their life. Mitchell (2003) stated that the industry is focused on whether the required skill needs of the industry itself or not. Therefore, when the industry has changed then it needs to enhance more skills where it is one of the most important elements in the development of economic and also social development in the globalization era. Hence, there have a high demand on skills in the industry sector. Knowledge, skills and understanding in certain fields of specialization are important aspects that need to be possessed by an individual to face the challenges in work.

The nature of the workplace culture is in the construction industry where it is the central to explaining women's career under-achievement. It can see from their equal progression through the exclusionary and discriminatory work environment. Women will become disillusioned with the discrimination and lack of opportunities that they confronted if they entering construction industry without an in-depth knowledge of the cultural influences on construction careers. Their male peers perceived them as added competition for the limited promotional opportunities available, which incited resentment and discriminatory behaviour from their male colleagues (Dainty et al, 1999). Furthermore, women also had to conform to work practices towards men's needs and in addition to having to deal with the explicit resistance to their development or construction industry. This can included long working hours, geographical instability and also an expectation that they would subordinate their personal lives. Dainty et al., (1999) stated that these works need to endure because of the attitudes of male middle managers, which were empowered to impose such work within their own projects environments.

Besides that, we can notice that employers are more focused on solution for cost reduction, productivity improvement and also provide a new market where need a good services. So, it is a necessity that needs to have in female employees for indicated cooperative teamwork, problem solving ability and also ability to deal with various situations. Women also need to try to make decision, be more responsible and also need to communicate more effectively. Now, competence and domination of skills has become a main requirement for moderns' workers (Calla, 2003). In addition, women also need to expose the ability and capabilities of her in order to achieve a balanced in development. Therefore, the role and contribution of women in the economy is very important. In addition, the involvement of women in the industrial field is particularly spread due to government incentives and opportunities. Following the serious suppression of government and high demanding of the industry, it is no wonder if there is had women in certain career fields especially engineering. As it is know that engineering functions is to satisfied human needs.

Therefore, these skills are needed in a women especially those who living in the industry. By Harvey and Green (1994), they found that employers need workers who have the intellectual skills, willing to learning, analytical thinking skills, ability to solve problem, work in group and also have the skills interpersonal. However, to fulfil the employment opportunities in the industry which are growing, women should raise up a meet the admission criteria that are required by the industry. According to Raja Rohana (1991), the higher the education level, the more opportunities to get a job and thus increase the Malaysia's name. Therefore, it is very important for women to organize themselves in dominate of every job specifications and various skill that are required by employers just to acquire occupations that are offered by the industry. Besides that, women are not only qualified to work equivalent with men instead able to hold higher positions within an industry.

1.3 PROBLEM STATEMENT

Nowadays, it founds that there are still exist and arise of various responses to women especially in disputed the ability of women to involve which are usually dominated by men only. Abdul Rahman (2000) stated that the participation of women in

outdoors work which emphasizes its competitiveness, an independent, not emotional and need to be aggressive is considered as an incompatible with femininity and may damage its traditional role as a wife and mother. In addition, women are still regarded as someone who is has less equipped to find the knowledge and skill needed by industry (Rozi Bainon, 1999). Despite there is changes where in Malaysia, women compete with men by the number of female student who continue educations either in or outside the country is more than the men which is found that about 60% of the 75,000 unemployed graduates is women (Ruzana, 2003). According Nor Aini and Zaini (2000), female students are majoring in technical course in institution but female student that involves in industry for the engineer is opposite. In fact, women are often placed in sections that are not oriented technical skills and receive minimal salary. In addition, the industry believes that the capacity and efficiency of women are weak compared to male workers who are more active and aggressive in conducting the work.

1.4 OBJECTIVES OF THE STUDY

1. To identify the risk or conflict that encountered by women who work in the construction field and industry.
2. To identify the scope of an appropriate work for women in the construction industry.
3. To identify an appropriate employment for a women who work in the construction field or industry

1.5 SCOPE OF STUDY

The study focused on the gender issues in the field of construction industry at Malaysia which is about the extent woman inventory in technical field from aspects of knowledge, skills and experience as a preparation for the higher position in industry. Respondents were made up of women and men who work in the construction industry at Malaysia. This is due to identify the comparison opinion on behalf of women and men on this issue. For the aspects of knowledge, it is a knowledge or skill a person (Kamus Dewan Bahasa, 1998). In this research, the knowledge refers to expertise of women in

technical fields that can assist them in understanding the whole process so that the work can be done with more effective role in the fields.

Skills aspect is the ability to interpret the knowledge into action featuring person efficiency (Schermerhorn, 2005). In this study, technical skills refer to skills work as a team and are a leader in the construction project or in the construction development. It also needs to have a critical and creative thinking and problem solver among the women or men worker in the technical fields. The final aspects are taken as an aspect of work experience which is defined as all the previous commitments as employees based on technical fields. With this experiences can improve the efficiency in implementing the work.

1.6 METHODOLOGY

The methodology for this study will based on an approach that assesses the relationship between several factors such as masculinity and feminization of women in construction industry, sex discrimination and harassment on site, work environment and work hours, family responsibilities and intellectual and physical capability. Besides that, the decision of career that suitable for women in construction industry will be discussed in this research. A quantitative approach was chosen as the research method. An extension review will be conducted on this issue from the literature that related to the research topic including the surveys made in previous studies in this field to achieve the objectives of the research. Data was collected via questionnaire surveys that were developed from the literature review, the question will mostly closed or multiple choice questions and involve ticking bullet, ticking boxes on a table and ranking the answer by dragging and dropping the answer based on the most suitability to less suitability. The targeted respondents of this study are project manager or project team regardless whether women or men who are employed by construction industry which is having experienced work in the construction projects in Malaysia. Thus, questionnaire data collected will be incorporated into computer software, which is through the “Statistical Package for Social Science 22” (SPSS) and analysed using qualitative and quantitative analysis. All survey results are then translated in tabular form for ease of analysis performed.

1.7 SIGNIFICANT OF STUDY

In this study, the results of the study are expected to be particularly beneficial to women who were work in technical industry and also for female graduates where they can be prepared before working in the construction industry. Besides that, this research also can encourage women to work in construction industry where they can compete with men colleagues. From the literature review it is revealed that women adopt democratic and participative leadership styles in the corporate world an education. From this it could be said that the women have the capability to manage the construction environment both industry as well as in the academic.

This study will be supportive resource for enable women to find suitable position in the construction industries and it also acquires suitable skills to be more competent in the construction industries. Further it provides a good guidance to continue the research work, in particularly in the area of gender and leadership which could be considered as under theorised area.

Other than that, the results of this study, it was found that the preparation of the technical field of female employment in terms of knowledge, skills and experience can be identified as a whole as a measure the readiness of women to high positions in the construction industry in Malaysia. Besides that, from the results of this study, it may be one approach or initiative can be identified and adopted either by the industry or even education institutions to improve the level of preparedness of women technical field assistance and qualify them for high positions in construction industry in Malaysia.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

One of the most attractive phenomena of recent times has become a growing part of the women in the labour force, it possible for women in many regions to use their potential in the labour market and also to achieve the economic independence. Hart (2007) stated that the huge demand ensured an exponential growth of 10.5 % women employed in all levels of engineering to 35.2 % by 1943 with the official classification of women that were doing men's work and those who are doing women's work. Arslan and Kivrak (2004) revealed that there is much effort in order to increase the employment of women in the workforce in the industry. Consequently, many women that entered into the working life then become a pilot, doctors, engineers, teachers, educators and so on. In the early on 20th century, only several women that joined in the labour force in construction industry. The issue of women in workplace has been unrest over the last century (Davis, 2002). Most of the national academics that only select their first female members in the 20th century after the Second World War to be an employed as academic are in different sciences and engineering (Noordenbos, 2002).

As we all aware, women and careers is not an issues in Malaysia but it is the impact of the development and availability of the progress women to develop themselves to be more advanced. The contribution of the role of women in country development is very large, for example in the fields of politics, business, education, industry and so on. Now, the women and her career are growing from year by year. An increasing the number of female workers in industry opened the eyes of all parties that

all women are able to compete in the era of globalization to progress and sustainable economic development. In this regard, the women also made new inspiration as well as competitors to men so all men not complacent with the abilities that they have. So, all women that work in this industry will be respected and not easy to be eliminated in the realization of the country's hope where it is to achieve an industrialised nation by the year 2020.

Therefore, human resources development will continue to be turned into the country's main strategy to ensure that all people can share the prosperity of the country and further develop a dynamic labour competitive in the world without gender discrimination exists. According Arbaeyah (1993), the participation of women in science and technology started in the 40s. Overall, it appears without any action and taken to discriminate against women but women in Malaysia have been given the opportunities as men in numerous field in the industry. This issue is given the attention from other parties which caused the women's gaining recognition from world.

2.2 DEFINITION OF CONSTRUCTION INDUSTRY

In terms of economic growth and employment, construction is one of the most important industries. Construction can be defined as the one that employs workers in two main categories which are as a managers and as a professionals where they need to plan, organize and have an advise on specialist function or fields activities or direct and coordinate all activities and resources involved with construction procedures and also construction employments where they need to construct, install, finish, maintain and repair all the internal and external structure domestic, commercial and industrial buildings and also in civil construction (Employment Service, 1990).

Parry (1994) defined construction as, "the construction and maintenance of structural in forms of domestic, commercial, industrial and infrastructure of public including groups of an occupational in manual, administrative or organizational, paraprofessional or professional who are directly involved with construction and maintenance". In other meaning, there are many different scope of operation in the construction industry and also many activities were involves directly or indirectly to the

industry. McGrath-Champ et al, (2010) defined that construction is a "As a process directed towards the creation of structures which incorporates a number of industries. These are grouped into two: those that are directly involved with the construction process and those that are supplementary to it". From this definition, companies that produce construction materials to those that are engaged in mortgage or control of facilities may include as a construction industry.

2.3 DEFINITION OF WOMEN

In this study, women are meant as a woman that is opposed to men. It can be said as a female adult who has a feminine identity shows the entire outline as a woman. According to the "Kamus Dewan" (1998), women are a female or a girl that has specific properties or qualities that are not owned by the man. Women have several characteristics which are opposite the nature of the men. Women have higher emotional level than men, for example, women easily distracted while doing a particular task if their minds in not in good condition or when then faced with a problem. According to Bord (1959), a woman is a mature female or girl who has feminine identity where the women femininity shows instead of a woman.

Feminine identity exhibited by features such as the role and functions of social responsibility expectation, personality expressive, always influenced by feelings, gentleness and also lack of confident. A study by Epstein (1973) revealed that women are often assumed to have high emotional, low skilled control or cannot distribute their emotions into something productive. Conflict of these people is usually encountered due to the characteristics of the opposite occurring in men where that is courageous and ambitious, aggressive, emotional and has an intellectual performance. He also stated some of the problems that faces by women with respect to their status as mother, wife and also as a working women, thus it also preventing the advancement of women career's in their life.

Women often associated with the power sensitivity which ate often said to be something extreme. However, either it knowing or not, the sensitivity of the women that can caused they are able to do their responsibilities and also as a girl, perfect wife and

also as a mother for their kids. Without the sensitivity, they will not aware to the needs and also requirements in daily life. This sensitivity is quite privilege for a women because it means she able to express love and also affection that cannot be measured either as a child, a wife or a mother to her children. In terms of physical, the woman is given by the Creator to have less physical strength compared to man. Women are created which are requires of help and support from the men itself. Although women are lacking in term of physical strength, but women has the intellectual strength while thinking which they are able to carry them along with the men on this earth.

2.4 TECHNICAL FEMALE GRADUATE

This research focused on the professions in the construction industry namely, quantity surveying, construction management, project management, architecture, designing and civil engineering. As a graduate in quantity surveying will particularly work as an estimator or quantity surveyor to manage all cost associated with building and all civil engineering projects from the beginning calculation until to the final figures. Surveyor trying to reduce the costs of the project and increase the value of money while the standard and quality still achieve based on the required standards. Other than that, surveyor needs to understand and comply with the statutory building regulations that are provided.

Project managers, site managers, construction managers, project coordinators, planners and development managers are the career paths for a graduate in construction management. They have benefits because they have many prospective careers for the future in construction field. If they had a work experience in the construction field, they can request a higher salary for the job. Besides that, they can be a self-employed as contractors or projects developers as another option to be success in construction field. There are many specializations that can be focused on being distinguished from the other contractors in the construction industry. In Malaysia, the fastest rising profession is project management. The construction industry's labour market is characterized by non-standard employment practices and insecure (Dainty et al., 2007). Various different types of contractual arrangements and complicated project team can be a complex affair in terms of management a construction projects.

A demanding profession will be referring to an architecture where it will be the important issues that affect society today. The role of the architect is designing, planning and supervise the building construction. Besides that, when the balancing environmental issues were raised, they also need to explore new ways of living and also investigate new technologies and material to encountered the problem raised. Other than that, design a sustainable structure, functional and pleasing to the eye is the primary concern of architects. Planning, landscaping or conservation is the opportunities for those who with degree certificate in architecture. Able to compete in the job market is the important issues for the successful female architects where they hold a lot of responsibilities in the construction industry. Other than that, to be successful female architect they need willingness to deliver design on time and follow the quality required that had been ask from the client, the levels of effort to follow the client's needs and have the highest commitment in get the idea and solve the appropriate solution about designing.

Creating, improving and protecting the environment of people live is the profession of civil engineering graduated. The society will be not functional without civil engineer. Female graduates are more attractive in civil engineering field because it is a profession that we can see the whole range of artistic and also talents of scientific. The design stage of the construction until it completion project can be seen and female civil engineer also can involve in the design stage. The development and construction bridges, tunnels, roads, railways, dams, pipelines and major building can be include in the projects. Undertaking computer-aided design work or work on site, leading teams and solving problems can be done by female civil engineer.

Other than that, as a female civil engineering, the important thing is, they must be able to translate number and drawings into the reality life. The type of organisation that they are employed by and what area of civil engineering they work in is depends on the role they have in the projects.

2.5 WORK FORCE ISSUES

Crisis, conflict and male domination can be categorised as the culture of the construction industry (Gale, 1994). The industry of construction can be disunited and also people are very dependent on this industry. The workforce is very diverse and it also includes unskilled, crafts, managerial, professional and administrative workers (Dainty, et al., 2007). 0.98 Million people in 2010 were employed in the Malaysian construction sector (Department of Statistics 2012) but there were a problem which on the foreign unskilled workforce. The foreign workers came to Malaysia without their families and also they are often being unskilled or semi-skilled workforce. Besides that, they were lack of training. The employment will not last long enough to realize their investment because employers are reluctant to invest in developing the skills of their temporary employees (Dainty, et al., 2007).

