EXPERIENCED QUANTITY SURVEYOR'S PERCEPTION OF EMPLOYABILITY SKILLS REQUIRED BY MALAYSIAN FRESH GRADUATE QUANTITY SURVEYOR

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A project report submitted in partial fulfilment of the requirements for the award of Bachelor of Engineering (Hons.) Quantity Surveying

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DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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APPROVAL FOR SUBMISSION

I certify that this project report entitled **"EXPERIENCED QUANTITY SURVEYOR'S PERCEPTION OF EMPLOYABILITY SKILLS REQUIRED BY MALAYSIAN FRESH GRADUATE QUANTITY SURVEYOR"** was prepared by **CHAI WAI KUAN** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Science (Hons.) Quantity Surveying at Universiti Tunku Abdul Rahman.

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Specially dedicated to
my beloved parents and siblings

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ABSTRACT

The purpose of this research is to investigate the experienced quantity surveyor's perception towards the employability skills of fresh graduate quantity surveyor. The objectives of this research are (i) to examine the experienced quantity surveyor's perception of the important employability skills required by fresh graduate quantity surveyor, (ii) to examine their satisfaction of employability skills possessed by fresh graduate quantity surveyor, (iii) to investigate the fresh graduate's personal characteristics that will influence their employment and (iv) to identify the ways to enhance their employability skills. This research employed quantitative method. 280 questionnaires were distributed with only 20.7% of response rate. It was found that the experienced quantity surveyor ranked the top three important employability skills were management skills, computer and information literacy and communication skill while the top three satisfied employability skills were computer and information literacy, followed by teamwork and communication skills. Wilcoxon Signed Rank Test showed that 26 out of 28 employability skills were found significant difference between importance and satisfaction level. There were four characteristics of fresh graduate quantity surveyor that rated by experienced quantity surveyor that will look into which were working related experience, academic result, level of qualification and university reputation. Moreover, the solutions to enhance their employability skills were encouraged them to get work placement and internship, extend the duration of internship and the higher education institution shall revise the course structure to be more relevant to the current construction industry's needs.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS / ABBREVIATIONS

BQSM	Board of Quantity Surveyor Malaysia
QS	Quantity Surveyor
RICS	Royal Institution Chartered Surveyor

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1 Background

Recently, the development of global economic activities remained subdued (World Economic Outlook Update, 2016). The slow pace of global economic expanded pressures the organizations nowadays changed their organization's operating culture in order to exploit the advantage of economics. To keep pace with competitive in future, one of the strategies was to achieve a higher productivity with fewer number of human capital (Wood and Payne, 1998). The optimum combination of employees at different level with appropriate skills, capabilities, knowledge and motivations can drive the productivity of an organization (Banfield and Kay, 2008).

Since the increasing demands for high-skilled human capital in current market, the superior required the graduates not only able to possess with the basic knowledge, but also the employability skills in order to match the current demand of industries (Lee and Tan, 2003). Hence, the ability of graduates closely linked to the higher education institution including public and private institution. With a multi-ethnic population of about 28.3 million, the number of public institutions grew from 7 numbers in 1990 to a total of 20 in 2015 whilst there were 22 private universities was established in the same period. There were also more than 500 other institutions, including university-college, private college, foreign university branch campus and other institutions with non-university status (Ministry of Higher Education, 2016).

The expansion of higher education institution created a high number of graduates in a variety of disciplines (Ismail, 2011). According to the statistics from Ministry of Higher Education (2016), there were more than 200,000 fresh graduates including quantity surveyors in Malaysia. The number of degree holders increased from 63,998 people in 2006 to a total of 122,766 in 2015 whilst the number of diploma graduates increased from 39,524 people in 2006 to a total number of 113,637 in 2015. It created a competitive workforce environment in Malaysia.

After graduating from a higher education institution, graduates faced difficulties to find their employment due to the ineffectiveness of higher education system to equip the graduates with necessary employability skills (Saad and Majid, 2014). This phenomenon affected the perception of superior on the graduates including graduates in quantity surveying during recruiting and selecting them to work. As a result, the study focused on examining the perception of experienced quantity surveyor toward the employability skills required by fresh graduate quantity surveyor. The finding may help the fresh graduate quantity surveyor to understand what the experienced quantity surveyor or superior required on them. Besides, the higher education institution needed to work together with the organization in order to help the undergraduate develop necessary knowledge, skills and personal qualities before they step into the real working environment (AQU Catalunya Employer Survey, 2014).

1.2 Problem Statement

There was no doubt that people see the higher education as a stepping stone to get good job opportunities in the future (Lowden, et al., 2011). It is because the Higher Education Institutions (HEI) was aligned with the local government's agenda to produce a qualified, professional and skilled workforce to the people. It indirectly created a mind-set that "Completing a degree or diploma was sufficient qualified for getting a good job" (Islam, Hamid, Manaf, 2013.). A survey from Sodexo University Lifestyle in 2010 that over 73% of the students thought that taking a course in the university was sufficient to secure their future employment.

However, due to the increasing competitiveness of the workforce in our country, being a graduate from university no longer guarantees your job in the future (Leo, 2016). The rapid growth in the number of university graduates nowadays was not aligned with the number of job vacancies provided. The imbalance situation was created between workforce supply and demand (Islam, Hamid and Manaf, 2013). It contributed to a very serious unemployment issue among the graduates in a country. Singh (2016) reported that there were over 200,000 number of unemployed graduate including fresh graduate quantity surveyor in Malaysia. He claimed that the main reason causing the serious unemployment rate among the fresh graduate quantity surveyor were lack of the employability skills.

The experienced quantity surveyor today expected the fresh graduates were not only can possess with the basic academic skills, but also equip with relevant employability skills such as communication skills, interpersonal skills, leadership skills, teamwork, management skills etc. (Nayan, 2010). However, a survey was conducted by Islam, Hamid and Manaf (2013) revealed that there was a big gap difference between the experienced quantity surveyor's expectation and their satisfaction on the employability skills required by fresh graduate quantity surveyor. Therefore, this research is conducted to identify the experienced quantity surveyor's perception on the employability skills required by Malaysian fresh graduate quantity surveyor.

1.3 Research Aim and Objectives

The aim of this research is to investigate the experienced quantity surveyor's perception towards the employability skills required by fresh graduate quantity surveyor. The objectives of the research are:

1. To examine the experienced quantity surveyor's perception on the importance of employability skills required by fresh graduate quantity surveyor.

2. To examine the experienced quantity surveyor's perception on their satisfaction of employability skills possessed by fresh graduate quantity surveyor.
3. To investigate the experienced quantity surveyor's perception on the influence of fresh graduate quantity surveyor's personal characteristics on employment.
4. To identify the solutions to enhance the employability skills of fresh graduate quantity surveyor.

1.4 Research Scope and Limitation

The research is to examine the experienced quantity surveyor's perception of the employability skills required by fresh graduate quantity surveyor. The report will focus on the perception of the experienced quantity surveyor during evaluation of employability skills among graduate quantity surveyor. All the data will be based on the type of construction organization such as consultant firm, contractor firm and developer in Malaysia. This research will be completed in a year. As a result, time constraint becomes one of the limitations in completing the study. The data collection will be based on the construction organization in Klang Valley in Malaysia. The sample size of this research was calculated which is 196 samples collected from consultant firm, contractor firm and developer. The method used to collect the data through questionnaires.

1.5 Chapter Organization

The research report will be divided into five chapters. In chapter one, introduction, the researcher presents the overview of the study. It contains a brief introduction on the research background, research problem, aim, objectives, research scope and limitation. The chapter two which is literature review. This part includes the review of past literature, review of theoretical models, propose theoretical framework and relevant research associated with the problem addressed in the research. The chapter

three is about the overview of the study's research methodology. This chapter will present the research design, data collection method, instrument used, sampling design, and procedure. Then, the research result and finding will be discussed in the chapter four whilst the last chapter is conclusion. This chapter acts as a summary of the whole research including the statistical analysis, results, limitations and recommendations of study.

1.6 Conclusion

In a nutshell, this chapter provides an overview of the research which includes the research problem, research aim and objectives, research scope and limitation and chapter organization. This chapter provides a preliminary understanding of the research on how the research to establish to meet the objectives. To have a better understanding, Chapter 2 is established to provide further understanding of this study by reviewing the literatures relevant of the topic.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter will discuss and present the general concept of fresh graduate quantity surveyor, role of quantity surveyors, employability skills, the employer's perception on the importance and satisfaction of employability skills, fresh graduate quantity surveyor's personal characteristics influence their employment and the solutions to improve their employability skills.

2.1 Overview of Quantity Surveying Graduate

2.1.1 Definition of Fresh Graduate Quantity Surveyor

Fresh graduate was defined as an individual who successfully complete the higher educational learning or training in higher education institution with less than 3 years working experiences in relevant industries (Lowden, et al, 2011; Mirza, Jaffri and Hashmi, 2014). They successfully obtained the full time employment and academic qualification to deal with the practical issues in the work environment (Mtebula, 2014). While the quantity surveyor was an individual who was professionally trained and accredited professional with bachelor degree or diploma to deal with the issues within the construction industry (Seeley, 1997).

Board of Quantity Surveyor Malaysia (2016) decided that, effective from January 2002, the undergraduates needed to admit to the Quantity Surveying courses on the current list of recognized qualifications. They will be eligible on graduation to apply for registration with the Board without any topping up requirement. However, when the undergraduates from universities whose quantity surveying courses were not in the list of recognized qualification, they needed to attend and pass the paper in the Institution of Surveyors Malaysia (ISM) Direct Final Exam before being eligible to apply for registration with the Board.

Table 2.1 List of Recognized Qualification in Malaysia

List of recognized qualification in Malaysia
Royal Institution of Surveyors Malaysia
Heriot Watt University Malaysia
Infrastructure University Kuala Lumpur (IUKL)
Universiti Tunku Abdul Rahman (UTAR)
Institut Teknologi Imperia
International Islamic University Malaysia
Linton University College
Tunku Abdul Rahman University College (TARUC)
Universiti Malaya (UM)
Universiti Sains Malaysia (USM)
Universiti Teknologi Malaysia (UTM)
Islamic Science University of Malaysia
University of Reading Malaysia
INTI International University
University College of Technology Sarawak
Twintech International University College of Technology
SEGI University
Taylor's University
Universiti Teknologi Mara

Adapted from Board of Quantity Surveyor Malaysia (2016). *List of Recognised Qualifications.*

2.1.2 Quantity Surveyor Professionalism

Quantity surveyor was an individual who possess professional skills in all aspect in the construction process and building life cycle. The role of quantity surveyors had existed since the ancient Egyptian civilization. During that time, quantity surveyor provided the valuation and measurement services for the building. According to Moss (2004), the role of quantity surveyors in past decades were taking off the quantities of material, preparation of Bills of Quantities, preparation of contract documents, cost planning and control, provide advices in procurement to client and contract administration throughout the construction process. He or she provided distinct services in the built environment, and would like their professional status and services to be known and upheld in society. Subsequently, Rashid (2002) also summarised that the traditional job scope of quantity surveyors which were estimating during pre-construction stage, preparation of bills of quantities, quantification from the architectural, engineering and specialist drawings, and preparation of specification for the project.

Moss (2004) described the profession of quantity surveyors in modern were planning the construction and procurement, acting on behalf of client, construction administration and management, project management and construction design and economics. Moreover, the Royal Institution of Chartered Surveyor (1998) listed out the competencies of quantity surveyor into three categories: basic competencies, core competencies and optional competencies, for assessment of professional competence, as shown in the Figure 2.1. The basic competencies were the general to all construction professions under the RICS structure, the core competencies described the professionalism required by the quantity surveyors and the optional competencies showed the specialisation area or future career diversification.

Basic competencies	Core competencies	Optional competencies
• Personal & Interpersonal skills • Business skills • Data, Information and Information Technology • Professional Practice • Law • Measurement • Mapping	• Construction Contract Practice • Construction Technology & Environmental Services • Economics of Construction • Procurement and Financial Management	• Arbitration & Other Dispute Resolution Procedures • Development Appraisal • Facilities Management • Insolvency • Insurance • Project Management • Property Investment Funding • Research Methodologies & Techniques • Taxation Allowances & Grants • Valuation

Figure 2.1 Competencies of Quantity Surveyor

Source: The Royal Institution of Chartered Surveyors (1998)

2.2 Concept of Employability skills

The employability was not a new concept but it was difficult to be defined tersely and comprehensively because it covered a wide range of skills required by the fresh graduate (Yorke, 2001). Kumar (2009) also clarified similarly that term of employability was difficult to be measured and assessed because it brings different thing or meaning to different people such as employers or superior, fresh graduates and educators. Hillage and Pollard (1998) of the Institute of Employment Studies stated that the employability was referred as a multi-dimensional construct which including the capability to get the first employment after graduating, keeping potential within the organization and obtaining a new employment from new organization. Harvey (2001) elaborated the component of employability of fresh graduates was based on the five main characteristics which were the type of occupation, the attributes on the recruitment, the time selection, lifelong learning and employability skills.

Employability skills were defined as a set of skills and behaviours that were necessary for the employment (Careerwise Education, n.d.). Nayan (2010) expounded that they were the skills that necessary for not only gaining the employment, but also including the keeping and performing well in the workspace.

There were a lot of interpretations to the employability skills that carry the same meaning which were transferable skills, generic skills, key skills, essential skills, core skills, job-readiness skills etc. More often than not, the employability skills focus on the capability of fresh graduates to apply and adapt their academic skills and personal skills in the working environment (Saad and Majid, 2014). In addition, Yorke (2006) explained the employability skills was a set of competencies such as knowledge, understanding and skills that made the graduate to get their chosen occupation successfully which may benefit themselves, workforce, the community and the economy.

Besides, employability skills were often related to the graduates' soft skills (Saad and Majid, 2014). Soft skills was an non-academic abilities, knowledge and understandings required by individuals to work effectively in their workspace (My future, n,d.). Keller (2011) also categorised the employability skills into attributes and skills. The attributes were referred to non-skill-related behaviour, whilst the skills was the capability in completing the work task. The soft skills also included the personal qualities, belief, self- control behaviours and attitudes of the graduate in order to perform and achieve their targets (Youth Guarantee, n.d.). In addition, personal adaptation in both learning and working environment was also considered as soft skills. Consequently, soft skills covered a wide range of non-technical skills such as communication skills, teamwork skills, higher order thinking skills, leadership skills, analytical and problem solving skills, work independently, adaptability and etc.

Nevertheless, Monash University (n.d.) argued that employability skills were a blend of both hard skills and soft skills. The hard skills were referred as the technical skills or discipline-specific skills which can be acquired through a course of study and training at higher education institution. Lei (n.d) stated that the hard skills or technical skills can be learned from books which were designated the level of competency and give direction to the readers on how to practice and apply the skills. For example, measurement is a hard skill. The undergraduates can choose to take the quantity surveying course in higher education institution to practice this skills before stepping to real construction working environment. William (2015) summarised the categories of employability skills was the combination of technical skills and non-

technical skills. The technical skills can be further subseted such as information technology skills, computer skills, numeracy skills, and literacy skills including writing and listening,

The employability skills were classified into three broad categories which were basic academic skills, higher order thinking skills and personal qualities (Robinson, 2000). Coopers and Lybrand (1998) also further worked on the definition of employability skills that the skills covered four main areas which were:
(a) Traditional intellectual skills (eg. critical thinking and analysis),
(b) Main skills such as interpersonal skills, computer literacy, presentation skills, etc,
(c) Personal attributes such as confidence, motivation, honest, etc. and
(d) Sector specific knowledge or professionalism such as information technology skills.

2.3 Employer's expectation and satisfaction

In the competitive era, the role of quantity surveyors had significantly changed in order to match the current construction business landscape (Cartlidge, 2011); as well as fulfilled the requirements and satisfactions of client and other parties. It affected the expectation of experienced quantity surveyor towards the employability skills possessed by fresh graduate quantity surveyors during recruitment and selection. Tengku Ariff (2002) described the profile of ideal fresh graduate quantity surveyor was who able to possess high performance in hard skills, soft skills and competitive skills. This phenomenon showed that the employability skills became increasingly important in this challenging working environment.

2.3.1 Communication skills

Communication skills were defined as oral, written and listening skills that encourage effective interaction with a variety of individuals and groups. (Arensdorf,

2009). Communication was a two-way information exchange between the presenter and audience (Barbara, 2013). An effective communication referred to the ability of the presenter to convey the information, knowledge and instructions clearly to the audience in order to reach a mutual understanding and give appropriate feedback from the audience (Kermode, n.d).

In Malaysia, the Ministry of Higher Education (2006) described the criteria of communication skills including the ability of the fresh graduates to oral communicate and write effectively in both Bahasa Malaysia and English. Islam, Hamid and Manaf (2013) expounded that the English was the most important language used by both local and international companies while the Bahasa Malaysia was only important within the local companies. In addition, the fresh graduates were expected to express their own ideas and information clearly, effectively and confidently. They were concerned with ability of listening attentively and provide appropriate feedbacks.

A survey was conducted on the Malaysian Employers Perception by Azian and Mun (2011), there were 68% of experienced quantity surveyor rated the communication skills was the most important skills required by the fresh graduates quantity surveyor to gain their first employment. Precision Consultancy (2007) subsequently proved that the effective communication skills in all domains such as reading, writing, speaking and listening were the important generic attributes to the fresh graduates. Shafie, Khuzzan and Mohyin (2014) stated the communication and language skills were in the top five most importance skills that the experienced quantity surveyor expected the fresh graduate quantity surveyor to possess as it was an important skill in dealing with the clients in construction industry (Said, Shafiei and Omran, 2010).

However, Islam, Hamid and Manaf (2013) conducted a survey on the experienced quantity surveyor's satisfaction level on the Malaysian fresh graduate quantity surveyors' skills. They were the bigger gap between the importance and satisfaction level on communication skills rated by experienced quantity surveyor with mean value of -0.7261. They described the main reason of the gap difference was due to the fresh graduates quantity surveyor were lack of ability to speak fluently and write effectively in English. An average of six out of ten graduates

cannot speak fluently and effectively during interview due to their poor command of English. As a result, they were unable to explain and answer the questions clearly from the interviewers. This is so in line with the survey from Archer and Davison (2008) which the finding showed the communication skills were the in top ten largest importance-satisfaction gaps in competencies of fresh graduates quantity surveyor.

2.3.2 Computer and information technology literacy

Computer literacy was referred to the ability of individual to function the basic computer function (Said, Shafiei and Omran, 2010). It was included as part of core competencies of quantity surveyors.

A survey was conducted by the Nkado and Meyer (2001), computer literacy and information technology was the most important skills required by quantity surveyors as the software helped them to work effectively and efficiency. The basic computer software required by quantity surveyors was Auto Cad, Microsoft Excel, Revit and others (Yusof, et al., n.d). In fact, this supported the finding from Dada and Jagboro (2012) and Nkado (2000). Both of the findings showed the computer literacy and information technology were in the highest ranking. Moreover, Musa, Babalola and Oyebisi (2010) also stated the computer literacy and information technology skills played an important role in the work scope of quantity surveyors especially in cost estimating and measurement. There were 61% of experienced quantity surveyor indicated the computer information technology skills were important. Islam, Hamid and Manaf (2013) also spelled out that ability to search and manage information from various information as part of computer skills required by quantity surveyor.

However, Said, Shafiei and Omran (2010) argued that although the respondents agreed the computer and information technology literacy was the competencies of quantity surveyors because the advance technologies can enhance the accuracy and error-free, it carried the lowest important index reading with only 81.67 compare to the communication skills, leadership skills, management skills and others skills. This was subsequently supported by the result from Zakarial, Munaaim

and Khan (n.d) that employer ranked the computer and information literacy skills in the lowest ranking with the mean of 2.68.