2.6 CHALLENGES

Females are unemployed and underpaid in comparison to their male counterparts is the issues of gender discrimination against women (Lips, 2000). According to Sasser's (2004), improvements in the recruitment, retention and progression practices are essential for the elimination of the significant gender discrepancy. Sexist attitudes, behaviours and perception in workplace are a problem that is always associated with women that are working in the construction industry. An inflexible working practice is the main problem regarding their work-life balance that can be an equal concern in the construction industry (Worrall, et al., 2010). Review by Peus and Traut-Mattausch (2008) shows that women will continue to take responsibility for household work and child-upbringing even she spend a lot of time working outside the house. If there is conflict between work and family, their stress will increase and at the same time their job satisfaction will be decrease. Professional women that had higher expectations and were committed to remaining in the construction industry were stated by Bennet, Davidson and Gale (1999) which they studied about the expectation and experiences of construction undergraduate in the United Kingdom. Besides that, it also found that female students have a much higher financial expectation compared to male students.

There is fewer women work in the construction industry over the age of 36 compared to men. It clearly shows that the construction industry is not able to sustain senior female worker in this field. Female worker in this industry such as in the higher technical and managerial ranks is disproportionate absence that was stated by Chesler and Chesler (2002) and Watts (2007). The most women in the United Kingdom construction industry were employed in administrative positions and were thus disadvantaged for them to get work experience in technical field (Fielden, et al., 2001). Construction industry is seen as an encouraging business relationship conflict, working practices is poor, insensitivities of environmental and under-performance reputation (Fielden et al., 2001). 33% of women graduates in construction at Singapore have left the industry while 29% of those remaining indicated they are considering leaving. Better prospects in other industries, personal reasons, job conditions is poor and expectation for the job is not satisfied is the main factors or reasons they were leaving the industries.

Besides that, in male-dominated industry, women will face various forms of discrimination. The most prevalent problem is sexual harassment on site (Bagilhole, 2003). Males' values are average within the construction industry (Amaratunga et al., 2005). Besides that, it also included long working hours, competition among staff and independence. Other than that, there were issues that pointed out by the previous researcher where it including: an inaccessibility at jobsite (Dainty and Lingard, 2006), negative perception of women capabilities from men employment or employee itself (Chun et al, 2009), there were small presentation on the jobsite from women employment, expectation to impersonator male's aggressive actions (Maskell-Pretz and Hopkins, 1997). Other than that, Yates (2001) revealed about the lack of mentor or roles model in the construction industry from women achievement of the project, Hatipkarasulu and Roff (2011) cited that about the barriers that faced by women were family or work life balance in life, from English and LeJuene (2012) that were state about the slow career progression among women employment, Loosemore and Water (2004) stated that the other barriers that faced by women in construction industry were high degree of stress on job at workplace, frequently do a minor task , lack of supervisors reassurance at worksite, being underestimated and also have a low prospective of career advancement.

Then it also involves conflicts between women apparent societal roles and the construction industry image is low. Dainty et al. (2006) cited that training needs with unfair valuation from employee, rating performance compared to male colleagues is low, being restricted to clerical or administrative duties (Dainty et al, 2000), wages is lower for women compared to men and have a high concerns about the safety and health on site construction (Hopkins and McManus, 1998). Women have three choice if they want survive in the male-dominated construction industry where the teed to act like a men, lower their goals and also assume secondary positions and lastly, they need to surrender and move to work away. Men's intentional social isolation and also men's downplaying of women's contribution is the reason that were found where it is extremely difficult for women to reach leadership position in their companies (Dainty et al, 2000).

2.6.1 Masculinity and feminization of construction industry

The masculinity concept have formulated in twenty years ago which is has considerably influenced recent thinking amount men, gender and social hierarchy. The dominance of men and the subordination of women constitute a historical process, not self-reproducing system. As we can say that, masculinities are formations of practice that are created, disclose and change through time. Besides that, masculinities also are involved in specific patterns of internal divisions and emotional conflict and precisely that is because of their association with gendered power. As we can see that, the culture of the construction industry is openly masculine where they need to long working hours, working away from home, instability of geographical and also having a highly competitive of culture. Only 9% of women that involve in the workforce construction, 84% of women are in secretarial posts, 10% of women work as professional capacity and remaining were work in trades and crafts that were revealed by The Construction Industry Training Board (2003). This has been a concern with the lack of women in construction for many years.

The women's career have been described as a very limited chance, lower-paid part-time work, different rest or breaks for children and other responsibilities and unhelpful assuming about women's commitment and capabilities. For women who want

to be manager or in a general work they need to prove that all the assumptions about women are not true. This is because women also can improve themselves to be more successful in their work life and also real life. Wilson (1998) suggested that upward mobility remains, however, one of the conventional measures of organizational and career success. A basic theory of the disinclination aspect consequent to women being reasonably and physiologically willing to take on the responsibility on the domestic role within of relationship along with childcare. Louise (2001) stated that the tendency will motivate women to pursue a career or a higher level responsibility of management within the workplace.

2.6.2 Sex discrimination and harassment on site

Quick Takes (2011) cited that sex discrimination is present when a person or group of people who being treated unfairly solely based on their biological gender. Also, define sexual harassment as "unacceptable sexual prior, desire for sexual favours and other verbal or physical conduct of a sexual nature such that submission to or rejection of such conduct by individual is used as a basis for employment decisions affecting such individual or either explicitly or implicitly a term or condition of an individual's employment tends to create a unfriendly or offensive work environment." As an example, when women enter a male-dominated workplace, sexual jokes and rough language may become obvious rather than inhibited. In other means, the physicality of the workplace can limit on sexual harassment which this hold particular character for women working on construction sites where women and other highly visible minorities are the butt of vulgar jokes and comic ambiguity (Watts, 2007). Besides that, Cohn (2000) revealed that when in the boardroom where women finds herself in the minority of one in on the male team, where they will talk about sport before the meeting started it will leaving her outside this social dissertation.

Women are discouraged from applying for job positions within the construction industry by unofficial recruitment method and announcement (Fielden et al., 2000). Due to the construction industry is very technical, very high demand, the exhausting work and every hour has its own taxes and any small mistakes can cost a firm a lot of money spent. Because of that, the tolerance attitude in construction sites is very low and is not

easy to work with all parties and the behaviour of all people through words and deeds are always rough and so aggressive. Lauer (2010) showed conflict between the recruitment of women and encourage women in construction industry. This is the reason why women are usually restrained or not advisable from entering certain occupation.

When women have the same educational qualifications, the time given for the task assigned and attitudes in every occupation, women are less likely compared to men to achieve a higher status position or to work in management. If women want to work in construction industry, she needs to learn how to adequately address and endure with offensive, harsh language, sexual harassment, intimidation and also elimination (Perreault, 1992). They also should avoid being labelled as extremists, outspoken and emotional in their interpersonal dealings with men. Women are not taken seriously by men, especially older or subordinates, or a man who holds a university degree. When the women are entering to male dominated work field such as construction site, they will be subjected as sex discrimination at the site construction. Few women that are recruited as employers think that the management would avoid their sufficient performance in the job and also discrimination on advancement is led to the discrimination against women in construction industry.

2.6.3 Working environment

The number of women who enter the construction trades is increase, the more concerns about their health and safety (Chileshe and Haupt, 2010). In addition, there are safety and health issues that are specific to female construction workers which is the primary problem that faced in all construction workers. Because of this, the barriers were created to women because of the safety and health problem in construction. If the environment provides good working conditions in construction industry, a sense of responsibility and it is also challenging, women will choose construction industry as a field work (Warren, 2003). Besides that, there is need to be variety and also had a pleasant situation or atmosphere with the steady employment and also had a sense of security at the construction site.

In recent years, men will be more accepting all women who are working in the construction industry and for some women, who are not successful in the business, it will remains awful and at times outright adverse environment. The male company owner often prefer subcontracts among their male companions, but women are more supervising at the construction sites and many of the women become a project manager that were stated or observed by some women. The task will be different from day to day; the spectrum of colleagues varies from labourers to engineers to owners. The situation is changing rapidly, which are requires flexibility and also responsiveness. Warren (2003) cited that some women are drawn to specific challenges into the field seen as non-traditional for women.

2.6.4 Working hours

Kumbhar (2011) revealed that women who were working in construction sites will use a very long hours or times away from their homes. There is no fix timing for working in the construction site because they need to work for long hours. When they leave their home, their children are in sleep and they will return at late night when the children are in sleep. Hence, there is less time their will spent with their children because the working time is unpredictable. Arslan and Kivrak (2004) cited that it is the nature of the construction industry where working with long hours and also working in exposed weather conditions. Especially, when the contract would expire, working hours will tend to increase. For each project, the site will establish in the project area. Thus, the work will be constantly changing for location-based employee. The nature of employment in the construction activity is repetitive and unpredictable (Khumbar, 2011). There is no one either contractor or owner is ready to give a guaranteed of the work.

Regular working hours were preferred by women who had family where they could plan their life or duties or tasks or responsibilities (Etzkowitz, et al., 1994). The number of hour's predicted by women would work was less compared to the number's hour predicted by men that would work (Bon and Hughes, 1992). From the reality life, the actual work hours women is fewer compared to men did. These is because the differences seemed to be more by choice but in some instances were forced where the

men were required to work more hours because men had more senior positions in the construction field.

2.6.5 Family responsibility

Work-family conflict can be defined as a form of inter-role conflict whereby job and family demands cannot be met simultaneously and is an on0going problem for women with career aspirations (Wentling, 1996). There are many professional experience conflict between work and family where it more acute for women than for men. Lingard and Francis (2002) cited that jobs demand borne by construction professionals are damaging to their personal relationship. Women still need to bear the primary responsibilities for domestic duties in most households while men and women need to balance the demands of work and home life (Higgins et al, 2000). Usually site-based employees, both professional and manual workers are subjected to changing work locations. Travelling substantial distances and long periods away from home were involved where it can shows that the serious difficulties in terms of transport and child-care. Lingard and Lin (2004) suggested that women in construction adopt an 'either or' approach to career and family. It also possible that women's perception of the need to make a choice between family and work it means that women will choose family, which they will develop lower expectations of work experience and consequently the work-family conflicts des not negatively impact upon their organizational commitments. Lingard and Lin (2004) stated that women who expect to balance both family and careers success in the construction industry may experience significant difficulties.

In family, role of women is important same goes to in society. Naturally, there is a difference between women as men in terms of sexual and also physical. There will be a problem that will affect women's working life such as pregnancy, motherhood which are including birth and suckle phase. It might cause inconveniences for women's and their child's health if they were working in the construction site because it requires physical strength or working in dangerous and also tiring environment. Women place in the home is the common perception by all people where women's authority is family whether she is employment or not. As examples of family duty are like children care, cooking, house cleaning, visit relatives and other responsibilities. There is no

justification for working women by husband and society. There is no collaboration between men and women in social life. Also, there is no places that supplied and competitive to take care of children and also considered this is a difficulties for working women's.

An important jobs only occupied by a few women only. Both women and men recognize that the possibility of family responsibilities is an obstacle to advance in construction industry but for women, family is a priority for them compare to men. Although both women and men feel that having a family is an obstacle to their success in the workplace, women are more likely to marriage issues or the children and delay the timing to have a children compared to men (Frehill, et al., 2009). Family priority and circumstances always in women's mind for the choices if they need to make (Fearfull and Kamenou, 2006). The most important criteria and consideration is needed when attract women to the profession field is the women need to know the balancing between job and family responsibilities (Freguson and Sharples, 1994). For women, take care for themselves and also their children is very important in their life.

2.6.6 Intellectual and physical capability

Aulin and Jingmond (2011) revealed that most women thought and consent that they may overcome the physical part of job, while many who claim that women need to have the strong psychological strength to be at the building site. The women who work at site construction feel that they need to be good as men because they need to prove that women also can work better than men. Other than that, women need to be fit in the construction site where they need to accept all the behaviour of the workplace and also people at the site which they always do a comparison between women and men and also mean comprising their female identity (Clarke et al., 2005). Some lecturers stated that 77% of female students in engineering have the same intellectual with men where they can understand all the engineering tasks that assigned to them. However, 61% of the lecturers were agreed that female engineering students cannot accommodate physically than men with manual tasks engineering that are assigned at specific times (Matope, 2007).

2.6.7 Issues Challenging Women in Construction

According to Yean & Yeu (2004), the female graduate from Singapore felt that construction jobs have poor image and this may inhibit them from entering the construction industry. Other than that, they think that the jobs are stressful, demanding, times intense and often involve long working hours. This will interfere with on their social activities and family responsibilities. Women will face with practical barriers including loss of seniority in the process if they take a career break to start a family. From this observations, women will decide on whether to have a children or not because they don't know how to reconcile with their career expectation (Bennet et al, 1999). Besides that, contractors or employees perspective towards women discrimination is where they think that family responsibilities make women employees inflated and unpredictable. Sexual harassment at workplace is the other barriers that women need to face when work in the construction sites (Kaeswri, 2011) and (Watts, 2007). That's why women will avoid the situation by choosing a career in construction industry that have members if their own sex as employers (Smith, 1999). From the past research, Genaidy et al, (1994) stated that the existence of women is not fully accepted by the male workers. They were discriminated by many ways such as either being given negligible roles or being harassed on site in many form by the male workers. This is due to the fact that construction is a male's traditional job is the reasons for this discrimination. Barnabas, et al. (2009) cited that there is no hesitation that women often accompanying with low salaries and therefore it is important for men to avoid the admittance of female in this sector so that the level of payment will not be reduced to the level of women's salary.

There are assumptions and arguments that are often spoken of in the construction industry is that women are not strong enough by physically able to withstand with heavy duties at the construction site. Clarke et al. (2004) cited that women need to prove their ability regardless of their qualifications and experiences when entering the gender isolated occupations. Apart from being able to prove their technical skills, women should have the ability to adapt with the rough attitude at the workplace that can cause big problems. Studies have shown that women are more likely to leave the building industry due to complaints of pain or injury compared to men

where they have a strong physical strength that they can endure in the construction industry. Wangle (2009) revealed that it also can be attributed to the work-control and low-demand works that can lead to MSD (musculoskeletal disorders). The women were reported to be in working condition by the low work-control and also high work-demand compared to men. Olofsson, 2004 stated that many female workers overlook the safety of the task for a long time where it can lead to MSD which only to avoid being stereotyped by male counterparts. Control over work, impact, meaningfulness, support and professionalism is important variables for health and good situation at work environment and it also can be negatively influenced by gender particular offences.

In addition, culture in the workplace caused problems for female workers on site. As an example, sanitary facilities such as toilets usually unisex at construction site but there are no privacy in the area and poorly maintained. Apart from that, the place for pray also unisex where the places of Muslim employees have to share and the ablution places for women is not included. This caused of female workers feel uncomfortable with the services provided. Dainty et al (2000) cited that aversion against women was demonstrated in apparent and secret discrimination actions towards them. Among the actions that always occur at the construction site is gender harassment and bullying openly towards women where the women are not reporting orally to the related parties because of fear from being rejected by their male counterparts (Söderberg, 2009).

In a study which carried out by Novus Opinion in Sweden, it was not only jargon that made the situation difficult but also does not believe the women leadership or women as a leader (Axelsson, 2010). Axelsson, 2010 revealed that 49% of the women as a leader feel that character interference against them by female workers and counterparts are making their job more difficult where it make women leaves the construction industry because men always lead all the works. Besides that, women are some of the worst victims of discrimination in the construction site (Chrisna du Plessis, 1998). The type of discrimination that often faced by women in construction site is in the form of maintenance where it takes a quite long working hour and imposed geographical vulnerability. Dainty et al. (2000) cited the issues of stabilize between having a successful career and family oriented lifestyle will contributed. Women are

viewed as a threat to the restricted advantage of promotional practice in the construction organization.