Furthermore, Archer and Davison (2008) found that there was a bigger gap importance-satisfaction on computer skills. The experienced quantity surveyor rated the computer and information technology skills as middle important ranking whilst the satisfaction of the skills as in the highest ranking. It means that the performance of the quantity surveyor's performance in computer skills were meet experienced quantity surveyor's expectation. The result is same goes to the survey carried out by Islam, Hamid and Manaf (2013), the computer literacy skills was the smallest gap between mean of importance and satisfaction of fresh graduate quantity surveyor's skills as compared to other skills such as interpersonal skills, thinking skills and management skills. Lastly, in the research of AQU Catalunya (2014), the employer indicated the computer skills was the most satisfied skill by fresh graduates with 7.9 mean value.

2.3.3 Higher order thinking skills

Higher order thinking skills were defined in term of transferring, creative thinking and problem solving (Brookhart, 2010). Nayan (2010) highlighted the criteria in the higher order thinking skills were including the problem-solving skills, analytic skills, decision making skills and critical thinking skills. Finch (2012) expounded that these skills were closely interrelated as the problem-solving skills often incorporate with an array of competencies such as critical thinking or creative thinking and decision making skills.

Problem solving skills was described as the ability to identify the problem, analyse the problem and find a solution to address it (Kar, 2011). It consists of comprehensive process of detecting the problem, establishing and implementation of the solution, and the assessment of the outcomes (Arensdorf, 2009). It was important to the quantity surveyor in explaining, analysing and evaluating the data and information. On the other hand, critical thinking was defined as the ability of the

fresh graduate to think critically or think out-of-the-box to generate creative ideas (Islam, Hamid and Manaf, 2013). Hence, problem solving skills always worked together with the analytical skills, critical thinking skills and decision making skills. For example, when there was a problem arises, the individual needed to identify the problem, analyse the problems, contribute critical or creative thought and make a necessary judgement in order to solve it.

The problem-solving skills, analytical skills critical thinking skills and decision making skills were categorised as important employability skills in the perception of experienced quantity surveyor (Lees, 2002). According to the analysis from Mtebula (2014), the problem solving and analysis skills were in top five important skills rated by the experienced quantity surveyor. These finding were in line with the results from Shafie, Khuzzan and Mohyin (2014). Whereby they pointed out the analytical skills and problem solving skills that fresh graduate quantity surveyor must possess. They considered these skills were necessary and essential for them to compete in current challenging market as they required handling problems and providing appropriate solutions related to the construction projects such as analysing the tenders submitted by contractors. It was also subsequently proved by the Precision Consultancy (2007) that, there were 94.4% of experienced quantity surveyor pointed the problem-solving skills were the most important employability skills required by the graduates which carried the second higher of factor loading of 5.80. They provide some recommendations and strategies to improve the skills which can through the case studies, analyse, simulation and investigative the problem, synthesis various solving tools and technique, developing or designing the model, and encourage the decision-making activities.

Furthermore, according to AQU Catalunya (2014) survey, they found that there were a bigger gap of mean between importance and satisfaction on skills based on the experienced quantity surveyor's perception. Their differences in mean importance-satisfaction value were 1.7. These findings subsequently supported the result of the gap analysis from Islam, Hamid and Manaf (2013), where there were 1.1211 mean value differences. It was the largest importance-satisfaction gap among the other skills such as interpersonal skills, computing skills, communication skills and management skills. Under this category of skills, the main reason contributed to

the largest difference was due to the lack of ability to provide creative thought and explain, analyse and evaluate the information. In addition, there was also highlighted in the findings from Archer and Davison (2008) that, the analysis and decision making skills were the second highest importance-satisfaction gap with 16 differences in capability of fresh graduate quantity surveyor rated by experienced quantity surveyor.

2.3.4 Leadership skills

Leadership skills were the ability to provide guidance and lead the whole team members in various activities. Fresh graduate quantity surveyor required understanding the concept of leadership skills because they need to lead the construction project between the team members. It also included the ability to motivate the team to work for a mutual goal. The leader was willing to the ownership and take responsibility for the job task. (Gurcharan and Garib, 2008)

According to Said, Shafiei and Omran (2010), the basic competencies of the QS fresh graduates were the leadership skills. The respondents rated the leadership skills as an important characteristic of fresh graduate quantity surveyor. It subsequently supported the finding from Zakarial, Munaaim and Khan (n.d) that the leadership was one of the expectations of experienced quantity surveyor toward the fresh graduate quantity surveyor's skills with 4.21 mean values. Dada and Jagboro (2012) also stated the leadership skills were an important employability skills required by fresh graduates with mean value of 3.06 and in the ranking of 13 among the others 20 skills. It same goes to the findings from Nakdo (2000) on the experienced quantity surveyor's expectation on the fresh graduate with 77.9%. Besides, the survey from Gurcharan and Garib (2008) and Haynes, et al. (2002) also showed the leadership skills were the important skills required to possess by the fresh graduate quantity surveyor.

However, by referring the analysis from Griesel and Parker (2009), there were 1.12 gap differences between the 4.3 mean value of expectations and 3.2 mean

value of satisfactions rating. Whilst the survey from the AQU Catalunya (2014) also showed there was 0.8 gap importance-satisfaction. They pointed out some main reasons which lead to the poor leadership skills were (Clayton, 2015): -

(a) Improper project planning, time management and problem solving
(b) Poor teamwork and communication between leader and members
(c) Lack of experiences
(d) Lack of analytical skills in process the data
(e) Low level of computer skills and technical knowledge.

2.3.5 Interpersonal Skills

Interpersonal skills were the ability of individual to develop and interact with the others individuals or groups within an organization environment. It consists of 7 main areas which are verbal communication, non-verbal communication, listening skills, negotiation skills, problem solving skills, decision making skills and assertiveness (Lombardo, n.d). Islam, Hamid and Manaf (2013) also pointed that interpersonal skills was the skills required to deal with the superior in a working environment. The interpersonal skills were included as the basic competencies required by the fresh graduate quantity surveyors (RICS, 1998).

According to the survey from Said, Shafiei and Omran (2010), the respondents rated the interpersonal skills as the three most important abilities required by the fresh graduate quantity surveyor due to the skills could help them carry out the task in a competent manner. Besides, the Dada and Jagboro (2012) highlighted that the interpersonal skills were in the top ten ranking skills. There were 59.8% of respondents classified the interpersonal skills as the basic competencies required by fresh graduate quantity surveyor. As a result, it subsequently proved the statement from Royal Institute of Chartered Surveyors. Moreover, the interpersonal skills carried the second highest factor loading with 22.38% of the variances among the intrapersonal skills, leadership skills and technical skills (Ismail, 2011).

Nevertheless, Islam, Hamid and Manaf (2013) stated that there was a greater gap between the importance and satisfaction for the interpersonal skills with 0.9758 of mean value. They also revealed the main reason which contributed to the poor interpersonal skills were lack of ability to encourage and motivate the colleague in an organization.

2.3.6 Teamwork skill

Teamwork skill was one of the employability skills required by the fresh graduate quantity surveyor. It referred to the ability of an individual to work as a team to achieve specified goals. They were expected to develop good relationship in a team with across different background, ages, gender, race, ethnic and political persuasion. Besides, the ability of fresh graduate quantity surveyor to share their information with their team members was one of the important criteria included under the teamwork skills. (Ministry of Higher Education, 2006; Precision Consultancy, 2007)

The experienced quantity surveyor viewed the teamwork skills were the most important skills required by the fresh graduate quantity surveyor (Shafie, Khuzzan and Mohyin, 2014). It same goes to the findings from Ang (2015) that, the respondents rated the teamwork skills as the highest ranking among the 20 employability skills. The teamwork skills were considered as the more critical element of employability required by the fresh graduates (Ferns, 2012).

However, a survey conducted by Hynes, et al (2002) disagreed that the teamwork skills as the most important skills because the experienced quantity surveyor in that particular survey rated the teamwork skills as the 12^{th} important skills ranking among the others 18 employability skills.

Besides, the data analysis from United Nation Educational, Scientific and Cultural organization (2012) also proved that the teamwork skills were the important skills rated by the employers through quantitative and qualitative analysis. However, they found that there was underlining differences in their expectation and satisfaction

because most of the fresh graduates were lacking of teamwork skills. The survey form CBI (2012) also stated that there were only 25% of experienced quantity surveyor satisfied with the teamwork skills possessed by the graduates. There were also 0.8 of big gap difference on importance-satisfaction (AQU Catalunya, 2014).

2.3.7 Management skills

Management skills were described as the how the individual to organise themselves in their working environment. According to Said, Shafiei and Omran (2010), they mentioned that the management skills of the fresh graduate quantity surveyor were ability to plan their works and complete their work in an effectively and structure manner within the time limit or deadline. They also emphasized that the outcome must meet the appropriate standard or expectation of their experienced quantity surveyor. The management skills of the fresh graduate quantity surveyor also focused on their ability to adapt the new environment, work independently and under pressure (Islam, Hamid and Manaf, 2013).

Referring to the findings from Shafie, Khuzzan and Mohyin (2014), the management skills was in the third ranking among others 10 skills. However, they also found out that the management skills were under better expectation status of experienced quantity surveyor's perception. Besides, it also subsequently proved the survey from Said, Shafiei and Omran (2010) that, the management skills were in the top ten listed of the employability skills with 83.33% of importance index.

However, the findings did not work in line with the survey from Zakaria, Munaaim and Khan (n.d) because the experienced quantity surveyor disagreed the management skills was the important skills for the fresh graduate quantity surveyors. In the survey from Dada and Jagbaro (2012), they also found out the management skills were placed in the ranking of 13^{th} out of 20^{th} with 3.06 mean values. It was classified as the basic skills for the quantity surveying graduates rather than core skills. Whilst Nkado (2000) also claimed that the management skills were in the

ranking of 11th out of 20th of skills with 77.9% of importance, but it was still within the list of important skills required by the fresh graduate quantity surveyors.

There were 33% of experienced quantity surveyor were disappointed with the fresh graduate quantity surveyor's self-management skills (Archer and Davison, 2008). Based on the findings from CBI (2012), over 61% of experienced quantity surveyor were dissatisfied with the management skills possessed by the fresh graduates because they expected the fresh graduates able to accept or take the responsibilities, time management and improved their performance. In addition, through the survey from Islam, Hamid and Manaf (2013), they also prove that there were the bigger gap between importance and satisfaction with the mean value of 1.04. The main reasons that contributed to bigger gap of management skills were poor time management and lack of ability to plan and coordinate the projects.

2.4 Fresh Graduate Quantity Surveyor's Personal Characteristics that Influence their Employment

2.4.1 Gender

Gender was one of the criteria that influenced the experienced quantity surveyor's consideration in engaging for employment. According to the findings from Ismail (2011), the unemployment rate among the female fresh graduates was higher compare to the male fresh graduates. Female fresh graduates were always perceived as emotional, passive and less suitable to take the responsibilities than male fresh graduates. They were also discriminated in the field in raising children and family responsibilities after marriage. Moreover, most of the people classified the construction industry as the "man's place" which was not suitable for the female fresh graduate quantity surveyor. Thus, the female's workforce in construction industry were lack of opportunities to develop their skills such as working at construction site, dealing with the foreign workers, construction site management and others (Dainty, et al., 2000). Mitchell (2014) stated that the female fresh graduate

was largely present in the office-based team and provide administrative support within the construction industry.

2.4.2 Work related experience/ industrial training

Work related experience was an important factor that affects the experienced quantity surveyor's consideration during recruitment. The fresh graduate quantity surveyor were given the opportunities to explore themselves in the real working environment. According to the research from Finch (2012), the working experience was a critical factor that affected the fresh graduate quantity surveyor's employment. Throughout the working base learning, the fresh graduate quantity surveyor can recognize the relevant work-life skills required in the workplace such as communicating and interacting well with other individuals or groups. The graduates also can have the opportunities to demonstrate commitment and reliability to employers. As a result, the work-related experiences before graduation can enhance their future employment opportunities (My future, 2015).

2.4.3 University reputation

Academic institution reputation was impact on a variety of outcomes of interest to the employers, policy makers and educators. Generally, the academic institutional world ranking, image and branding were concerned by the experienced quantity surveyor when determining the fresh graduate quantity surveyor's employment (Finch, 2012). Most of them believed that the higher educational institution played an important role in preparing the fresh graduate quantity surveyor with the relevant skills, attributes and capabilities to meet the needs of construction industries. Thus, the fresh graduates quantity surveyor from the nation known or regionally known higher education institutions was more likely to be employed (Thompson, 2014).

2.4.4 Academic achievement

Academic performance in the institution became a major factor in determining the fresh graduate quantity surveyor's employment. More specifically, the experienced quantity surveyor determined the fresh graduate's academic performance by looking at their cumulative grade point average (CGPA). It ranged from zero to four (Ismail, 2011). Koeppel (2006) said the CGPA was a predictor of future job performance in workplaces. The organizations required the smartest employees to work for them. Their grades become an initial indicator to determine their capabilities to compete in knowledge-based working environment. Brown (2015) agreed that the higher CGPA was a key metric during evaluating on how valuable a fresh graduate including quantity surveyor. A research showed that the fresh graduate quantity surveyor obtained higher pointer was probably to be hired than the others with low academic performance. There were 66% of experienced quantity surveyor recruited the fresh graduate quantity surveyor by CGPA whilst 58% of experienced quantity surveyor were much less likely to employ the fresh graduates with below the average grades (less than 3.0). Moreover, the fresh graduate quantity surveyor with good academic performance were paid with higher starting salary.

2.4.5 Level of qualification

Every superior today requires his employee was well-educated with required knowledge and expertise. It same goes to fresh graduate quantity surveyor. The researcher found that the higher the level of education or qualification possessed by the fresh graduate quantity surveyor, the more knowledge and specified skills they had. It means that the fresh graduate quantity surveyor who obtained degree level of education was much easier to get employment than the fresh graduate quantity surveyor who only obtained the diploma level (Nidjon, 2012). This result is subsequently supported by a survey on the relationship between the level of education and job opportunities. The survey revealed that the higher the education level possessed by the fresh graduate quantity surveyor, the higher the job opportunities. The experienced quantity surveyor was more likely to employ the

fresh graduate quantity surveyor who had higher qualification (Torpey and Watson, 2014)

2.4.6 Extra-curriculum participation

Nowadays, the experienced quantity surveyor were more likely to employ the fresh graduate quantity surveyor who acted actively in extra-curriculum in their universities. The extra-curriculum activities give opportunities to fresh graduates to identify and develop some necessary employability skills and non-academic abilities. Throughout the extra-curriculum, the fresh graduate quantity surveyor was able to develop the personalities, specialized skills, improve academic performance, strengthen self-confident, sense of responsibilities, and their career opportunities (Arora, 2015). According to the survey from Chronicle of Higher Education (2012), there were 10% of respondents rated the extra-curriculum participation was important during evaluating the fresh graduates quantity surveyor for employment because it was more valued than the academic result (CGPA) and higher education institution's reputation for the employers.

2.4.7 Physical appearance

Physical appearance in term of looking, body size and weight can affect individual's career opportunities, employment and pay salary. A survey was conducted by Pope (2010), there were around 5,000 resumes sent to more than 2,600 employers who advertised the job vacancies. The result found that the fresh graduates who sent the resume attached with plain looking photos were more likely to be eliminated in the earlier selection stage. However, there was a higher rate of call for interview when the fresh graduates with attractive looking. It subsequently supported the result from Rasmussen (2013) that the fresh graduate quantity surveyor with good looking was more persuasive than others. Armour (2005) added that body size and height of fresh graduate quantity surveyor were the factors influence their employment. He believed

that an overweight fresh graduate quantity surveyor was more likely to be disengaged at work compared to normal body size and weight as it gives an overall impression to the recruiter.

2.5 Way to improve the graduate's employability

2.5.1 Revise course structure

The academic curricula became a problematic issue in term of not emphasizing the employability skills earlier in the program. It subsequently limited the opportunities for the undergraduate quantity surveyor to develop the skills before graduation (Cavanagh, et al., 2015). Thus, Ang (2015) suggested that the academic program should be revised from time to time in order to reflect the array of skills and attributes for their employment. She also emphasized that the employability strategies should be an integral part of learning and teaching. However, Chua (2004) highlighted that the academic program should be balanced, up-to-dated and meet the requirements of the construction industries. Besides, the activities in the program should be designed to improve the skills such as higher order thinking skills and communication skills to ensure the fresh graduate quantity surveyor were gaining these skills and incorporate the problem based learning. According to the survey from Gallup Organization (2010), there were about 18% of experienced quantity surveyor agreed to revamp the curricula or courses to make it more relevant to the need of them. Said, Shafiei and Omran (2010) emphasized that the Board of Quantity Surveyors Malaysia (BQSM) incorporated with higher education institutions in order to has a good track to produce the "Criteria and Standard for Educational Programs In the field of Quantity Surveying" comprising the required skills, knowledge and attributes to educate the Malaysian undergraduate quantity surveyor.

2.5.2 Partnership between HEI and employer

Currently, there was a barrier existence between higher education institution and employers in term of differences in their mind-sets, expectations and priorities concern the fresh graduate quantity surveyor's employability skills. Lowden, et al. (2011) suggested that the real and equal partnership between the higher education institutions and experienced quantity surveyor was encouraged to improve the quantity surveying graduate employability. The higher education institution required to inform the experienced quantity surveyor about the quantity surveying degree course development to ensure the course provided and graduate's learning experiences were meet the need of employers. It was subsequently supported by Ang (2015) that the gap between the employer's expectations and satisfaction of the skills can be narrow through the partnership. Thus, it was a good practice to encourage the fresh graduate quantity surveyor's employability.

2.5.3 Employer's contribution in course design

Dr Kinash (2015) suggested the experienced quantity surveyor can contribute in designing the quantity surveying course in the universities. The participation of employer in course design can directly reflect the type of experienced quantity surveyor in the community and their preferences of required skills, knowledge and attributes. It subsequently strikes a balance between the theoretical knowledge and industrial knowledge. In addition, the experienced quantity surveyor contributes in designing the course structure program can ensure the programs offered and the undergraduates learning experience were in a better fit to address the needs of employers. However, Lowden, et al. (2011) claimed that the experienced quantity surveyor's engagement in course design was often disregarded and it subsequently caused some difficulties to secure them in educational program. Thus, higher education institution should become the initiator of partnership with experienced quantity surveyor.

2.5.4 Provide guest lecturer

Royal Institution of Chartered Surveyors (RICS) recommended that the providing of the guest lecturer to the quantity surveying undergraduate can improve their employability after graduation. The guest lecturer should be the expert in the particular field from the faculty of institution, outside the faculty of institution or expert from community. Dr Kinash (2015) also highlighted that the higher education authorities can invite the experienced quantity surveyor as the guest speaker or lecturer to deliver talks and workshops to undergraduate quantity surveyor in the institutions. Hearing the new voices provides to the graduates with different point of views, opinions and potential resources for their future career (Millier, 2014). It also provided the fresh graduate quantity surveyor with latest information and kept follow up with the local industries (Ang, 2015).

2.5.5 Design assessment activities

Dr. Kinash (2015) pointed out that the higher education institution should design authentic assessment activities which aligned with the current industry practices and standard to the graduates. The common assessment activities can be conducted either in group or individual such as interview, group discussion, case studies, role-play presentation, questionnaires, test etc. Throughout the assessment activities, the undergraduate can share their ideas, information and opinion with others participants. The assessment activities can reflect the undergraduate quantity surveyor's performance and evaluate their strengths and weakness. It can check whether their skills were adequate with the requirement of the construction industries.

2.5.6 Work placement or internship

The internship program and work placement were the most effective method to encourage the employability skills of fresh graduate quantity surveyor. It bridges the

gap between the education and the requirement of experienced quantity surveyor. More often than not, the internship program was a compulsory pre-requisite subject for the quantity surveying undergraduate before graduation. It is a good opportunity for the graduates to explore to the actual working scenario to gain working experiences and develop the skills, personal qualities and knowledge about their profession. The work placement also can enhance the adaptability, thinking skills in problem solving, work independently and etc. (Asonitou, 2014). According to the finding from The Gallup organization (2010) that there were about 36% of employers encouraged the work placement or internship as an integral part of the academic program. Generally, the duration of the quantity surveying internship program was four to six month. Most of the employer believed that the duration is insufficient for the quantity surveying undergraduate to families with the actual working environment. Therefore, 74% of employers suggested that the industrial training period must be extend and allocated between the semester of program due to the undergraduate quantity surveyor able to enhance their performance and rectify the problem.