In a study that conducted by Hossain and Kusakabe (2005), the main obstacle that identified by women engineers in Thailand and Bangladesh are men is higher demand for recruitment of workers in the construction field. Cost estimation, mapping and documentation is the tasks that employers prefer to keep the organization by male-dominated. Women have been exempted during the recruitment. The employer's opinion stated that the construction work is not suitable for women where this is also stated in the recruitment process for a formal or personal relationship (Dainty et al, 2000). In addition to the practices of the organization, there is also assumption that said the involvement of women in construction was blocked due the country's culture and religion or gender ideology. Women as a model to be emulated in the industry is low, less advice for successful careers, recruitment bias, peer pressure or poor and low educational experience and low where all above statement is affecting the career aspirations and development of women in the construction industry (Dainty et al, 2000).

2.7 CONCLUSIONS

There are no convincing studies in which it said that if the employees taking women as a successful way to advance in the construction field (Wangle, 2009). The cause may due to lack of training or lack of organized activities or tasks and programs for women in this construction or this also can be due to neglect in creating a work environment in which women must be treated with the same respect as men and also our fellow human beings. Women were found to have grown at a lower rate in the industry, but they faced a lot of problems, obstacles and barriers.

A scope of interrelated constitutional and social components characterized in this gender discrepancy in career advancement, together with the intuitive system of men and women in adapting to profession limitations and abusing profession opportunities. To inspire women presence in construction, they must give with support and embolden to non-conventional decision at an early age. Women must be forcefully enrolled into preparing projects with the point of arranging the educational modules and

abilities for preparing to absorb them into non-customary occupation (Wangle, 2009). After acquiring a path in construction, the construction association must keep supporting this company aggregate particularly those with family commitments, by creating adaptable work routine and working hours. Subsequently, the industry must make first move by effectively look for women for convenience job and making a workplace where women will stay and be approached with consideration.

Construction is considered historically as well as today to be non-traditional occupation for women. There are issues related to available opportunities, job satisfaction, equal compensations and acceptance as professionals. Despite the difficulties and barriers for success, women have been involved in construction throughout history and evidence can be documented as early as 13th century. It is important to note here that gender segregation and compensation issues are not and historically were not limited to construction industry but it already observed as general phenomena. There is no doubt that studying the history of a profession or industry is also crucial for the development of the next generation of professionals. Unlike architects and engineers, future construction professionals suffer from a significant lack of historical documentation. In general, construction history research efforts would benefit not only women in construction but all construction professionals. Despite its unique nature and cultural challenges, construction industry still offers great opportunities.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

The research procedure and the method that used in this research were discussed in this chapter. The methods are applied to achieve this study using the following techniques: the review from literature that are related to the factor that led to challenges and risks for women working in the construction field were studied, gathering data, analysis data by using questionnaire. The Statistical Package for Social Science (SPSS 22) was using to analyse the data that are gathered from the questionnaire. The data collected and data analysis will be presented. Research strategy and design, research sample, design of questionnaire, data collection process, statistical and analysis were provided the information in this study. Besides that, the validity of content and also pilot study is also summarized.

3.2 RESEARCH DESIGN

A survey I designated to obtain the qualitative and quantitative information on of women in construction industry. There were three section of the questionnaire. The beginning of the survey which is Section One, sought demographic information about the respondent profile or detail is being surveyed such as gender, age, marital status, education level, type of organization, type of discipline and also works experience. It involves ticking the bullets. Then, second part of the survey which is Section Two, it is about the challenges and risk for women while working in the construction industry which involve level agreement of the opinion that have been given by ticking boxes on

table and lastly Section Three which it involve by rank the careers based on most suitable careers to less suitable careers for women in construction industry. The sample is women and men who work in construction industry. Besides that, there have the flow for the methodology that was used in this research.

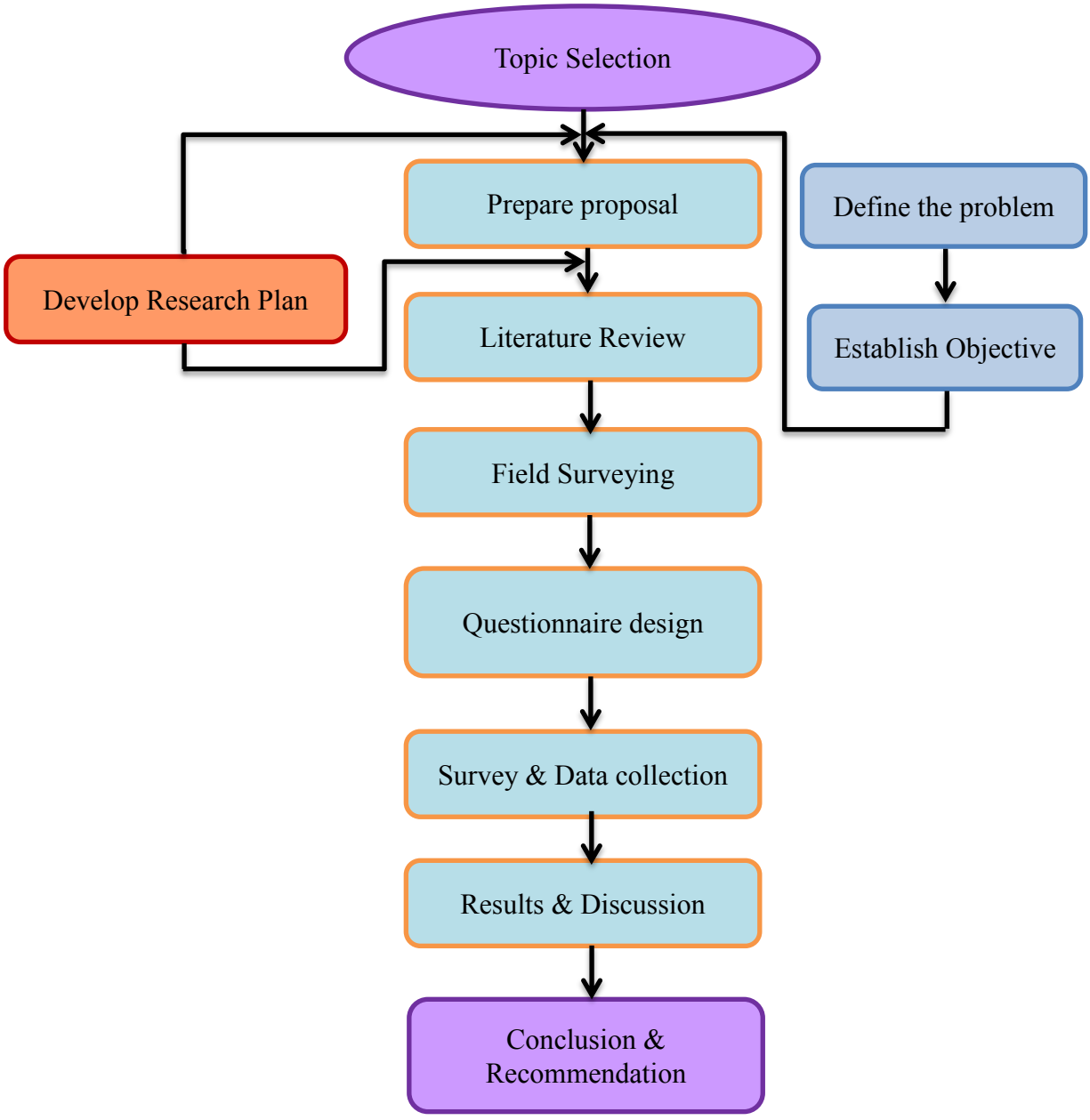

Figure 3.1: Flow chart of the methodology of the research

3.3 RESEARCH PURPOSE

1. To identify the risk or conflict that encountered by women who work in the construction field and industry.
2. To identify an appropriate employment for a women who work in the construction field or industry.
3. To identify the scope of an appropriate work for women in the construction industry.

3.4 DATA COLLECTION

The method of collecting data in this study were selected by using the questionnaire because it probably the most commonly used in data collection techniques for conducting surveys. From this method, the respondents will be confidentially, besides that it also supports internal and also external validity from the questionnaires, other than that it enables to analysis and also it can save all the resources. The samples were collected in a standardized form where it allows the researcher to carry out the data statistical references with the computer's help. In order to collect the data needed for this research, the questionnaire were distributed in order to get their opinions about the factor that led to challenges and risks for women who working in the construction industry. The main program of software which is SPSS was used to analysis data where it depends on the research methodology.

3.5 RESEARCH SAMPLE SIZE

The populations that were targeted of this study are respondents from project manager or project team regardless whether women or men who are employed by construction industry which is having experienced work in the construction projects in Malaysia.

3.5.1 Questionnaire distribution

The questionnaire were distributed by using electronic way which are via email for all female and male worker in construction industry and also the questioner on the Facebook page of Civil engineering association and the sample was received is about 68 questioner from all company which is company construction at Kuala Lumpur, Pahang, Johor and Penang.

- Closed questions

Closed-ended questions is where researcher provide a 'ready-made' categories which respondents need to reply the questions that have been ask and also help the researcher obtain the information needed. A set of alternative choices for the respondents is they could choose the question such as, multiple choice questions and involve ticking bullet, ticking boxes on a table and ranking the answer by dragging and dropping the answer based on the most suitability to less suitability. This closed question usually can be answered quickly then the large amount of information can get quickly by the researchers.

3.5.2 Questionnaire design

To obtain a good survey results, the questionnaire design must be good. It was conducted to determine the opinion all the women and men who are work in the construction company by the factor that's led to the challenges and risks for women in the construction industry. Seven pages of questionnaires which are consists 13 questions were distributed to 100 companies in Malaysia that are selected which are 25 companies from Kuala Lumpur, 25 companies from Pahang, 25 companies from Johor and 25 companies from Penang. The questionnaires included multiple choice questions and involve ticking bullet, ticking boxes on a table and ranking the answer by dragging and dropping the answer based on the most suitability to less suitability. The variation of this question is the purposes to meet the research objectives and also to collect all the necessary data that can support the discussion, results and recommendations in the research.

The section in the questionnaire will verify the objectives in this research that related to the factors that leads the challenges and risks for women which are working at the construction industry and it divided into three sections where it can accomplish the objective of the research. The table 3.1 showed the Likert scale for degree of agreement of the factors that leads to risk for women in construction industry and table 3.2 showed the ranking that respondent need to fill from their opinion.

Section One (1): General information

Section Two (2): Factor that leads to challenges and risk for women in construction industry

Table 3.1: Likert scale

No	Statements	Degree Agreement				
		Strongly disagreed	disagreed	neutral	agreed	Strongly agreed
Factors related to masculinity and feminization of engineering						
1.1	Male dominance on construction fields prevents women from choosing construction fields.					
1.2	Male dominance on the administrative positions affects women's choice of profession in construction fields.					
1.3	Preference for men over women when hiring affect the choice of profession in engineering.					
1.4	Difficult to get women to the supervisory position affect the choice of profession in construction fields.					
1.5	Low number of women in construction fields contributes to the shortage of skills in the profession.					

Section Three (3): Ranking according the most suitable carrier for women in construction industry

Table 3.2: Ranking scale

1 (less suitable)	2	3	4	5	6	7	8	9	10 (more suitable)

Career	Ranking
Quantity surveyor	
Architect	
Site engineer	
QAQC engineer	
Planner	
Project engineer	
Construction manager	
Designer	
Land surveyor	
Site Safety officer	

The questionnaires are constructed based on:

- Literature review
- Pilot study

To accomplish the research study that were reviewed, the topic that will be included in a survey from the previous study about the research's study. A questionnaire were develop after brain storming, consulting, amending and reviewing by using self-administered questionnaire with selected sample from women and men who were working as project team or project manager in the construction industry. The

questionnaire were develop from the literature review which are involved ticking the bullets, ticking the boxes and also ranking the answer based on the most suitable and less suitable based on the respondent opinion.

The questionnaire included of three sections to achieve the aim of the research, as follows:

1. **Section One (1)**: General information about the respondent which is consists, gender, age, marital status, highest level of education, type of organization, discipline, and work experience.

2. **Section Two (2)**: Factor that leads to challenges and risk for women in construction field: factors related to masculinity and feminization of engineering, factors related to sex discrimination and harassment on site, factor related to work environment and work hours, factors related to family responsibilities and factor related to intellectual and physical capability. This section is the purpose to accomplish the research objectives that intend to identify the risk and conflict that encountered by women which are work in construction industry of field.

3. **Section Three (3)**: The most suitable career for women in construction industry. This section is the purpose to accomplish the research objectives that intend to identify an appropriate employment for a woman who works in the construction field or industry and to identify the scope of an appropriate work for women in the construction industry.

3.6 PILOT STUDY

Before collecting the results of the sample, the pilot study was conducted. A trial run for the questionnaire were provided, the wording testing involved, the ambiguous question were identified, the techniques that used to collect data were tested and the effectiveness of standard invitation to respondents were measured. All questionnaire should initially be piloted which are completed by small respondents. The questionnaire

contents, inclusion of the data and the objectives of conducting this study were brief by the piloting process.

3.7 RELIABILITY OF THE RESEARCH

The reliability is the degree of the consistency which measures the attribute; it is supposed to be measured. The less variation an instrument produces in repeated measurements of an attribute, the higher its reliability. Reliability can be equated with the stability, consistency or dependability of a measuring tool. For the most purposes reliability coefficients above 0.7 are considered satisfactory. To measure the reliability of the questionnaire, it can achieve by using Alpha Cronbach's coefficient.

3.7.1 Alpha Cronbach's coefficient

The reliability of the questionnaire between each factor and the mean of the whole questionnaire were measured by using this method which is Alpha Cronbach's coefficient. The value between 0.0 and +1.0 is the normal range of Alpha Cronbach's coefficient value and the higher values reflect a higher degree of internal consistency. The formula that determines alpha is fairly simple and makes use of the item (variable), k, in the scale and the average of the inter-item correlations, r:

$\alpha = k\ r/1+ (k-1)\ r$ (George and Mallery, 2003).

Where:

$0.9 \leq \alpha \leq 1.0$ Excellent

$0.8 \leq \alpha \leq 0.9$ Good

$0.7 \leq \alpha \leq 0.8$ Acceptable

$0.6 \leq \alpha \leq 0.7$ Questionable

$0.5 \leq \alpha \leq 0.6$ Poor

$0.0 \leq \alpha \leq 0.5$ Unacceptable

From this formula, if the numbers of items increase, it will increase the Alpha Cronbach's coefficient value. Besides that, if the average inter-item correlation is low, the alpha will be low also. If the average inter-item correlation is increase, the alpha is increase also. This makes sense intuitively-if the inter-item correlations are high, and then there is evidence that the items are measuring the same underlying construct. This is really what is meant when someone says they have "high" or "good" reliability. The table 3.3 below showed the Alpha Cronbach's coefficient.

Table 3.3: Alpha Cronbach for pilot study

Variable	No of items	Alpha Cronbach
Factors related to masculinity and feminization of construction engineering	5	0.812
Factors related to sex discrimination and harassment on site	9	0.795
Factors related to work environment and work hours	13	0.918
Factors related to family responsibilities	3	0.856
Factors related to intellectual and physical capability	3	0.881
Ranking according the most suitable career for women in construction industry	10	0.814

3.8 DATA PROCESSING AND ANALYSIS

Firstly, the raw that are collected need to be sorted, edited, coded and then entered into computer software which is SPSS programme. To understand and analyse the questions, an appropriate graphical representation and table were obtained. The analysis process that used in this research is ordinal scale.

Ranking or rating data which normally used in the integers by using seconding r descending order is called ordinal scale. In this research, the relative important index and the mean value were used. Besides that, for ranking questions that have agreement levels, the triples scaling was used.

The respondents were asked to give their perceptions in group of questions on five-point scales, which reflect their assessment regarding the factors that leads to challenges and risks for women who work in the construction industry of fields.

CHAPTER 4

RESULT AND DISCUSSION

4.1 INTRODUCTION

This chapter presents about the quantitative findings of the research. The purposes of this research are to identify the risk or conflict that encountered by women who work in the construction field and industry depends on the factor that encountered. Then, to identify an appropriate employment for a women who work in the construction field or industry and lastly, to identify the scope of an appropriate work for women in the construction industry by rank the most suitable career for women in construction industry.

Besides that, this research is designed to answer the three section research questions by performing descriptive analysis to measure the background information of the respondents followed by the reliability of the variables in this research. The mean is used to analyse the degree of agreement of the factor that leads to risk and challenges for women at construction industry. Not only that, the mean also used to rank the suitable career for women in construction industry.

4.2 QUESTIONNAIRE DISTRIBUTION

The closed ended questionnaires were distributed to the targeted respondents in order to collect data for analysis. The targeted respondents of this study are project manager or projects who are employed by Construction Company that categorized from Kuala Lumpur, Pahang, Penang and Johor. The questionnaire consists of three sections

which are Section One, Section Two and Section Three. Section One is conducted to collect general information of respondents. Meanwhile, Section Two is designed to examine the degree of agreement of the factors that leads to challenges and risks for women who working in the construction industry and lastly, Section Three is designed to rank the most suitable career for women in the construction industry.

As stated in chapter three, the population of this research is 100 but only 68 companies available to be respondents in this research because the other company, currently they have no projects. The respondents in this research consist of project manager or project team who are employed in the construction company. 100 questionnaires were distributed to the company but only 68 companies answer and response the questionnaire. According to Cavana et al. (2001), return rate of questionnaire that exceeds 30 percent and above will be receives and acceptable. Table 4.1 showed that 100 questionnaires were distributed using email and only 68 responded, which indicates a return rate of 68% which is considered acceptable and it also appropriate for statistical analysis research.

Table 4.1: Distribution of questionnaire

Data collection method	Total distributed	Total responded	Return rate (%)
Email	100	68	68
Total	100	68	68

4.3 RESPONDENT'S PROFILE

Information on respondent's profile is obtained from Section One of the questionnaire which contained demographic questions. This section consists of six questions to determine the profile respondents. However, the demographic questions are not significant to the research questions, but it is important to know the background of the respondents. In order to identify the respondent's background, demographic analysis was carried out through descriptive statistics.

Table 4.2: Respondent's profile

Variable	Frequency	Percentages (%)
Gender		
Male	36	52.9
Female	32	47.1
Age		
Less than 20 years	0	0
21 to 24 years	20	29.4
25 to 29 years	18	26.5
30 to 34 years	7	10.3
35 years+	23	33.8
Marital status		
Single	32	47.1
Married	36	52.9
Level education		
SPM	2	2.9
Diploma	21	30.9
University-Bachelor's Degree	35	51.5
Master's Degree	10	14.7
Type of organization		
Consultant firm	10	14.7
Construction company	37	54.4
Developer company	4	5.9
Government	12	17.6
Oil and gas	0	0
Other	5	7.4
Discipline		
Quantity surveyor	17	25.0
Construction management	5	7.4
Project management	7	10.3

Architecture	0	0
Civil engineering	32	47.1
Designing	1	1.5
Other	6	8.8
Work experience		
Less than 1 years	6	8.8
At least 1 years but less than 3 years	13	19.1
At least 3 years but less than 5 years	17	25.0
At least 5 years but less than 10 years	10	14.7
10 years or more	22	32.4

According to Figure 4.1, the percentage for male more than female which are male is about 36 persons and 32 are female from all respondents.

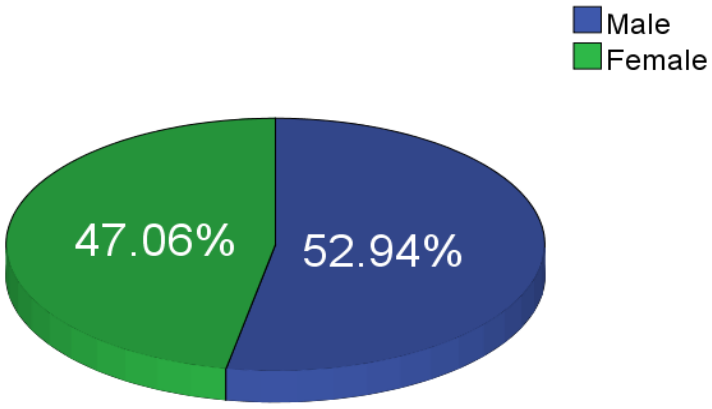

Figure 4.1: Gender

According to Figure 4.2, the highest percentage of respondent's age is 35 years and above which are 33.82% with frequency number of 23. Next, there is having 20 respondents who are age between 21 to 24 years with percentage about 29.41%. Then, there is having 26.47% with frequency of 18 from age between 25 to 29 years. Last but not least, there 7 respondents from age 30 to 34 years with only 10.29%.

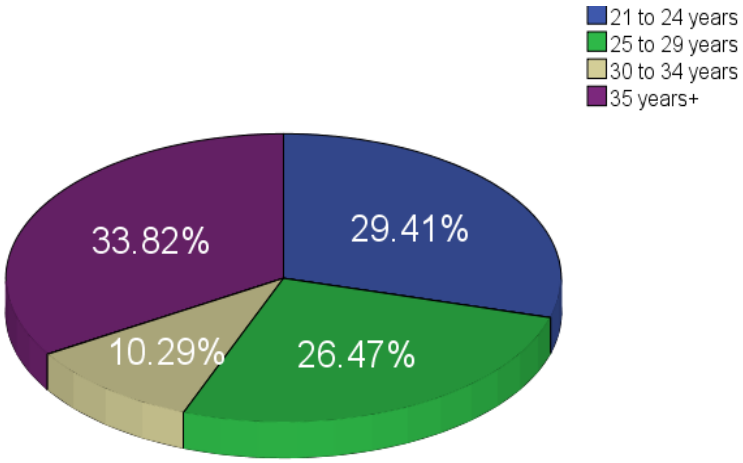

Figure 4.2: Age of respondent

Figure 4.3 showed that marital status of respondents which are married is more than single marital status of respondent where marital status of married respondents is 52.94% with 36 persons and 47.06% from single respondent with 32 persons

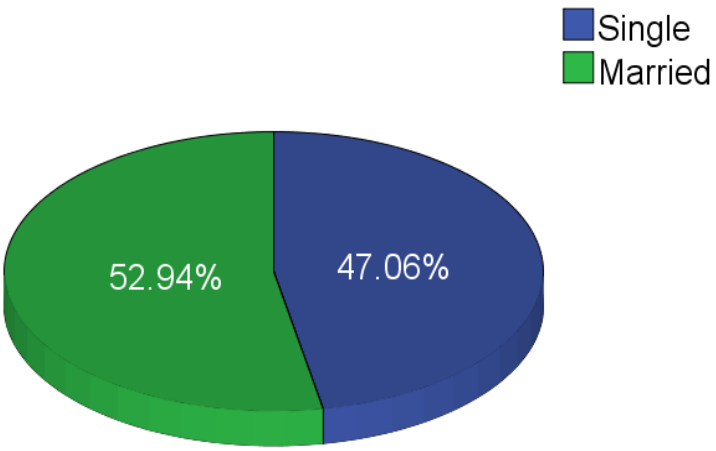

Figure 4.3: Marital status

According to Figure 4.4, the highest percentage of respondent's level of education is 51.47% that have university-bachelor's degree holder with 35 frequencies. Then, 30.88% respondents from diploma graduated with 21 persons. Next, respondents from master's degree graduated with 14.71% with 10 people and lastly, the lowest percentage of respondent's level of education is 2.94% which have SPM with 2 frequencies.

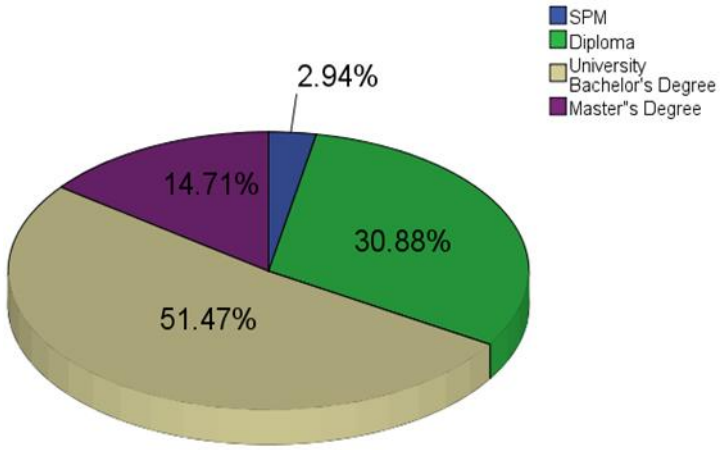

Figure 4.4: Level of education

Figure 4.5 above shows that the highest percentage of type of organization's respondent is 54.41% with 37 frequencies that are from Construction Company where the lowest percentages of respondent's type of organization are 5.88% that from developer company with 3 people only. Then, 12 respondent with 17.65% from government and 14.71% respondents from consultancy firm where it only 10 people. Last but not least there is having 5 people from other organization which is come from government Link Company and semi Government Company with only 7.35%.

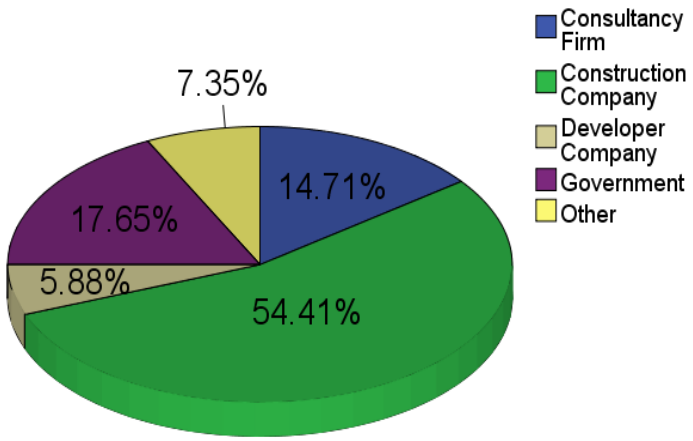

Figure 4.5: Type of organization

According to the Figure 4.6, it shows that the highest percentage is 47.06% of respondents from civil engineering discipline with 32 people. Next, there having 17 respondents from quantity surveying discipline with 25% and 10.29% of respondents from project management discipline. Then, 6 people of respondent came from the other discipline with 8.82%. Besides that, the percent of respondents from construction management is 7.35% with having 5 person and last but not least, the lowest persentages is 1.47% of respondent with only 1 respondents from designing discipline.

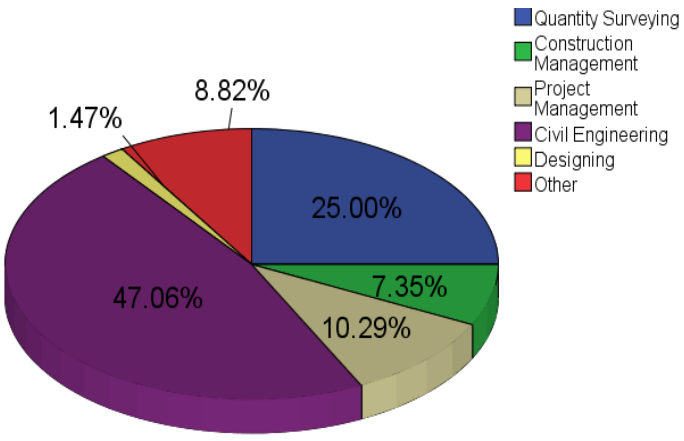

Figure 4.6: Discipline

Referring to Figure 4.7, number of year curreny position has the highest respondents with number of 22 or 32.35% which have 10 years or more experience in current position. Next, there are having 17 respondents that have at least 3 years but less than 5 years experiences in their current position with 25%. Then, 19.12% of respondents have at least 1 year but less than 3 years experinence with 13 people and 10 of respondent that have at least 5 years but less that 10 years experience in current position with 14.17%. Last but not least, respondents who have less than 1 year experiences in current position are only 6 people with 8.82%.

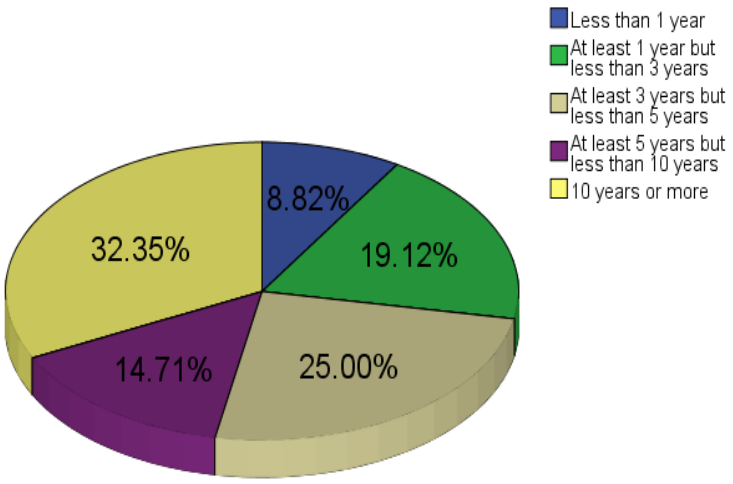

Figure 4.7: Number of years in current position

4.4 REALIBILITY ANALYSIS

To ensure the reliability of the items used to measure the variables, reliability test was conducted by using Alpha Cronbach Model. This model to ensure the inter-item consistency reliability of the items, which indicates the homogenenity of the item (Cavana et al. 2001). Internal consistency concerns the scope to which items on the test or instrument are measuring the same thing. For example, the researcher are developing a test to measure organizational commitmnet they should determine the reliability of each item. According to Cronbach (1951), if the individual item are highly interrelated with each othet they can be highly confident in the reliability of the entire scale. Next, according to Yusoff (2012), the value of Alpha Cronbach coefficient value is within 0.5 and 0.7 is represented as acceptable value or level of internal consistency of the

variables. While, if the value is below 0.5, the value considered to be unacceptable. The closer the Alpha Cronbach coeeficient to 0, the greater the internal consistency realibility (Sekaran at.al, 2003). The Alpha Cronbach values of the variable in this research are shown in Table 4.3. the analysis in this research stated that Alpha Cronbach values are between 0.795 to 0.918 and all the factors that leads to risk and challenges and also ranking career were under acceptance.