2.5.7 Embedding employability skills in course

Nowadays, the fresh graduate quantity surveyor were lack of concern about the employability skills relevant to the needs in the workplace. Although this information is published in the websites or in all the course guideline, the fresh graduate still does not realize that there was a close relationship between the curriculum and learning outcome. Worse come to worse, the educator had not educated these skills and capabilities strongly enough to the fresh graduates (Cavanagh, et al., 2015). Thus, the employability skills and capabilities should be embedded and linked to the learning outcomes for every subject. The higher education institution should consider all the subjects offered in the course aligns with the employability skills relevant to the need of construction industries. Dr Kinash (2015) suggested the educator should brief and discuss with the fresh graduates quantity surveyor to ensure them can understand the linkage between learning outcomes and graduate employability. As a result, promoting the employability skills

was at the priority in the higher education institution's strategic planning (Lowden, et al., 2011).

CHAPTER 3

METHODOLOGY

3.0 Introduction

This chapter will discuss the research design adopted in the study, data collection method for primary data and secondary data, sampling design including the target population of study, sampling frame and sampling location, sampling element, sampling techniques used and appropriate sampling size required for the study. It also discusses the instrument used for research data collection and data analysis.

3.1 Research design

Research designed was defined as systematic procedures and planning to conduct a research through data collection and data analysis (Creswell, 2009). Vaus (2001) also described a detailed work plan need to be established by describing the flow of the project to complete. The purpose of the research design was to ensure the collected data to answer the research questions and hypothesis. The most common type of research designed is qualitative method, quantitative methods and mix methods (combination of quantitative and qualitative method).

3.1.1 Quantitative research versus Qualitative research

Table 3.1 Overview of Quantitative and Qualitative research method

Criteria	Qualitative research	Quantitative research
Approach	Inductive approach	Deductive approach
Research question	Developed and refined the question during date collection. The questions are designed in open-ended.	Developed and refined the question before data collection. The questions are designed in closed-ended.
Sample size	Small	Large
Respondent	Selected	Randomly selected
Data	Non-measurable	Measurable
Collection method	Using unstructured or semi-structured techniques such as group discussion or interview.	Using structured techniques such as survey, questionnaires through online, telephone or face-to-face.
Data analysis	Using narrative stories and detailed description of a social setting.	Using statistics, tables or charts with relationship among numbers for description.

(Sources: Creswell, 2009; Neuman, 2009; Wyse, 2011)

3.1.2 Selection of research method

After determining the aim of the research, which was to examine the experienced quantity surveyor's perception of employability skills required by the fresh graduate quantity surveyor, it was appropriate to categorize it as exploratory research. The perception of experienced quantity surveyor was examined against the importance of employability skills, satisfaction of employability skills, personal characteristics of fresh graduates and solution to enhance their employability skills to determine the relationship between the dependent and independent variables. Thus, quantitative research method was suitable to be adopted in this research. The quantitative research method studies small group of individuals to represent large group of people

or population and making generalization from the samples. The data was collected through the online questionnaires survey which provides an inexpensive approach for data collection. After the data is obtained, a statistical analysis can be adopted in the research to present the result clearly and easy understand to readers.

3.2 Data Collection Method

3.2.1 Primary Data

The primary data was described as the new information collected through interaction with other individuals. It was assembled for the research problem. The collected information was first-hand information which had not been published yet until the research project is completed. It can be the result of the experiment, observation, telephone survey, face-to-face interview, focus group etc. (Hair, et al., 2003; Burns and Bush, 2006; Zikmund, 2003).

In this research, the primary data was collected using the questionnaire surveys which were distributed through online and walk-in. The questionnaires were distributed to certain target of individuals in order to collect the desired data and information. The reason of using questionnaires survey was to ensure the high degree of accuracy and consistency of information collected because the structure questions were developed in the survey to scope the required information. The primary data obtained through questionnaires can ensure it reliability because the information is new and without any editing.

3.2.2 Secondary Data

Secondary data was defined as the historical data which was already published by other people. The information of secondary data was gathered from the existed sources and did not require access to respondents. It could be obtained easier and

faster than the primary data through online, reference book, textbook, articles, journal, research paper etc. (Sekaran, 2003; Ticehurst and Veal, 2000).

In this research, the secondary data was collected from the online journals and articles through the e-databases and references books provided by Universiti Tunku Abdul Rahman's library. Besides, the secondary data used in this research are also obtained from the websites and e-books from different authors and academicians. The final year projects also can be found in the library which was done by the former undergraduates to act as one of the references of research.

3.3 Sampling Design

3.3.1 Target Population

Target population was also known as theoretical population which described as the entire group of elements such as individuals or objects which the researches were interested to make inferences. The element possessed some common characteristics (Professor Fricker, n.d; Neuman, 2009). Thus, the target population in this research was the construction industries in Malaysia which including consultant firms, developers and contractor firms. The target respondents were the personnel who had working experiences or such as superior quantity surveyor and senior quantity surveyor.

3.3.2 Sampling Frame and Sampling Location

Sampling frame was defined as a list of sampling chosen from the target population required for the research (Ross, 2005; Neuman 2009). The sampling frame in this research focused on construction organizations which were possess their business as consultant firm, contractor firm and developer with varying size of organization.

Moreover, the sampling location of the research was set at the construction organizations in Klang Valley area in Malaysia.

3.3.3 Sampling Element

The sampling element was referred as the unit of analysis of the population than were selected. It focused on what the researcher observed in the data (Neuman, 2009). The sampling element of this research was the personnel who had experienced working with fresh graduate quantity surveyor. The personnel can be the superior quantity surveyors and senior level quantity surveyor who are rich in real working experiences in evaluating the performance of quantity surveyors during recruitment.

3.3.4 Sampling Techniques

Sampling techniques can be divided into two categories which were probability sampling and non-probability sampling. Probability sampling was defined as randomly selection of element from the target population. It consisted of simple random, systematic, multi-stage, stratified and cluster. On the other hand, the non-probability sampling referred to the selection of element from the target population through the non-random techniques. The sampling techniques under this category were convenience sampling, quota sampling, purposive sampling and snowball sampling (Neuman, 2009; Nalzaro, 2012).

The non-probability sampling technique was adopted in this research by using the convenient sampling. Convenient sampling was described as non-random sample which selection of element based on non-systematic procedure, availability and convenient accessibility. The reason of adopting the convenient sampling in this research was due to the data can be obtained and collected easily, faster and convenient.

3.3.5 Sampling Size

The sample size can be calculated through the formula below:

$$n = \frac{z \times \{p\ (1-p)\}}{ME^2}$$

Where,

ME indicates as margin of error

z is the z-score; The confident level is 90%, then z-score is 1.645; The confident level is 95%, then the z-score is 1.96; The confident level is 99%, then the z-score is 2.58.

p is prior judgment of the correct value of p

n indicates as the number of sample size.

In this research, the confidence level was assumed as 95% which the z-score was determined as 1.96 whilst the p value was assumed as 0.05. The margin of error was set as 0.05. Thus, size of the sample can be obtained:

$$n = \frac{1.96 \times \{\ 0.5\ (\ 1-0.5)\ \}}{0.05^2}$$

n= 196

Thus, the questionnaires will be prepared and distributed to the experienced quantity surveyors in Klang Valley area in order to receive 196 responses.

3.4 Research Instrument for Data Collection

Research instrument was the tool that the researcher to collect the desired data for the research. It was important as the inaccurate data impacted the result of the research and leaded to invalid outcome. There were few types of data collection instruments

usually used by the researcher such as interview, experiment, questionnaires, observation and others.

3.4.1 Questionnaires

In this research, the web-based questionnaire was used as a tool to collect the data. The questionnaires will be sent through e-mail to the respondents. The advantages of using this method are cost saving and short time required delivering. It also allows large amount of information to be collected from large number of respondents. The result of the questionnaires can be quantified easily and quickly. Besides, the questionnaires were also printed and distributed to the respondents in order to achieve higher response rate

The questions in the questionnaire was designed based on the closed-end or structured questions in order to ease the procedure in analysing the data. The questionnaires were divided into 5 sections which were section A, B C, D and E. In section A, the questions were designed to obtain the demographic profile of respondents such as type of organization, working experiences, current and experienced working with fresh graduate quantity surveyor. The questions in sections B and C in the questionnaire were designed based on 5 points LIKERT scale while section E were designed as 3 points LIKERT scale to determine the relationship between the dependent variables and independent variables.

3.5 Data Analysis

Data analysis was a process of systematically describing, analysing and evaluating the data obtained from the respondents through questionnaires. The software used in statistical analysis of data for this research was Statistical Package for Social Sciences (SPSS).

3.5.1 Frequency Analysis

The frequency analysis was adopted in this research to analyse the frequency or percentage for the demographic profile of respondents including the type of organizations (eg. consultant firm, contractor firm and developer firm), working experiences, and currently and experienced working with fresh graduate quantity surveyor. The results were presented in the form of table showing the percentage to ease for viewing.

3.5.2 Relative Importance Index (RII) Analysis

The Relative Importance Index Analysis was adopted to measure the LIKERT scale in the research. Five point LIKERT scale was employed to the questions to examine the importance and satisfaction on 28 employability skills and their weightages were:

1- Not Important/ dissatisfied;
2- Slightly important / slightly satisfied;
3- Moderate important/ moderate satisfied;
4- Important/ Satisfied;
5- Very important/ very satisfied.

While the 3 point LIKERT scale was also employed in this survey to examine the solutions to enhance the employability skills of fresh graduate quantity surveyor and their weightages were:-

1- Not important
2- Important
3- Very important

Based on these five or three scale rating, the RII can be calculated by using the formula as below:

$$RII = \frac{\Sigma w}{AN}$$

Where,

w = weight of scale;

A = highest weight (in this case was 5 for 5-point LIKERT; 3 for 3-points LIKERT);

N = total number of respondent

The RII of importance and satisfaction on employability skills were calculated and ranked accordingly. Then, the difference between the importance and satisfaction will be calculated as below:

Difference = RII of satisfaction on employability skill – RII of importance of employability skills

3.5.3 Kruskal-Wallis Test

Due to the questionnaires were set as LIKERT scale based, non-parametric statistical technique is adopted in this research. The Kruskal-Wallis Test was carried to examine the statistical significant difference among consultant firm, contractor firm and developer.