Table 4.3: Realibity test

Variable	No of items	Alpha Cronbach
Factors related to masculinity and feminization of construction engineering	5	0.812
Factors related to sex discrimination and harassment on site	9	0.795
Factors related to work environment and work hours	13	0.918
Factors related to family responsibilities	3	0.856
Factors related to intellectual and physical capability	3	0.881
Ranking according the most suitable career for women in construction industry	10	0.814

According to the Sekaran (2003), the acceptable range fro Alpha Cronbach is above than 0.6 and if it less than 0.6 it considered to be poor. From the table above, the variables used in this research are acceptable as the Alpha Cronbach because the value declared more than 0.7. In this research, there is no item deleted because it already in a range of acceptable value of Alpha Cronbach.

4.5 FACTOR THAT LEADS TO THE CHALLENGES AND RISK FOR WOMEN WHO WORK IN THE CONSTRUCTION INDUSTRY

The objective of this research is to identify the risk or conflict that encountered by women who work in the construction industry. This is to help all women to always be prepared when they work in this construction industry. This section contains five

factors that lead to risk for women while working in the construction industry. There are five main factors that implemented, which are:

I. Factors that related to masculinity and feminization of construction industry
II. Factors that related to sex discrimination and harassment on site
III. Factors that related to work environment and work hours
IV. Factors related to family responsibilities
V. Factors related to intellectual and physical capability

4.5.1 Comparison between female and male perspective of factors that related to masculinity and feminization of construction industry

The table below showed the mean and rank on the comparison option between female and male based on the masculinity and feminization factor. According to Table 4.4, both female and male respondents perceive 'preference for men over women when hiring affect the choice of profession in construction industry' are the serious factor that related with masculinity and feminization of construction industry that were shown in the table below. Table 4.4 show that highest means among the sub factors where male option with 4.00 value of mean and female option with 2.97 value of mean for man preference for men over women when hiring affect the choice of profession in construction industry.

According to Lindsay & Miescher (2005), the tendency toward functionalism in social theories of gender there has been often which are gender as self-contained, self-producing system and explaining every element in term of its functions. Other than that, men were seeing had a power or strong physical compared to women which men can adapt it in construction industry. Then, from the table women choose 'low number of women in construction industry contributes to the shortage of skills in the profession' as the second choices with 2.81 value of mean because the EOC (2005) observed that under-representation of women in sectors experiencing skills shortages is exacerbating these shortages. The EOC stated that breaking gender barriers will help solve skill shortages. In construction, men skills will be more advantages compared to women because men have many skills that they can use it in the construction industry. Besides

that, the second choice that men agreed with the sub-factor is ‘male dominance on construction industry prevents women from choosing construction industry’ with mean 3.58. Employers prefer to keep the organization male-dominated even for tasks such as cost estimation, mapping and documentation. Women were excluded while hiring. Employers’ prejudice that construction is unsuitable for women is manifest in the recruitment process where employments are often informal and through personal contacts (Dainty, et al., 2000).

There is a common opinion between men and women where they choose ‘difficult to get women to the supervisory position affect the choice of profession in construction industry’ as the third choice where mean for women is 2.78 and mean for mean is 3.58. At construction site, majority of the worker are dominated by men so they will not follow instruction from women. From men perspective, they agreed with this sub-factor because men supervision will be stricter in giving instruction compared to women.

Women choose ‘male dominance on construction industry prevents women from choosing construction industry’ as a fourth option with mean 2.69 where majority of the construction company will prefer male employment compared to women at site construction so, women will be less attractive to compete in construction industry. Then, men prefer ‘low number of women in construction industry contributes to the shortage of skills in the profession’ as fourth choices with 3.22 value of mean. This is because usually women have a little skill about construction compared to men where they have more skills about work in construction industry.

Lastly, perspective from women and men about ‘male dominance on the administrative positions affects women’s choice of profession in construction industry’ were chosen as a fifth opinion which women with mean 2.25 and men with mean 3.06 where it is the low ranking. This is because women prefer work at technical office or management department compared to work at site construction and men give the opinion about this sub-factor where women are more prefer not to work at construction site because it will be more difficult for women.

Table 4.4: Female and male option towards factors that related to masculinity and feminization of construction industry.

Variable	Female		Rank	Male		Rank
	Mean	Std. Dev		Mean	Std. Dev	
Preference for men over women when hiring affect the choice of profession in construction industry	2.97	1.231	1	4.00	0.862	1
Low number of women in construction industry contributes to the shortage of skills in the profession	2.81	1.148	2	3.22	1.149	4
Difficult to get women to the supervisory position affect the choice of profession in construction industry	2.78	1.070	3	3.58	1.156	3
Male dominance on construction industry prevents women from choosing construction industry	2.69	1.061	4	3.58	1.156	2
Male dominance on the administrative positions affects women's choice of profession in construction industry	2.25	0.842	5	3.06	0.955	5

4.5.2 Comparison between female and male perspective of factors that related to sex discrimination and harassment on site

According to the Table 4.5, it showed that the highest mean that were choose by the female and male respondents is 'women fit administrative work more than work at sites' with value of mean is 4.03 from male option and 3.38 from female option. Based on the Fielden et al. (2000) revealed that women are discouraged from applying for job positions within the construction industry because of the behaviours of people who working at construction site through words and deeds are often rough and an aggressive nature and the tolerances on site also not very high. This result agreed with the result of Arslan and Kivrak (2004) where he found that female civil engineer stated they prefer to work in technical office rather than construction sites. It also agreed with Madikizela (2008) that women were more suited to administrative that productive function on sites.

From the table, the result shows that 'discrimination reflect negative image when women choices her career' at the sixth place where it was agreed by women and men with mean 3.00 from women and 3.14 value of mean from mean perception. Women without a comprehensive knowledge of the cultural encouragements on construction careers soon become displeased with the discrimination and the lack of opportunity for themselves. Lastly, it shows that women are not suitable for working in construction industry is the opinion from men because it women will subjected to the harassment on site.

Table 4.5: Female and male option for the factors that related to sex discrimination and harassment on site.

Variable	Female		Rank	Male		Rank
	Mean	Std. Dev		Mean	Std. Dev	
Women fit administrative work more than work at sites	3.38	1.100	1	4.03	1.133	1
Pregnant engineering women who work in the workplace discrimination suffered the highest percentages	3.31	0.991	2	3.72	1.059	3
The man can do everything as well as for women	3.28	0.991	3	3.75	0.996	2
Women in the workplace are respected as a man	3.16	0.920	4	3.33	1.014	5
Male discrimination against women refers to their belief that the role of women confined to the home and rising	3.15	1.008	5	3.06	1.068	7
Discrimination reflect negative image when women choice her career	3.00	1.047	6	3.14	0.990	6
Man has experienced more than women in construction fields	2.88	1.212	7	3.47	1.230	4
Engineering women subjected to harassment in the workplace	2.69	1.030	8	2.86	1.073	9
Working women in the field of construction does not have opportunity to develop the same as her male	2.66	1.096	9	2.94	1.218	8

4.5.3 Comparison between female and male perspective of factors that related to work environment and work hours

A comparative analysis of perceptions of both female and male respondents on the factors that related to work environment and work hours reveals that 'long working hour's effect on women to the choice profession in construction industry' in Table 4.6 is the factor for women who don't want work in construction industry. The highest mean among female respondents is 3.44 and from male respondents are 3.92 that agreed with this factor. According to Arslan and Kivrak (2004) mentioned that in his survey where women will not stay overnight at site and also do not work nightshift and weekends.

Besides that, the same perception from women and men will be discussed for this factor where 'an irregular working day is not appropriate for women' were ranked at the 10^{th} place where women with 2.84 mean and men with 3.56 mean. This is because they need to have quality time with family and also have the responsibilities for her children. Therefore, as a mother they need to have a specific time where they will go back home after finish working hours. They will not stay for a long time at workplace and also they will not do an extra time for working at the construction site.

Lastly, the lowest mean will be discussed among women and men perception. As we can see from the table the lowest mean among women chosen is 'travel between work sites is not suitable for women' with mean of 2.34. This sub-factor is not so important because company will provide the transportation for travels between work site and home or site office to work site. Besides that, they also can stay only at the work site if they don't want to travel other place to work site. From men chosen, the lowest mean is 'chance of women to get supervisory position in the workplace is unfair' with 3.11 mean. Sometimes women unable to get the supervisory position because male worker will not follow the instruction from women supervisor so there will be an unfair for women to get the supervisory position.

Table 4.6: Female and male option for the factors that related to work environment and work hours

Variable	Female		Rank	Male		Rank
	Mean	Std. Dev		Mean	Std. Dev	
Long working hours effect on women to the choice profession in construction industry	3.44	0.840	1	3.92	0.937	1
Women less receptive to work in an unsafe environment than men	3.28	0.958	2	3.78	0.959	3
Inadequate service facilities such as toilets, ablution and place of prayer	3.16	0.954	3	3.53	1.055	11
Some things are related to the nature of women not suitable for work in the field of construction	3.13	1.040	4	3.75	1.025	6
Some materials and tools used in construction fields make a problem	3.09	1.174	5	3.78	0.866	5
Chance of women to get supervisory position in the workplace is unfair	2.94	1.045	6	3.11	1.141	13
Evening work is not appropriate for	2.88	0.976	7	3.50	1.108	12
Limited number of leave days affects the choice of construction	2.87	0.976	8	3.61	1.050	7
An irregular working hours is not appropriate for women	2.87	1.008	9	3.61	0.934	8
An irregular working day is not appropriate for women.	2.84	0.987	10	3.56	1.054	10
Women are less likely to work in high temperatures weather	2.84	1.081	11	3.89	1.036	2
Harsh working environment is not suitable for working women	2.69	0.931	12	3.86	0.931	3
Travels between work sites are not suitable for women	2.34	0.701	13	3.61	1.103	9

4.5.4 Comparison between female and male perspective of factors that related to family responsibilities

According to Table 4.7, there were comparison perspectives between female and male respondents about the factors that related to family responsibilities where the highest mean from female respondents is ‘low concentration of women and their productivity at work when they are married and have children’ with 2.78 value of mean and highest mean from male respondents is ‘women with young children cannot work at

site' with 3.33 value of mean. (Lingard and Francis, 2002) stated that job strains undergone by construction professionals are destructive to their personal relationship. From that, we can see that both men and women need to balance the difficulties of work and home life where women still endure the primary responsibility for domestics' duties in most household and also responsibilities for family as a mother (Higgins et al, 2000).

From the table 4.7, women and men choose 'women working in construction fields adversely affect family stability' at the third option where it have the lowest mean which is women with 2.69 mean and men with 3.11 mean. Family responsibilities is the main issues for women who work in construction industry, it provides a useful means to detract attention from the organization culture barriers that women face in many working environments. It locates the problem evenly with the women (Mnganga, 2003).

Table 4.7: Female and male option for factors that related to the family responsibilities

Variable	Female		Rank	Male		Rank
	Mean	Std. Dev		Mean	Std. Dev	
A low concentration of women and their productivity at work when they are married and have children	2.78	1.128	1	3.33	0.956	2
Women with young children cannot work at site	2.78	1.070	2	3.44	1.107	1
Women working in construction fields adversely affect family stability	2.69	0.965	3	3.11	1.063	3

4.5.5 Comparison between female and male perspective of factors that related to intellectual and physical capability

Table 4.8 showed the comparative analysis of perceptions of both female and male respondents on the factor that related to intellectual and physical capability in construction industry reveal that 'women over forty years old are not appropriate for work in your field as men in the same age' are the factor that related with intellectual and physical capability. It shows that the highest mean from female respondents is 3.00 while from male respondents is 3.81. This result agreed with Madikizela (2008) that stated in his study where agreement that women are not as physically capable as men

have. In other meaning, older women were less suited to the physical job than men of equal age.

The ‘women physically unsuited to allocate construction fields as men’ were ranked by women and men at the second option. Masculinity refers to a society in which passionate gender roles are distinctive. Men are supposed to be emphatic, tough and focused on material success. Women are supposed to be more modest, tender and concerned with the quality of life. The preconception that women are physically not strong to endure determined tasks continues to work for. Clarke al. (2004) concluded that when women entering the gender segregated occupations, prospective women need to prove their capability regardless of their experiences and knowledges.

Table 4.8: Female and male option for factors that related to the intellectual and physical capability

Variable	Female		Rank	Male		Rank
	Mean	Std. Dev		Mean	Std. Dev	
Women over forty years old are not appropriate for work in your field as men in the same age	3.00	1.164	1	3.81	1.009	1
Women physically unsuited to allocate construction fields as men	2.87	1.100	2	3.67	1.042	2
Women take more vacation than men	2.72	1.023	3	3.28	1.031	3

4.5.6 Comparison between female and male perspective on ranking of career that suitable for women in construction industry

According to Table 4.9, it showed that have a comparison of perspective on female and male respondents towards career ranking that suitable for women in construction industry. Both the female and male respondents perceive ‘designer’, ‘quantity surveyor’, ‘planner’, and ‘architect’ as the four most career that suitable for women in construction industry. The career shows that the highest mean scores from female’s respondents is 7.41 value of mean from career as a designer, then followed by career as a quantity surveyor with 7.16. Next is career as a planner with 6.97 value of mean and lastly, career as architect with 6.53 value of mean. From male respondents,

they choose architect as the first career that suitable for women in construction industry with 7.83 value of mean, followed by career as a quantity surveyor with 7.61 value of mean, then designer at the third place of career that suitable for women with 750 mean and lastly, planner with 6.50 value of mean of career that suitable for women in construction industry.

This is because all the four career is required women no need to work at construction site where if work at construction site there will be long hour work and also the work time is not specified where if work at construction site they will need to work overtime. Besides that, construction work is hazardous by nature and employees which they will expose too many dangers when working at construction site. This is agreed with Chilse and Haupt (2010) with women concern about their health and safety when enter the construction trades.

Table 4.9: Female and male option on ranking of career that suitable for women in construction industry

Variable	Female		Rank	Male		Rank
	Mean	Std. Dev		Mean	Std. Dev	
Designer	7.41	2.917	1	7.50	2.372	3
Quantity Surveyor	7.16	3.174	2	7.61	2.643	2
Planner	6.97	2.307	3	6.50	2.287	4
Architect	6.53	2.840	4	7.83	2.261	1
Project Engineer	5.81	2.375	5	4.50	2.158	6
QAQC Engineer	5.50	2.688	6	5.67	2.056	5
Site Safety Officer	4.81	3.146	7	3.83	2.635	8
Land Surveyor	4.72	3.029	8	2.94	2.216	10
Site Engineer	4.50	2.272	9	4.00	2.586	7
Construction Manager	4.31	2.533	10	3.58	2.430	9

4.5.7 Finalized option of factors that related to masculinity and feminization of construction fields

The Table 4.10 showed the mean and rank of the factors that related to masculinity and feminization of construction fields. This factor consists of five sub factors. In this part, only the highest rank will be discussed that is the factor which has high value of mean. According to Table 4.10 and Figure 4.8, it showed the highest mean of sub factors that related to masculinity and feminization of women which is 3.5147 and was rank in the first place by the respondents as the most challenges factor if related with masculinity and feminization of construction field. The image of construction is a male-dominated industry where it requiring strong physical strength and tolerance for outdoor conditions, extreme weather and also bad language that were cited by Agapiou (2002). When it comes to hiring work, men will be preferred compared to women because construction industry it a tough field where always need to be prepared for all situation that will happen. Other than that, being heavy, dirty and masculine is the image of the construction field if work at site construction, while if a women want to work at the construction field especially site construction, they need to be more tough, aggressive and also masculine which this were wrote by Badekale (2003). At the same time, most men do not know how to treat women in construction industry and they were frequently embarrassed that were stated by Greed (2000).

Table 4.10: Mean and rank of factors that related to the masculinity and feminization of women of construction field.

8. Factors that related to masculinity and feminization of construction fields	**Mean**	**Rank**
a) Male dominance on construction fields prevents women from choosing construction fields	3.1618	3
b) Male dominance on the administrative positions affects women's choice of profession in construction fields	2.6765	5
c) Preference for men over women when hiring affect the choice of profession in construction fields	3.5147	1
d) Difficult to get women to the supervisory position affect the choice of profession in construction fields	3.2059	2
e) Low number of women in construction fields contributes to the shortage of skills in the profession	3.0294	4

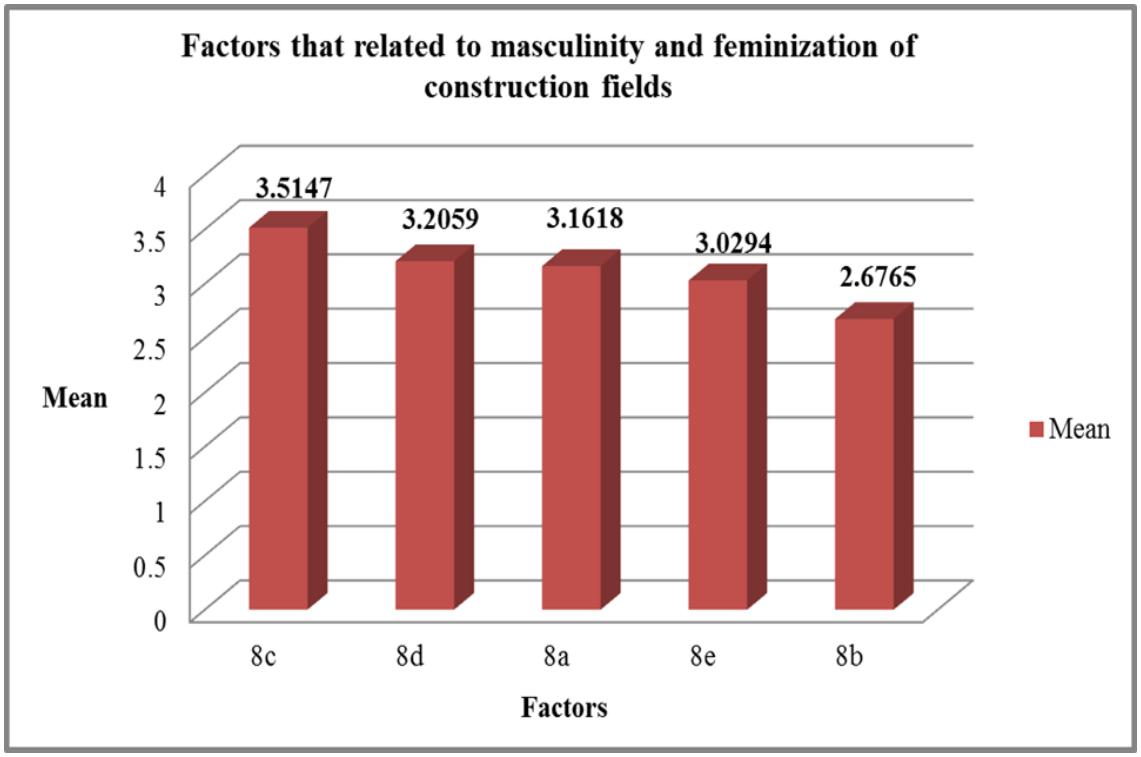

Figure 4.8: Factors that related to the masculinity and feminization of women of construction field

4.5.8 Finalized option of factors that related to sex discrimination and harassment on site

The second factor that leads to challenges and risk of women of construction industry is sex discrimination and harassment on site. This factors consists of nine sub factors that the reason why not many women working in this construction industry, only the most essential strategy will be discussed.

Referring Table 4.11 and Figure 4.9, it showed that the highest mean of the factors is women fit administrative work more than work at site with 3.7206. When a women entering or working in the work field that were dominated by male, women will be subjected to sex discrimination and also harassment on site especially in construction industry. This is because women are often barred or discourage from entering construction industry by the discrimination issues. This issue were showed by Lauer

(2010) where the discrepancies among hiring women in construction industry were happened.

Table 4.11: Mean and rank of the factors that related to sex discrimination and harassment on site.

9. Factors that related to sex discrimination and harassment site	**Mean**	**Rank**
a) Discrimination reflect negative image when women choice her career	3.0735	7
b) Engineering women subjected to harassment in the workplace	2.7794	9
c) Working women in the field of construction does not have opportunity to develop the same as her male	2.8088	8
d) Women in the workplace are respected as a man	3.2500	4
e) Man has experienced more than women in construction fields	3.1912	5
f) Women fit administrative work more than work at sites	3.7206	1
g) The man can do everything as well as for women	3.5294	2
h) Pregnant engineering women who work in the workplace discrimination suffered the highest percentages	3.5294	3
i) Male discrimination against women refers to their belief that the role of women confined to the home and rising	3.0882	6

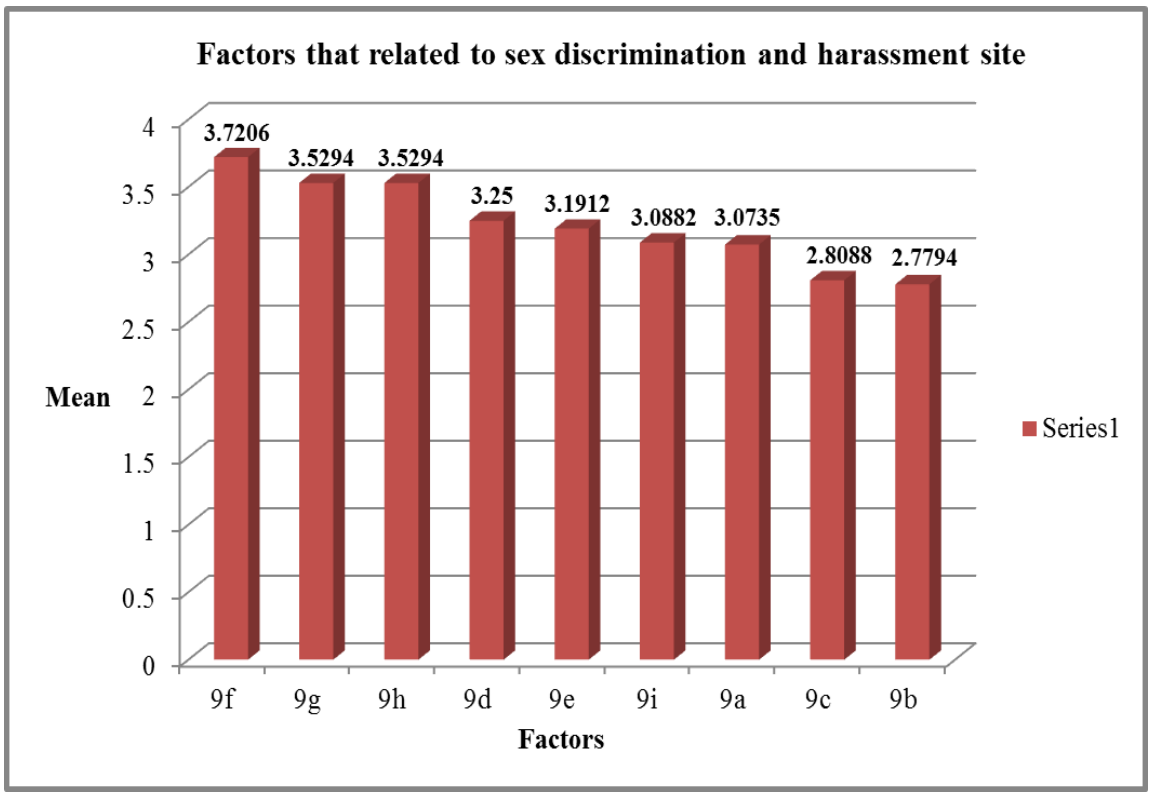

Figure 4.9: Factors that related to sex discrimination and harassment on site.

4.5.9 Finalized option of factors that related to work environment and work hours

Next factor is related with work environment and working hours. Table 4.12 and Figure 5.0 was shown the mean and ranks among 13 sub factors. Long working hour's effect on women to the choice profession in construction fields was ranked in the first position by the respondents with the mean value of 3.6167. Safety and health is the most concern among women who were entering the construction trades that were cite by Chileshe and Haupt (2010). Other than that, women will choose the construction industry as a career if it will provide good working conditions, have sense of responsibility and is challenging that were mentioned by Warren (2003).

Radhlinah and Jingmond (2011) and Fielden et al. (2000) argued that besides poor prospects and poor job conditions such as extreme weather and unsociable working hours, the construction industry also suffers from poor image which makes

both men and women reluctant to work in it. The effect of the adverse working conditions associated with the construction industry on female retention, especially its long hours, has been documented in previous studies (Florence and Lena, 2008; Dainty and Lingard, 2006; Greed, 2000).

Table 4.12: Mean and rank of factors that related with work environment and working hour

10. Factor that related to work environment and work hours	Mean	Rank
a) Some things are related to the nature of women not suitable for work in the field of construction	3.4559	4
b) Some materials and tools used in construction fields make a problem for women	3.53	3
c) Inadequate service facilities such as toilets, ablution and place of prayer	3.3529	6
d) Women less receptive to work in an unsafe environment than men	3.54	2
e) Chance of women to get supervisory position in the workplace is unfair	3.03	12
f) Women are less likely to work in high temperatures weather	3.40	5
g) Travels between work sites are not suitable for women	3.01	13
h) Harsh working environment is not suitable for working women	3.31	7
i) Long working hours effect on women to the choice profession in construction fields	3.6176	1
j) Evening work is not appropriate for women	3.21	10
k) An irregular working hours is not appropriate for women	3.26	8
l) An irregular working day is not appropriate for women.	3.22	11
m) Limited number of leave days affects the choice of construction fields as a professional for women	3.26	9

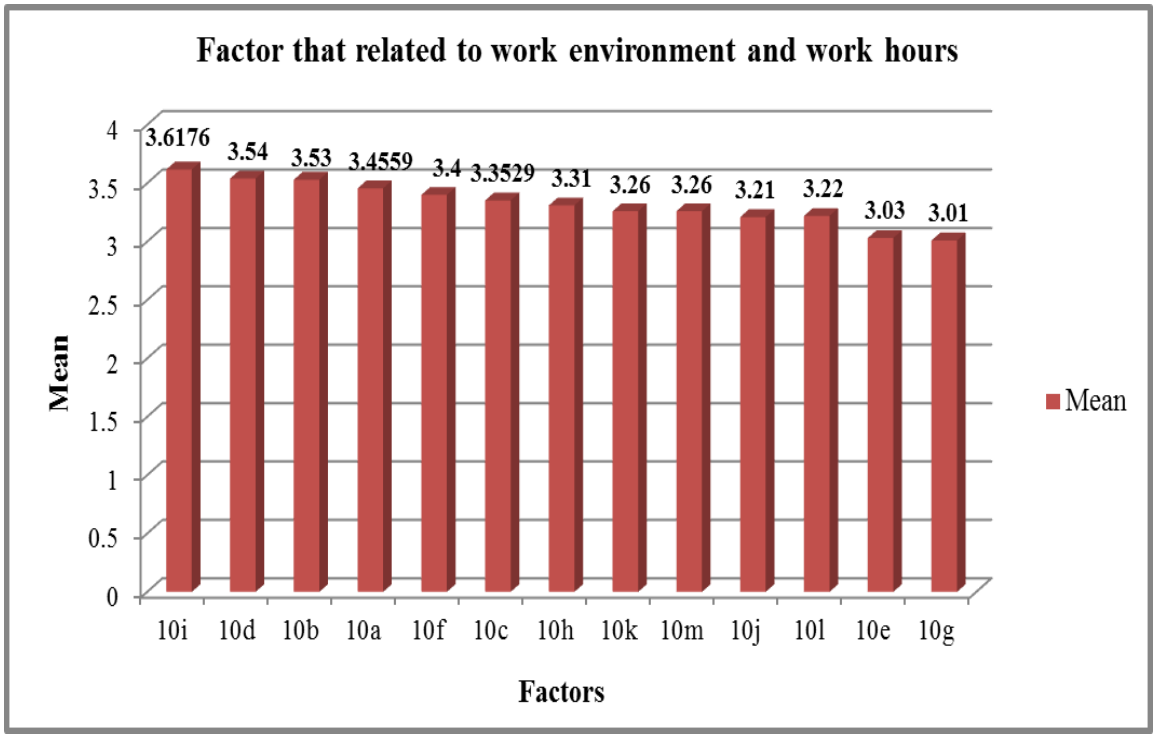

Figure 5.0: Factors that related with work environment and working hours

4.5.10 Finalized option of factors that related to family responsibilities

The Table 4.13 and Figure 5.1 were shown the mean and ranks of the factor that leads to challenges and risk for women in construction industry. This factor consists of 3 sub factors and as we can see women with young children cannot work at site get the highest mean with 3.13 which are ranked by the respondents. This is because women are very important in family responsibilities which as a role model to her children. As women, they all have responsibilities toward family and cannot just focus only on work. A child needs mother's love and intention. So, women with young children cannot work at site because there is no limit time if work at site construction. They need to focus on work progress of the project at the site construction. Family responsibilities and job balancing is the most important criteria and consideration that proved by Ferquson and Sharples (1994) when women have a profession in work especially in construction industry.