The alpha value used in this test is 0.05 and degree of freedom is 2. Based on this two information, the referenced critical value can be found in the Chi-square Table which was 5.991. When the critical value was lesser than 5.991, it indicated there was no statistical significant difference. While the critical value was greater than 5.991, it indicates that there was statistical significant difference (George, et al, 2011).

3.5.4 Mann-Whitney U Test

Since the Kruskal-Wallis Test was used to examine the statistical significant difference among the independent groups including consultant firm, contractor firm and developer. However, result of Kruskal-Wallis Test cannot present same as ANOVA Post Hoc Test to indicate which pair of independent groups means the differences. Therefore, the Mann-Whitney U Test was further to carry out to compare which pair of independent group showing the different. When the asymptotic significant (p) value less than 0.050, there was significant difference (George, et al, 2011).

3.5.5 Wilcoxon Signed Rank Test

Wilcoxon Signed Ranks Test was conducted to determine the significant difference between two dependent variables (importance and satisfaction on employability skills). It was similar with the 2-Paired Sample T Test. However, due to the data collected for this research was non-parametric, the Wilcoxon Signed Rank Test was selected to use in this research instead of 2 Pair Sample T Test. At the level when asymptotic significant (p) value was less than 0.050, there was significant difference between two dependent groups (George, et al, 2011).

3.5.6 Cronbach's Alpha Test

The Cronbach's Alpha Test was performed measure the internal consistency reliability of several item. It was most commonly adopted when the multiple questionnaires were set as LIKERT questions that form a scale and wish to determine the how the scale was reliable. Alpha was based on a correlation matrix and should be positive value. The Cronbach's Alpha Test's accepted rule of thumb for describing the internal consistency as below (Manerikar. M &Manerikat. S, 2015):

Table 3.2 Cronbach's Alpha Test's Accepted Rule of Thumb

Cronbach's alpha	Internal consistency
$\alpha > 0.9$	Excellent / Very good
$0.7 = \alpha < 0.9$	Good
$0.6 = \alpha < 0.7$	Acceptable
$0.5 = \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

CHAPTER 4

RESULTS AND DISCUSSION

4.0 Introduction

The target respondents of this research were quantity surveyor, cost consultant estimator or contract administrator with at least three years working experiences in construction industry as they need to evaluate the employability skills possessed by fresh graduate quantity surveyors who were less than three years working experience in construction industry. There were questions to ask their working experiences in order to identify the qualification of respondents to this survey. 280 sets of questionnaires were distributed through email and walk-in. However, there were only 58 respondents responded this survey which the rate of response was only 20.7%. Among the 58 responses, there were four responses cannot be counted in this analysis as they were unqualified due to they were less than 3 years working experiences. Therefore, 54 responses were used in the analysis.

4.1 Respondent Demographic Profile

In the questionnaire survey, each of the respondent was asked fours questions regarding their demographic profile including type of organisation, working experiences, currently and past experiences working with the fresh graduate quantity surveyors. The frequency analysis was conducted to analyse the respondents' demographic characteristics.

4.1.1 Type of Organization

Table 4.1Type of Organisation

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Consultant firm	22	40.7	40.7	40.7
	Contractor firm	25	46.3	46.3	87.0
	Developer	7	13.0	13.0	100.0
	Total	**54**	**100.0**	**100.0**	

Source: Data generated from SPSS

As shown in the Table 4.1, three type of organisations were discussed in this questionnaire survey which were consultant firm, contractor firm and developer. Among these three type of organizations, majority of the respondents were from contractor firm which consisted of 46.3%, followed by consultant firm and developer which were 40.7% and 13.0% respectively.

4.1.2 Respondent's Working Experience

Table 4.2 Working Experience of Respondents

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	3 years to 7 years	23	42.6	42.6	42.6
	8 years to 12 years	12	22.2	22.2	64.8
	13 years to 17 years	8	14.8	14.8	79.6
	18 years and above	11	20.4	20.4	100
	Total	**54**	**100.0**	**100.0**	

Source: Data generated from SPSS

The purpose of this research was to examine the experienced quantity surveyor's perception of the employability skills required by fresh graduate quantity surveyor

who successfully complete the higher educational learning with less than three years working experiences in construction industry. Thus, the requirement of the respondents to complete this questionnaire survey was set as an individual who at least three years of working experiences as quantity surveyor, estimator, cost consultant or contract administrator to evaluate the employability skills required by fresh graduate quantity surveyor.

The interval range of working experience was set as 5 years as shown in Table 4.2. Majority of respondents were fall under the range of 3 years to 7 years of working experiences which had 42.6 %, followed by 8 years to 12 years (22.2%), 18 years and above (20.4%) and 13 years to 17 years (14.8%).

4.1.3 Respondent Working with Fresh Graduate Quantity Surveyors

Table 4.3 Currently Working with Fresh Graduate Quantity Surveyor

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Yes	43	79.6	79.6	79.6
	No	11	20.4	20.4	100.0
	Total	**54**	**100.0**	**100.0**	

Source: Data generated from SPSS

Since the survey was conducted to examine the experienced quantity surveyor's perception towards the fresh graduate quantity surveyor. Thus, they must had experiences working with the fresh graduate. As shown in the Table 4.3, there were 43 respondents among 54 respondents were currently working with fresh graduate quantity surveyor. However, there were still 11 respondents not working the fresh graduate quantity surveyor recently, but they still had past experiences working with fresh graduate quantity surveyor as shown in the Table 4.4.

Table 4.4 Previous Experience Working with Fresh Graduate QS

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Yes	54	100.0	100.0	100.0
	No	0	0.0	0.0	100.0
	Total	**54**	**100.0**	**100.0**	

Source: Data generated from SPSS

4.2 Important-Satisfaction Level of Employability Skills

The employability skills were the essential skills required by the fresh graduate quantity surveyor that necessary to get employment and perform well in their workplace. There were seven employability skills discussed in this survey including communication skills, computer and information technology literacy, higher order thinking skills, leadership skills, interpersonal skills, teamwork skills and management skills. Therefore, the importance and satisfaction of employability skills possessed by fresh graduate quantity surveyor were being asked in this survey.

All the questions are being asked using 5-point Likert scale with: -
1 indicating – not important / very dissatisfied;
2 indicating – slightly important / slightly dissatisfied;
3 indicating – moderately important / moderately satisfied;
4 indicating important / satisfied; and
5 indicating – very important / very satisfied.

By using the 5 point Likert scale, the relative importance index and rank for importance and satisfaction of employability skills were tabulated in the following section. The Kruskal- Wallis Test, Mann-Whitney U Test, and Wilcoxon Signed Rank Test were conducted to test for the significant difference between the independent groups. The Cronbach's Alpha Test was conducted to test for reliability of the employability skills.

4.2.1 Importance of Employability Skills

4.2.1.1 Cronbach's Alpha Test for Importance of Employability Skills

Table 4.5 Cronbach's Alpha Test for Importance of Employability Skills

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.930	0.932	28

The Cronbach's Alpha Test was conducted to test for the reliability of the importance of 28 employability skills required by fresh graduate quantity surveyor as shown in Table 4.5. Based on the result shown in Table 4.5, the Cronbach's Alpha coefficient for the importance of 28 employability skills was 0.930 which indicated there was a very excellent internal consistency (Manerikar & Manerikat, 2015).

4.2.1.2 RII and Ranking for Importance of Employability Skills

There were 28 employability skills tabulated as shown in the Table 4.6. These 28 employability skills required by fresh graduate quantity surveyor were rated according to their degree of importance by the respondents. The relative importance index were calculated and they must in the range of 0.000 to 1.000.

Table 4.6 RII and Ranking for Importance of Employability Skills

Employability Skills		RII	Rank
Communication skills	Ability to speak fluently in Bahasa Malaysia, English and other languages.	0.841	5
	Ability to write effectively in Bahasa Malaysia, English and other languages.	0.793	14
	Ability to listen attentively and give appropriate feedback.	0.819	9

	Ability to convey information clearly and effectively to reach common understanding.	0.807	11
	Ability to present information or project confidently.	0.807	11
Computer and information technology literacy	Ability to operate the basic computer functions such as Excel, Word, Power point, etc.	0.893	1
	Ability to use the advance software such as Auto CAD, Revit, and etc.	0.811	10
	Ability to search and manage the information from various sources.	0.804	12
Higher order thinking skills	Ability to identify the problem, analyse and give appropriate solutions.	0.811	10
	Ability to explain, analyse and evaluate the data and information.	0.804	12
	Ability to make necessary judgement or decisions.	0.737	18
	Ability to think critically or think-out-of-the-box to generate creative ideas	0.770	16
Leadership skills	Ability to lead and give guidance to the team members.	0.704	20
	Ability to give motivate to the team member.	0.700	21
	Ability to take responsibilities of the task.	0.863	2
Interpersonal skills	Ability to interact/ network with others in an organization.	0.807	11
	Ability to negotiate to reach consensus.	0.748	17
	Ability to deal with superiors.	0.826	7
	Ability to encourage and motivate others.	0.733	19
Teamwork	Ability to work with other in different background, ethnic, race, gender and age	0.774	15
	Ability to share information with others.	0.793	14
	Ability to contribute to the group or team to reach goals.	0.800	13

Management skills	Ability to plan and organize the work.	0.852	4
	Ability to complete the work in efficiency and structured manner.	0.856	3
	Ability to allocate the time well and complete task within deadline.	0.893	1
	Ability to meet the identified standard or expected result when performing a job.	0.837	6
	Ability to adapt in new situation or environment	0.822	8
	Ability to work independently and under pressure.	0.841	5

The 28 employability skills required by fresh graduate quantity surveyor were arranged and ranked accordingly by their relative importance index's (RII) weightage. The RII's weightage of these 28 employability skills were in the range of 0.700 to 0.893. The highest the relative importance index's weightage, the highest the rank is placed.