Table 4.13: Mean and rank of the factor that related to family responsibilities

11. Factors that related to family responsibilities	Mean	Rank
a) Women with young children cannot work at site	3.13	1
b) A low concentration of women and their productivity at work when they are married and have children	3.07	2
c) Women working in construction fields adversely affect family stability	2.91	3

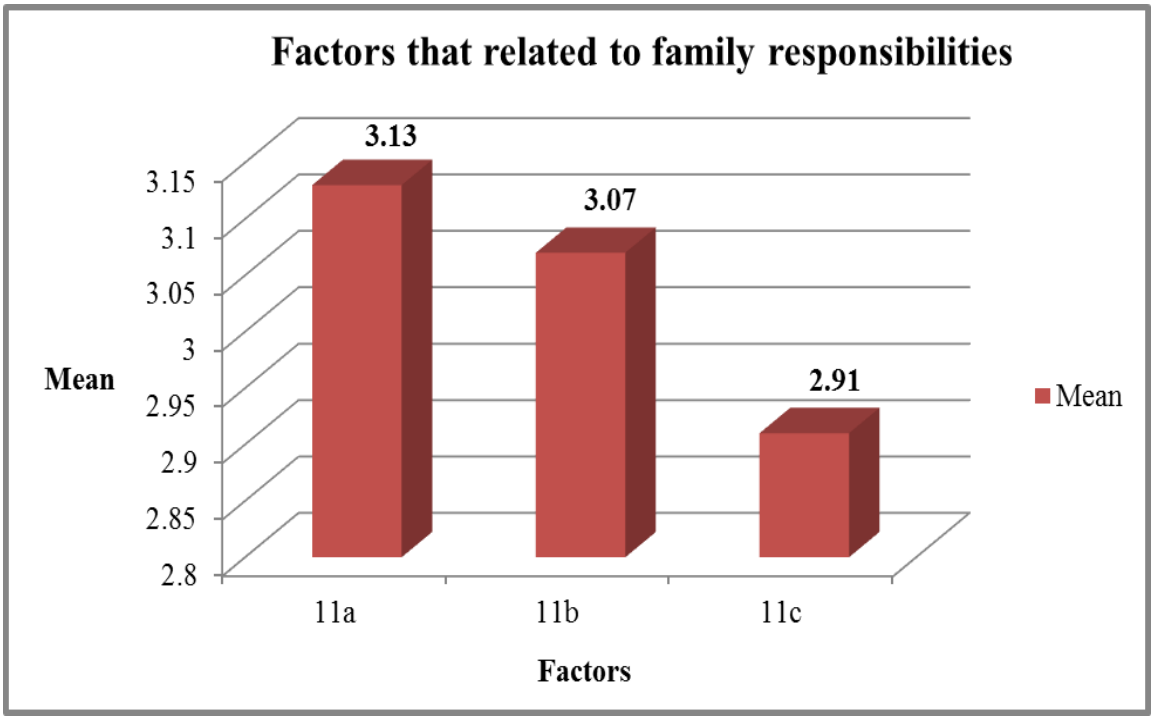

Figure 5.1: Factor that related to family responsibilities

4.5.11 Finalized option of factors that related to intellectual and physical capability

The table below shown the mean and ranks of the factors that leads to challenges and risk for women. This is the last main factor of the risk and challenges that encountered for women in construction industry which are consist of three sub factor. In this part, only the factor that ranked the highest will be discussed that is the factor that has the highest value of mean.

By referring at the Table 4.14 and Figure 5.2, the highest mean in the factor that related wit intellectual and physical capability is a woman over forty years old are not appropriate for work in construction industry as men in the same age with 3.43. Most women claimed that they need have a strong physical if they want to be on the building site and majority of all women agreed with that and think if they can cope with physical part job that were stated by Aulin and Jingmond (2011). This is because when working at building site need a tough physical and also mentality must be always be prepared to solve a problem that encountered.

Table 4.14: Mean and rank of the factor that related with intellectual and physical capability

12. Factors that related to intellectual and physical capability	Mean	Rank
a) Women over forty years old are not appropriate for work in your field as men in the same age	3.43	1
b) Women physically unsuited to allocate construction fields as men	3.29	2
c) Women take more vacation than men	3.01	3

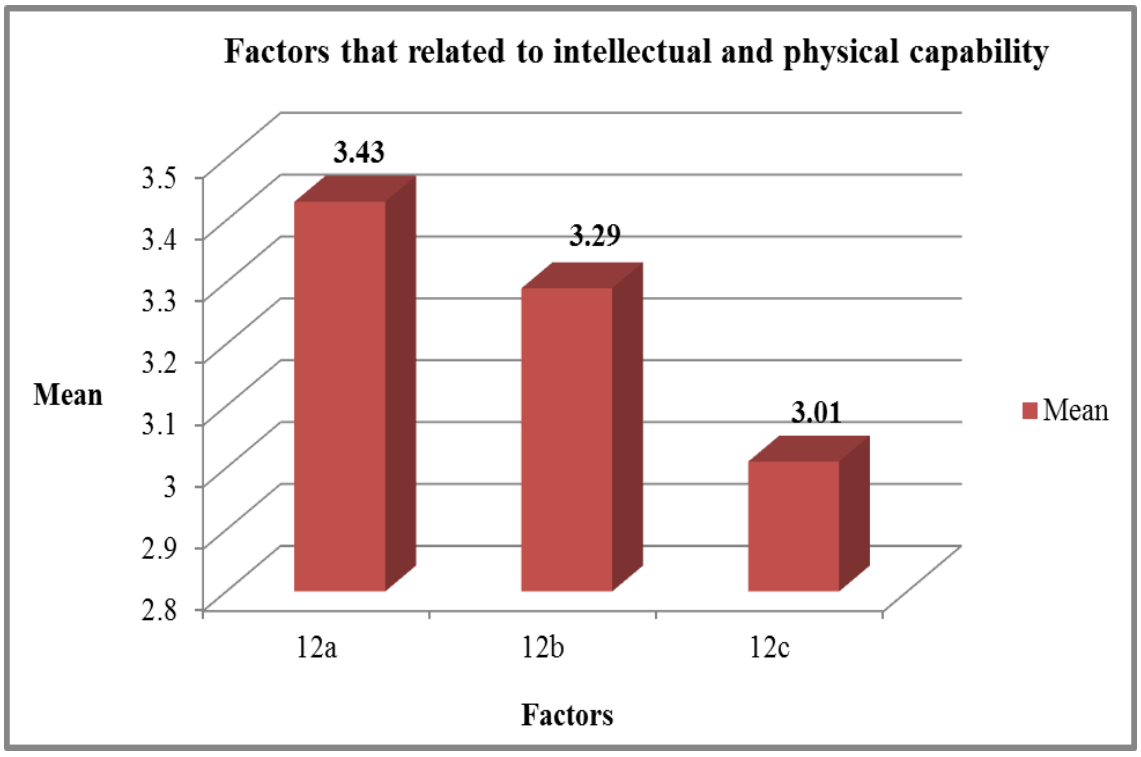

Figure 5.2: Factors that related to intellectual and physical capability

4.5.12 Finalized option of comparison between all group of ranking of factors that leads to challenges and risk of women in construction industry

Table 4.15 and Figure 5.3 shows the comparison of results of all five factors that leads to challenges and risk for women in construction industry according to the mean of each factors. In this part, only the most important and have the highest mean value factors that will be discussed.

Table 4.15 and Figure 5.3 showed that the 'factors that related to work environment and work hours' has the highest mean which is 43.1755 and it was ranked in the first factors that leads to challenges and risk for women in construction industry by the respondents. 13 sub factors consist in this factor which can refer to Table 4.9. As we know, when we are working in the construction site, as an employees or worker, we will be exposed by dangers which are hazardous for us. By referring to Chileshe and Haupt (2010) that cited where women are more concerns about safety and health at the construction site. While it is argued that there is a general perception that construction work is not conducive for women, Haupt and Madikizela (2004) various legislations do not consciously ensure that women feel safe and protected while working on construction sites and these have either impeded or deterred females' career aspirations (Julia and Donna, 2009).

Besides that, the other problem that were faced by employees and worker which are work at construction is about the temporary sanitary facilities where it usually unisex when it comes to site construction. It also generally not well maintained and often without privacy. Other than that, long working hour where if at the site construction have not finish the work or progress yet, they cannot go back home until the work is finished. Based on Arslan and Kivrak (2004) in his survey, women will not stay overnight at sites and also will not work at nightshifts and weekends. They prefer to work in technical office rather than construction site were stated by the female civil engineering.

The second factors that were ranking by the respondents is 'factors that related with sex discrimination and harassment on site' with the mean value is 28.9705.

Women were discriminated in many ways either being given marginal roles or being harassed in many forms by the male workers. Among the reasons for this discrimination may simply be due to the fact that construction is a male's traditional job (Barnabas et al., 2009). Thus, for example, when women enter a male-dominated workplace sexual jokes and crude language may become overt rather than repressed. In some setting, the physicality of the workplace can border on sexual harassment (Watts, 2007).

'Factors that related to masculinity and feminization of construction fields' were ranked at the third place by the respondents. The mean value of these factors is 15.5883. According to action research undertaken by Fielden et al. (2001), the participants complained that the construction industry has a male-dominated, macho image symbolised by 'the builders bum' or 'Stratford smile'. Besides that, there were assumptions that women are physically not strong to endure heavy work. When entering the male-dominated occupations, women need to prove their competence towards male counterparts (Clarke et al, 2004).

Respondents ranked the 'factors that related to intellectual and physical capability' at fourth option which have value of mean is 9.73. When women entering the construction industry, they need to have the ability to fit in the work site and also need to accept behaviour of the workplace and also they need to have a strong physical and also need to be psychological strong to be in the construction sites.

Lastly, 'factors that related to family responsibilities' were ranked at fifth place by the respondents with mean of 9.11 which is the lowest mean among others. Dainty et al. (2000) have found site work to be time consuming and infringing on social activities and family responsibilities. Both of groups of the respondents see better prospects in other industries, sex discrimination and harassment on site, masculinity and feminization, working environment and working hours, intellectual and physical capability and family responsibilities as barriers to woman entry and retention in the construction industry in Malaysia.

Table 4.15: Mean and rank of the five factors that leads to challenges and risk for women in construction industry

Factors that leads challenges and risk for women in construction industry	Mean	Rank
4.4.1 Factors that related to masculinity and feminization of construction fields	15.5883	3
4.4.2 Factors that related to sex discrimination and harassment on site	28.9705	2
4.4.3 Factors that related to work environment and work hours	43.1755	1
4.4.4 Factors that related to family responsibilities	9.11	5
4.4.5 Factors that related to intellectual and physical capability	9.73	4

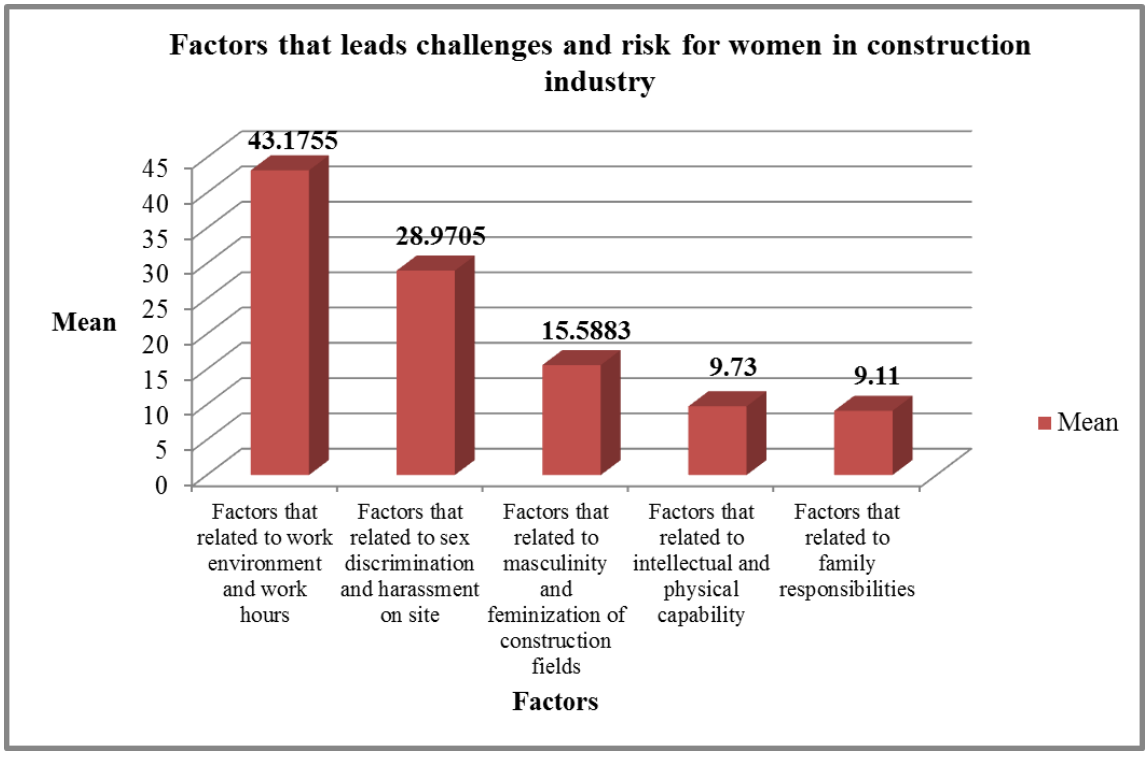

Figure 5.3: Factors that leads to five factors that challenges and risk for women in construction industry

4.5.13 Finalized option of comparison between all group of ranking of all career that most suitable for women in construction industry

The Table 4.16 and Figure 5.4 showed that the mean and rank of the all career that are most suitable for women in construction industry based on respondent's opinion. It consists of 10 career that respondents need to choose whether it suitable career for women in the construction industry. All the career will be discuss in this research. According to Table 5.0 and Figure 5.4, it shown the highest mean of most suitable career for women in construction industry is a career as a designer which is 7.46 and was rank in the first place by the respondents as the most suitable career for women in construction industry. Then, followed by second career that most suitable for women in quantity surveyor with 7.4 value of mean. Third career is architect which is 7.22 value of mean and fourth career is a planner with 6.72 that were choose by the respondents. Lastly, at the fifth rank goes to career as a QAQC engineer with 5.59 value of mean.

As a conclusion, the best five ranking of the career that suitable for women in construction industry is all in the design team of the construction industry where women who work in this design team are not involve working at construction site. They just focus more on design work for safety of the building. Besides that, they will involve more on Consultant Company. For designer, they are the key part of the design team which are they often working alongside civil engineers and architects. They need to decide the best choice of materials that need to use in the construction work. Besides that, it involves mathematical calculations to predict how a structure will react to various loads and stresses. So, it more suitable for women have hardworking attitude where this career involve with calculation, using computer software and rarely go to work site. As designer, they will go to work site when all they already decide the load that need to use. Besides that, women are more focus if it involve with calculation work compared to men.

As a quantity surveyor, it also known as cost consultant where they manage and advise all of the costs of a construction project. Quantity surveyors may work closely with client or the contractors to ensure a project is both efficient on budget and

profitable. They no need to go to work site at all because they only focus on the budgeting of the construction phase and development. For an architect, they will be focus on the design building where they will come up with imaginative new building design with needs to meets the user's need and an environment. They will design a building follow by the clients need without follow the specification. It also involves working at office only and they are will not go to work at construction site. As a planner, they involve in helping development which that assist economic growth and protecting the environment. Besides that, they will reviewed and commenting towards any changes that happen at the existing building. They also need to make sure the building is stable and friendly environment and also protecting historical area or building. They are rarely go to work site and more work in office. Lastly, as a QAQC Engineer, they need to ensure the workplace at site need to be followed the specifications that are provided from the company or the client. Besides that, they will do more on documentation about the specification that are provided.