Table 4.7 Summary RII and Ranking for Importance of Employability Skills

Skills	RII	Rank
Communication skills	0.813	3
Computer and information technology literacy	0.836	2
Higher order thinking skills	0.781	5
Leadership skills	0.756	7
Interpersonal skills	0.779	6
Teamwork skills	0.789	4
Management skills	0.850	1

The 28 employability skills were categorised into seven main employability skills including communication skills, computer and information technology literacy, higher order thinking skills, leadership skills, interpersonal skills, teamwork skills and management skills as shown in the Table 4.7. The seven employability skills

were arranged and ranked according to their mean of relative importance index from the Table 4.6.

The management skills were placed at the first ranking as it carried the highest relative importance index's weightage with 0.850. By referring the Table 4.6, there were six sub-employability skills categorised under the management skills and they carried higher relative importance index's weightage which subsequently contributed to highest rank of management skills. This result supported the finding from Said, Shafiei and Omran (2010) as they also listed the management skills in the top skills required by the fresh graduate. Under the management skills, the ability to allocate the time well and complete the task within deadline was the most important skill ranked by the respondents as it carried the highest weightage with 0.893, followed by ability to complete the work in efficiency and structure manner with 0.856, ability to plan and organize the work (0.852), ability to work independently and under pressure (0.841) and ability to meet the standard or expected result (0.837). The result shows that the respondents were care for how the fresh graduate quantity surveyors to manage their time and resources available in planning and organizing their given tasks in order to complete the tasks within deadline and meet their superior's expectation. However, the ability to adapt in new situation or environment was ranked as the lowest required skills by fresh graduate quantity surveyor which had the lowest RII weightage with 0.822 under management skills.

The computer and information literacy skills carried the second higher weightage of relative importance index with 0.836 and it was placed at the 2nd important skills among the seven employability skills as same finding with Jagboro (2012) and Nkado (2000). Under this skill, the ability to operate the basic computer functions such as Microsoft Excel, Words and Power Point were the important employability skills rated by the respondents with 0.893 of RII's weightage. Generally, the Microsoft Excel provided the basic spreadsheet program. It was common used by the quantity surveyor in completing the calculation works as it assists them in scheduling the large amount of figures. Musa, Babalola and Oyebisi (2010) also supported that the basic computer function can assist quantity surveyor in cost estimating and measurement. It allowed them to complete their work faster and reduce the human error. Although the advance software such as Auto CAD or Revit

were so popular to be adopted in construction industry now, the respondents ranked the ability to use the advance software at the 10th ranking due to the respondents think that the advance software might not suitable to be used by the fresh graduate quantity surveyors to complete their works. Besides, the ability to search and manage information from various sources was placed at the 12th ranking among the 28 employability skills and it was the least important skills under the computer and information literacy due to they think that the sufficient information will be provided to the fresh graduate quantity surveyor to prevent wrong information used in their works.

Moreover, the 3rd ranking among the seven employability skills was communication skills. It carried third highest relative importance index's weightage with 0.813. Under the communication skills, it focused on the fresh graduate quantity surveyor's writing, speaking and listening skills to convey the information to reach mutual understanding and confidently. Based on the Table 4.6, it shows that the respondents rated the speaking skills as the 5th important skills compare to the writing and listening skills which they were placed at 14th and 9th ranking respectively. The respondent considered the speaking skill possessed by the fresh graduate quantity surveyor was an important skill because they need to deal with various parties in the construction projects. It was supported by Islam, Hamid and Manaf (2013) as they were expected to speak at least Bahasa Malaysia and English as these two languages were important to local and international construction industries while other languages such as Chinese and dialect languages will add advantages when they were getting employment. Besides, the ability to convey information clearly to reach mutual understanding and present information confidently were less required skills under the communication skills by fresh graduate quantity surveyor as they were placed at the 11th ranking.

Furthermore, the teamwork skills were placed at the 4th rank with 0.789 of weightage. There were three sub-employability skills discussed under the teamwork skills including ability to contribute to the team to reach goals, ability to share information with others and ability to work with colleagues in different background, ethnic, race, gender and age. By referring the Table 4.6, these three sub-employability skills were ranked as less important skills required by the fresh

graduate quantity surveyor as they were placed at the 13th, 14th and 15th ranks. This result supported the finding from Gurcharan and Garib (2008) that the teamwork skills was an important skill required by the fresh graduate quantity surveyor but it was less important than the communication skills and computer and information literacy skills. However, the fresh graduate quantity surveyor was expected to join the organization as part of a team in order to complete a project together.

After the teamwork skill, the higher order thinking skill was placed at the 5th rank with RII's weightage of 0.781. Under this higher order thinking skill, there were four sub-employability skills discussed which including the ability to identify the problems and give solutions, analyse the information, make necessary judgement or decision and think critically to generate creative ideas. However, the respondents ranked these sub-employability skills were less important skills required by the fresh graduate quantity surveyor which they were placed at 10th, 12th, 18th, and 16th ranks respectively. It might due to the fresh graduate quantity surveyors were lack of working experiences in construction industry, they were still under the guidance of experience quantity surveyors. Therefore, the experienced quantity surveyors will become the problem solver and decision maker most of the time. However, according to Gurcharan and Garib (2008), the fresh graduate quantity surveyor will be guided and trained under the experienced quantity surveyor in identification the potential negative outcomes, analyse the problem and recognition of the alternative solutions.

In addition, the second last rank was the interpersonal skill which carried 0.779 of RII's weightage. There were four sub-employability skills under the interpersonal skills. Among these four sub-employability skills under interpersonal skill, the ability to deal with the superior was the important skill required by the fresh graduate quantity surveyor because it was ranked at the 7th with 0.826 of RII's weightage. According to Schwartz (2011) stated that the emotional control was an important criterion during dealing with the superior. The respondents focused on what was the fresh graduate quantity surveyor's reactions and actions when they deal with experienced quantity surveyor who as their superior. Besides, the researcher also emphasized that well-interaction with the colleagues in the same work place was important to create a comfortable working environment. Nevertheless, the

respondents ranked the ability to network with others in the organizations was less important skills required (11th rank) by fresh graduate quantity surveyor. It same goes to the ability to encourage and motivate others which placed at the second last skills among 28 employability skills. Besides, the respondents ranked the ability to negotiate to reach consensus was not important skill (17th rank) because they thought the fresh graduate quantity surveyor were lack of working experience, they were not familiar to negotiate with parties in construction industry.

Last but not least, the leadership skills were rated as the least important employability skills required by fresh graduate quantity surveyor. In the respondent's point of view, the ability to lead and give guidance and motivation to the team members were not the important skills required by fresh graduate quantity surveyors as they were at the 20th and 21th ranks. The respondents commented that the fresh graduate seldom became a lead role in a team as they were still insufficient of working experiences. Thus, the ability to lead and motivate the team member were least important to the fresh graduate. However, as shown in the Table 4.6, the respondents pointed that the ability to take the responsibilities was the important skills which was place at the 2nd rank under the leadership skills because the fresh graduate quantity surveyor should take the responsibilities to conduct and complete the given tasks in order to meet experienced quantity surveyor's expectation or identified targets.

4.2.1.3 Kruskal-Wallis Test and Mann-Whitney U Test

Kruskal-Wallis Test was conducted to find out the statistical significant difference in rating the importance of the employability skills between the consultant firm, contractor firm and developer as shown in Table 4.8. The alpha value used in this analysis was 0.05 while the degree of freedom was 2. By referring the Chi-square Table, the critical value was 5.991. It means that when the critical value was greater than 5.991, there is a significant difference between the independent groups.

Table 4.8 Kruskal-Wallis Test for the Importance of Employability Skills

Employability skills	Chi-square	Asymp. Sig.
Communication skills		
Ability to speak fluently in Bahasa Malaysia, English and other languages.	1.663	0.435
Ability to write effectively in Bahasa Malaysia, English and other languages.	3.383	0.184
Ability to listen attentively and give appropriate feedback.	0.052	0.974
Ability to convey information clearly and effectively to reach common understanding.	0.694	0.707
Ability to present information or project confidently.	3.157	0.206
Computer and information technology literacy		
Ability to operate the basic computer functions such as Excel, Word, Power point, etc.	5.828	0.054
Ability to use the advance software such as Auto Cad, Revit, and etc.	2.893	0.235
Ability to search and manage the information from various sources.	4.698	0.095
Higher order thinking skills		
Ability to identify the problem, analyse and give appropriate solutions.	*7.572	*0.023
Ability to explain, analyse and evaluate the data and information.	4.797	0.091
Ability to make necessary judgement or decisions.	1.124	0.570
Ability to think critically or think-out-of-the-box to generate creative ideas	1.392	0.498
Leadership skills		
Ability to lead and give guidance to the team members.	2.232	0.328
Ability to give motivate to the team member.	3.666	0.160
Ability to take responsibilities of the task.	0.688	0.709
Interpersonal skills		
Ability to interact/ network with others in an organization.	1.893	0.388
Ability to negotiate to reach consensus.	0.942	0.624
Ability to deal with superiors.	5.700	0.058
Ability to encourage and motivate others.	2.187	0.335

Teamwork		
Ability to work with other in different background, ethnic, race, gender and age	1.185	0.553
Ability to share information with others.	0.346	0.841
Ability to contribute to the team to reach goals.	2.016	0.365
Management skills		
Ability to plan and organize the work.	2.028	0.363
Ability to complete the work in efficiency and structured manner.	0.615	0.735
Ability to allocate the time well and complete task within deadline.	2.994	0.224
Ability to meet the identified standard or expected result when performing a job.	0.315	0.854
Ability to adapt in new situation or environment	1.280	0.527
Ability to work independently and under pressure.	4.220	0.121

Based on the result in the Table 4.8, the 27 employability skills showed that there were no significant difference between the consultant firm, contractor firm and developer because their critical values were lesser than 5.991 and their asymptotic significance were higher than 0.050, except “the ability to identify the problem, analyse and give appropriate solution” under higher order thinking skill. Its critical value was 7.572 which greater than 5.991 and showed significance value with 0.023.

Nevertheless, the Kruskal-Wallis Test does not show which pair of independent groups mean the significant differences. Therefore, Mann-Whitney U Test was further to carry out in order to find out which pair of independent groups (consultant firm, contractor firm and developer) showed the significant difference on rating the “ability to identify the problem, analyse and give solution”.