Then, we can see from the table the lower five that were by the respondents is project engineer with 5.12 mean, site safety officer with 4.29 mean, site engineer with 4.24 mean, construction manager with 3.93 mean and the last choice for women career is land surveyor with value of mean is 3.78. we can conclude that all these five career is involve with working at the construction site where they will be always in the construction site to ensure the progress of the project followed the flow that were given. As a project engineer, they need to know all the overall project work that involved from the project start until the completion of the project. Site safety officer are important at the work site where they need to ensure the safety of the worker while doing their work. They need to ensure the entire worker follows all the safety instruction on site to avoid an accident happen in the construction site. Site engineer need to ensure the progress of work follow the planning that were decided and also need have the ability to make a quick decision when there have a problem at the site. As a construction manager, they need to have a problem solver skills and e a forward planner. They are responsible to run the construction project and responsible for coordinating the building project and lastly as a land surveyor, these career tend to work outdoors a lot.

Table 4.16: Mean and rank of the all career that are most suitable for women in construction industry

Career	Mean	Rank
Designer	7.46	1
Quantity Surveyor	7.4	2
Architect	7.22	3
Planner	6.72	4
QAQC Engineer	5.59	5
Project Engineer	5.12	6
Site Safety Officer	4.29	7
Site Engineer	4.24	8
Construction Manager	3.93	9
Land Surveyor	3.78	10

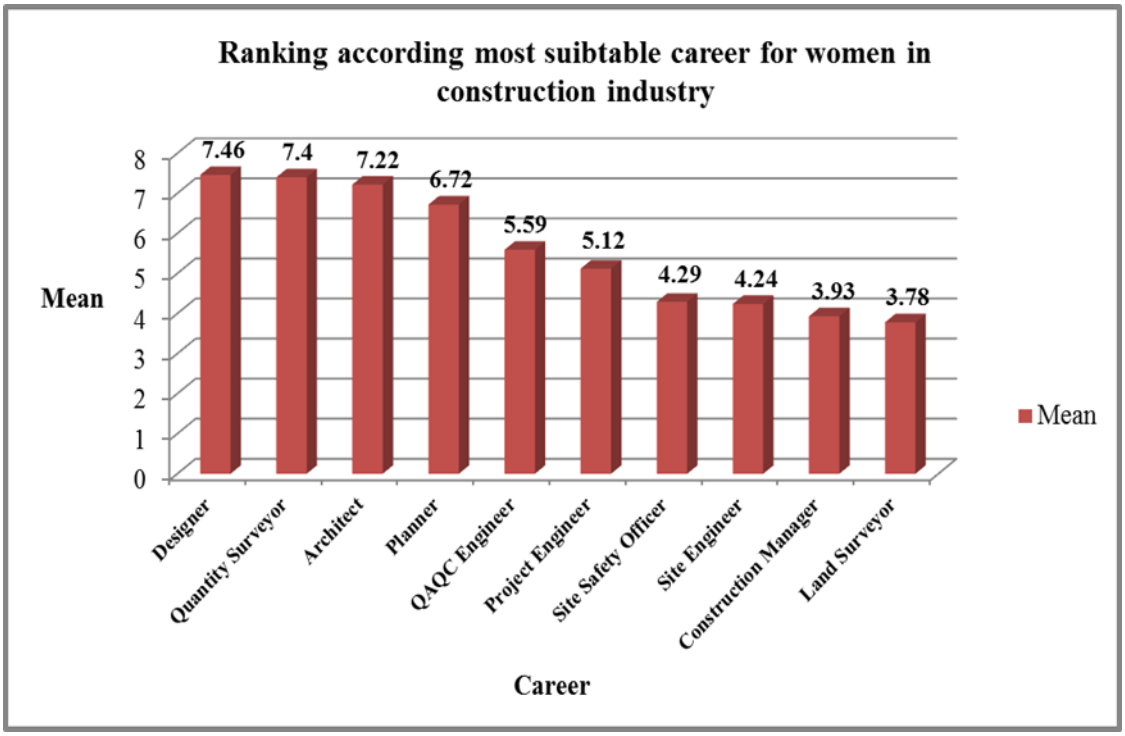

Figure 5.4: Ranking of careers that are most suitable for women in construction industry

4.6 CONCLUSIONS

This research reviewed the literature that relation the barriers that faced by women in construction industry. It is found in the literature review that masculinity and feminization in construction industry, sex discrimination and harassment on site, work environment and work hours, family responsibilities and intellectual and physical capability is the barriers for women in construction industry. Women need to face many challenges and risks when choose career in non-traditional occupations such as construction industry in order to enter and retain in this industry. This research discussed about the factor that leads to challenges and risk for women in construction industry and also the career that suitable for women in this construction industry. Based on the result of the research, it can be concluding that the factors that leads to challenges and risk for women in construction industry is 'factor that related to work environment and works hours'. This is because there are many aspects that need to consider if they were working in the construction industry. This is the answer for the first objective where to identify the risk and conflict that encountered to women when working in construction industry.

For the second objective, to identify the scope and appropriate work for women in construction industry, the career ranking were made to answer this objective where it can be conclude from the respondents opinion, they think the four career that suitable for women in construction industry is to be a designer, quantity surveyor, architect and planner. Career as designer it the first ranking that were choose by the respondents which is the most suitable career for women in construction industry where women can do a work in the office without go to the site construction. It can conclude that, the respondents agreed with careers that involve no need to go to the construction site.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This chapter include the conclusion and recommendation to employment women in construction industry, unemployment women and also female student who were studies in civil engineering field. The purpose of the research was first to determine the factors that lead to challenges and risk for women in construction industry from female and male respondents' perspective. Apart from that, the second objective for this research is determining the scope of employment and career that suitable for women in construction industry. Hence, women can be well prepared if their want to work in construction industry. In addition, the conclusion on qualitative analysis result of this research will be addresses. Last but not least, recommendation section also will be included in this chapter for further studies soon.

5.2 RESEARCH SUMMARY

The results of the study have shown that both female and male construction professionals in Malaysia share the same perceptions on factors that lead to challenges and risks for women in construction industry and barriers to female when entry at construction industry. From the result that have been analyse, it can see that both female and male professionals showed the stronger perception on the factors that related to masculinity and feminization of construction industry is the preference for men over women who hiring affect the choice of the profession in construction industry where it can see that the image of the construction industry is typically portrayed as promoting

adversarial business relationship, poor working practices, environmental insensitivity and a reputation for under performance. Besides that, the predominant image of the construction is that of a male-dominated industry requiring brute strength and a good tolerance for outdoor conditions, inclement weather and bad language. From the image, employee will make the right choice for choose men to be work with their company because men have strong physical compared to women where they believe women cannot work at a harsh environment.

For the second factors, the respondents agreed with women fit administrative work more than work at site for the factors that related to sex discrimination and harassment on site. That is because construction industry displays as a macho culture where relationships are characterized by argument, conflict and crisis. As a result, employees find that they are exposed to an extremely hostile environment. this macho environment which also expressed in more disturbing terms and sexual harassment within construction industry, is a real concern with almost all reports on women in the industry acknowledging this problem. Some civil engineer stated that they will prefer work at technical department compared to construction site. For the third factor, it can see that long working hour's effect on women to the choice profession in construction fields for factors that related with work environment and work hours. Women will not work for long hour because they need to do family responsibilities where they need to have times to handle all the work at home and take care of their children. So they will not prefer work at construction site which the work hour is not fixed.

From the respondents perception, they agreed with women that have young children cannot work at site for the factors that related with family responsibilities because women need to taking care for their children which they need have time for their children. Children needs mother's loves because they will prefer a mother to comfortable for them. Children will be more comfortable with their mother compared to their father. Lastly, for factors that related to intellectual and physical capability, respondents choose women over forty years old not appropriate for work in construction field as men in the same age because women with forty years old does not have a strong physical compared to men where men still have a strong physical. They need to focus more on technical work compared to work at construction site. That is the better

solution for women who at forty years old above. According from the respondents' perception with the ranking career for women which are more suitable to work at construction industry is as a designer because they think that women will be more patients to do all the calculation for the design of all load of the building and also it for safety of the building. Besides that, they said that women are more diligent to be a designer in the future. This research finding clearly stated that, most respondents choose and agreed that factors that related to work environment and work hours is the challenges and risk for women who work in the construction industry and women need to be tough if they want to work in the construction industry.

5.3 LIMITATION

In this research, there are some limitations which need to know in which these can be improve in future research. During the course of research, some potential limitations of this research in terms of methodology and data collection were expected. The first limitation of this research is the population of company that involved where the population area was focus on Kuala Lumpur, Pahang, Johor and Penang. Furthermore, the number of the company is based on the website of Construction Industry Development Board (CIDB). At the same time, not all the company currently have project. So, it will effect on the population size. Most of the respondents answered this research questionnaire by email. Due to the process of data collection was time consume, therefore the period of time given to collect the data still insufficient. This is because, not all the respondents answer the question immediately.

5.4 RECOMMENDATION

This construction industry culture needs to change if it is to escape from the current image, conflict and masculinity. There is the suggestion for future of construction industry to be more suitable for women which is employee need to provide separate facilities for women on site including toilets and prayer places (surau) for women. Then, monitor all the attitudes and behaviours of co-worker towards female professional and employee can allocate more than one women for site based jobs,

because when women are not isolated they can make a change in the structural factors. Other than that, develop a flexible working policy to encourage women to continue their working during critical periods, allow them to work from home at times when they really need to be at home and spend time on family responsibilities and also allow unpaid parental leaves to employees who have child or adopt a child until the child is a certain age.

Besides that, they can provide workshops for superiors and subordinates to improve mutual understanding and to create a more cooperative working environment. Then, promotes women achievements through success stories about projects managed and supported by women professionals where it can help to change the attitude of clients towards women's performance. Lastly, recruitment policy must be established to ensure that the selection criteria and its policies and procedures are maintained to treat individuals solely on the basis of the merits and abilities which are appropriate to the job and it must avoid any stereotyping of roles. Most importantly organisations should avoid recruitment solely by word of mouth or through recommendations of existing employees to avoid unlawful activities.

Besides that, there are some recommendations for the future research in this area of research. Future research are suggested to study the large number of respondents or participants by include all company in the Malaysia. Next, the future research should use various methods to collect data. For example, they can use interview session. They can do face to face interview session or phone interview. Face to face interview will make the respondents more understand and clear about our research.

5.5 CONCLUSION

Construction industry is the male-dominated industry in the world. Despite extensive research on the factors that leads to challenges and risks for women in construction industry, it also has the ranking that most suitable career for women in the construction industry. From the study, there have five factors that lead to challenges and risk for women in construction industry where it is about the masculinity and feminization of the construction industry, ex discrimination and harassment on site,

work environment and work hours, family responsibilities and intellectual and physical capability. After carry out the data analysis, this research finding that work environment and work hours is the factors that leads to challenges and risk for women. Besides that, from this research also it finding that the most suitable career for women in construction industry is as a designer in the construction industry. From this research, it can help for future where when women want to work in the construction industry they need to know and also be prepared before entering the construction industry. This research also can be a guideline to all the female students or women who want work in construction industry.

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APPENDIX A1

QUESTIONNAIRE

Section One: General Information

Gender:	Age:	Marital status:
a. Male	a. Less than 20 years	a. single
b. Female	b. 21 to 24 years	b. married
	c. 25 to 29 years	
	d. 30 to 34 years	
	e. 35 years+	

1. What is the highest level of education you have completed?
    a. SPM
    b. Diploma
    c. University – Bachelor's Degree
    d. Master's Degree
    e. Others (please specify _____)

2. What is the type organization that you are working in?
    a. Consultancy firm
    b. Construction company
    c. Developer company
    d. Government
    e. Oil & Gas
    f. Others (please specify _____)

3. Discipline:
    a. Quantity Surveying
    b. Construction Management
    c. Project Management
    d. Architecture

e. Civil engineering
f. Designing
g. Others (please specify _____)

4. About how many years have you been in your current position?
    a. Less than 5 years
    b. (5-10) years
    c. (11-15) years
    d. More than 15 years

Section Two: Challenges and Risk for Women in Construction Field

Please state your opinion and perception related to the following statements by tick (/) on one of the following number.

In your opinion, to what extent the following factors that led to challenges and risks for women working in the construction field.

No	Statements	Degree Agreement				
		Strongly disagreed	disagreed	neutral	agreed	Strongly agreed
1. Factors related to masculinity and feminization of construction engineering						
1.1	Male dominance on construction fields prevents women from choosing construction fields.					
1.2	Male dominance on the administrative positions affects women's choice of profession in construction fields.					
1.3	Preference for men over women when hiring affect the choice of profession in engineering.					
1.4	Difficult to get women to the supervisory position affect the choice of profession in construction fields.					
1.5	Low number of women in construction fields contributes to the shortage of skills in the profession.					
2. Factors related to sex discrimination and harassment on site						
2.1	Discrimination reflect negative image when women choice her career.					
2.2	Engineering women subjected to harassment in the workplace.					
2.3	Working women in the field of construction does not have opportunity to develop the same as her male.					
2.4	Women in the workplace are respected as a man.					
2.5	Man has experienced more than women in construction fields.					
2.6	Women fit administrative work more than work at					

	sites.					
2.7	The man can do everything as well as for women.					
2.8	Pregnant engineering women who work in the workplace discrimination suffered the highest percentages.					
2.9	Male discrimination against women refers to their belief that the role of women confined to the home and rising.					
3. Factors related to work environment and work hours						
3.1	Some things are related to the nature of women not suitable for work in the field of construction					
3.2	Some materials and tools used in construction fields make a problem for women.					
3.3	Inadequate service facilities such as toilets, ablution and place of prayer.					
3.4	Women less receptive to work in an unsafe environment than men.					
3.5	Chance of women to get supervisory position in the workplace is unfair.					
3.6	Women are less likely to work in high temperatures weather.					
3.7	Travels between work sites are not suitable for women.					
3.8	Harsh working environment is not suitable for working women.					
3.9	Long working hours effect on women to the choice profession in construction fields.					
3.10	Evening work is not appropriate for women.					
3.11	An irregular working hours is not appropriate for women.					
3.12	An irregular working day is not appropriate for women.					
3.13	Limited number of leave days affects the choice of construction fields as a professional for women.					
4. Factors related to family responsibilities.						
4.1	Women with young children cannot work at site.					
4.2	A low concentration of women and their productivity at work when they are married and have children.					
4.3	Women working in construction fields adversely affect family stability.					
5. Factors related to intellectual and physical capability						
5.1	Women over fourty years old are not appropriate for work in your field as men in the same age.					
5.2	Women physically unsuited to allocate construction fields as men.					
5.3	Women take more vacation than men.					

Section Three: Ranking according the most suitable career for women in construction industry.

Please rank the following careers that you think is less suitable (1) for women in construction field to the most suitable careers (10) for women in construction field by dragging and dropping the choices.

1 (less suitable)	2	3	4	5	6	7	8	9	10 (more suitable)

Carrier	**Ranking**
Quantity surveyor	
Architect	
Site engineer	
QAQC engineer	
Planner	
Project engineer	
Construction manager	
Designer	
Land surveyor	
Site Safety officer	