Table 4.9 Mann-Whitney U Test for Significant Difference Skill

	Consultant & Contractor	**Consultant & Developer**	**Contractor & Developer**
Ability to identify the problem, analyse and give appropriate solutions.	0.233	0.062	*0.015

The p-value of three pair of independent groups were shown in the Table 4.9. There is a significant difference when the p-value is lesser than 0.050. By referring the Table 4.9, there was a significant difference between the respondents from contractor firm and developer towards the ability to identify the problem, analyse and give appropriate solution as its p-value was 0.015 which lesser than 0.050. Whilst the other two pairs of consultant firms vs. contractor firms and consultant firms vs. developer showed there were no significant difference towards the fresh graduate quantity surveyor's ability to identify the problem, analyse and give appropriate solution as both p-values were 0.233 and 0.062 respectively which greater than 0.050.

The Table 4.10 shows the relative importance index of three independent groups toward the ability to identify the problem, analyse and give appropriate solutions. It can be used to explain the significant difference between the contractor firm and developer from the result of Mann-Whitney U Test in Table 4.9.

Table 4.10 Degree of Importance of Three Independent Groups

	Type of organisation	**Degree of importance**					**RII**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**	
Ability to identify the problem, analyse and give appropriate solutions.	Consultant firm	0	0	3	13	6	0.827
	Contractor firm	0	3	4	13	5	0.760
	Developer	0	0	0	2	5	0.943

By referring the Table 4.10, the RII of consultant firm, contractor firm and developer were 0.827, 0.760 and 0.943 respectively. There were three respondents from contractor firm rated this skill as slightly important. Thus, it contributed to less weightage of RII as compare to consultant firm and developer. Due to the biggest difference of RII between the contractor firm and developer, it showed the significant difference in Mann-Whitney U Test.

4.2.2 Satisfaction on Employability Skills

4.2.2.1 Cronbach's Alpha Test

Table 4.11 Cronbach's Alpha Test for Satisfaction on Employability Skills

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.972	0.971	28

The Cronbach's Alpha Test was conducted to test for the reliability of the satisfaction on 28 employability skills possessed by fresh graduate quantity surveyor. Based on the result shown in Table 4.11, the Cronbach's Alpha coefficient for the satisfaction on 28 employability skills was 0.972 which indicated that there was at the excellent internal consistency (Manerikar & Manerikat, 2015).

4.2.2.2 RII and Ranking for Satisfaction on Employability Skills

After examining the degree of importance of employability skills, the same 28 employability skills were asked to rate according to the degree of satisfaction toward the fresh graduate quantity surveyor by the respondents. The relative importance index were calculated and they must in the range of 0.000 to 1.000.

Table 4.12 RII and Rank for Satisfaction on Employability Skills

	Employability Skills	RII	Rank
Communication skills	Ability to speak fluently in Bahasa Malaysia, English and other languages.	0.652	11
	Ability to write effectively in Bahasa Malaysia, English and other languages.	0.693	6
	Ability to listen attentively and give appropriate feedback.	0.693	6
	Ability to convey information clearly and effectively to reach common understanding.	0.656	10

	Ability to present information or project confidently.	0.633	16
Computer and information technology literacy	Ability to operate the basic computer functions such as Excel, Word, Power point	0.763	1
	Ability to use the advance software such as Auto CAD, Revit, and etc.	0.722	5
	Ability to search and manage the information from various sources.	0.689	7
Higher order thinking skills	Ability to identify the problem, analyse and give appropriate solutions.	0.648	12
	Ability to explain, analyse and evaluate the data and information.	0.644	13
	Ability to make necessary judgement or decisions.	0.630	17
	Ability to think critically or think-out-of-the-box to generate creative ideas	0.633	16
Leadership skills	Ability to lead and give guidance to the team members.	0.630	17
	Ability to give motivate to the team member.	0.656	10
	Ability to take responsibilities of the task.	0.633	16
Interpersonal skills	Ability to interact/ network with others in an organization.	0.689	7
	Ability to negotiate to reach consensus.	0.637	15
	Ability to deal with superiors.	0.667	9
	Ability to encourage and motivate others.	0.641	14
Teamwork	Ability to work with other in different background, ethnic, race, gender and age	0.748	2
	Ability to share information with others.	0.730	4
	Ability to contribute to the group or team to reach goals.	0.670	8
Management skills	Ability to plan and organize the work.	0.633	16
	Ability to complete the work in efficiency and structured manner.	0.633	16
	Ability to allocate the time well and complete task within deadline.	0.648	12
	Ability to meet the identified standard or expected result when performing a job.	0.648	12

Ability to adapt in new situation or environment	0.737	3
Ability to work independently and under pressure.	0.656	10

The satisfaction of 28 employability skills were arranged and ranked accordingly by referring their RII's weightage as shown in the Table 4.12. The relative importance index's weightage on satisfaction of employability skills were in the range of 0.630 to 0.763. The highest the relative importance index's weightage, the highest the rank is placed.

Table 4.13 Summary RII and Ranking for Satisfaction of Employability Skills

Skills	RII	Rank
Communication skills	0.665	3
Computer and information technology literacy	0.725	1
Higher order thinking skills	0.639	7
Leadership skills	0.640	6
Interpersonal skills	0.658	5
Teamwork skills	0.716	2
Management skills	0.659	4

The 28 employability skills were grouped into seven main employability skills as shown in the Table 4.13. The relative importance index were calculated based on the mean of RII on the satisfaction of employability skills required by fresh graduate quantity surveyor from Table 4.12. The satisfaction of employability skills were ranked accordingly. The range of RII on satisfaction of employability skills were from 0.725 to 0.639

Based on the result in Table 4.13, the computer and information technology literacy was the most satisfied skills rated by the respondents which carried the highest weightage of relative importance index with 0.725. Under the computer and information literacy, there were three sub-employability skills including ability to operate the basic computer function, advance software and search and manage the

information from various sources. Among these three sub-employability skills, the ability to operate the basic computer functions was the most satisfied skills with 0.763 of RII's weightage because the fresh graduate quantity surveyor was well trained to operate these computer functions before they graduate. For example, they required to complete their assignment by using various computer functions such as using Microsoft Excel to do the tabulation, Microsoft Word to prepare report and etc. This result supported the finding from Archer and Davison (2008) and Gurcharan and Garib (2008) where the performance of fresh graduate quantity surveyor in operating the basic computer functions were met experienced quantity surveyor's expectation. Besides, the respondents were also satisfied with the fresh graduate's ability to use the advance software such as Auto CAD and Revit which carried 0.722 weightage, followed by ability to search and manage the information from various sources with RII weightage 0.689.

The teamwork skill was ranked at the second highest ranking on the satisfaction of employability skills by the respondents. However, it did not work in line with the finding from CBI (2012) as it showed there were 75% of respondents dissatisfied with the teamwork skills possessed by the fresh graduate. According to the Table 4.12, the respondents rated the ability of fresh graduate quantity surveyor to work with others in different background, ethnic, race, gender and age and willing to share information with their colleagues were the satisfied skills which carried 0.748 (2^{nd} rank) and 0.730 (4^{th} rank) respectively. They satisfied with these two sub-employability skills under the teamwork skills because the fresh graduate quantity surveyor was easy to get along with their colleagues in the same work place. However, the respondents ranked the ability to contribute to the team to reach goals was the lower satisfied skills under teamwork skills which was placed at 8^{th} rank with 0.670 of RII's weightage due to the heavy workload and stress working environment might cause them to poor contribution to the team (Nag, 2016).

In addition, the third satisfied rank among the seven employability skills was communication skills. There were six sub-employability skills discussed under this skill. Both of the writing skills and listening skills required by the fresh graduate quantity surveyor carried higher weightage with 0.693 and placed at the 6^{th} rank among the 28 employability skills. However, the other sub-employability skills under

communication skills were at the lower ranking including the ability to convey information clearly to reach mutual understanding (0.656, 10th rank), followed by ability to speak fluently (0.652, 11th rank) and ability to present information confidently (0.633, 16th rank). This result subsequently supported the survey conducted by Islam, Hamid and Manaf (2013) as it showed that the fresh graduates quantity surveyor in Malaysia were lack of ability to speak fluently due to poor command of languages especially English. Therefore, they were lack of skills to convey and present information clearly and confidently.

The fourth satisfied employability skill was the management skills. There were six sub-employability skills were discussed under this skill. Among these six sub-employability skills, the respondents were satisfied with the ability of fresh graduate quantity surveyor to adapt in new environment as it carried 0.737 of RII's weightage and it was placed at the 3rd rank among the 28 employability skills. This finding showed that the fresh graduate quantity surveyor had strong adaptability in changing environment. They were easy to comfort with when their work place was changed. Nevertheless, the others five sub-employability skills were less satisfied by the respondents including ability to work independently and work under pressure with 0.656 (10th rank), followed by ability to allocate the time to complete the task within the deadline and meet the identified standard and goals (0.648, 12th rank), ability to plan and organize the work and complete the work in efficiency and structure manner (0.633, 16th rank). It supported the findings from Archer and Davison (2008) and CBI (2012) as the experienced quantity surveyor were less satisfied with the management skills possessed by the fresh graduate quantity surveyor. The poor management skills will lead to delay of work and poor working productivity.

Furthermore, the interpersonal skill was ranked at the fifth placed as shown in the Table 4.13. There were four sub-employability skills included in interpersonal skills. Among these four sub-employability skills, two sub-employability skills were at the top ten skills while the other two skills were out of the top ten skills. The respondents quite satisfied with the ability to interact with others in organization and ability to deal with superiors with 0.689 (7th rank) and 0.667 (9th rank) respectively. However, the respondents ranked the ability to encourage and motivate other with

0.641 (14th rank) and negotiate to reach consensus with 0.637 (15th rank). The result supported the finding from Islam, Hamid and Manaf (2013) because the respondents realised that they were able to network with colleagues and create a harmony working environment. However, they were poor in negotiation due to poor command of languages and lack of confident.

According to Table 4.13, the leadership skill was at the second last rank with 0.640 of RII's weightage among the seven employability skills. In overall, the respondents were less satisfied with the three sub-employability skills possessed by the fresh graduate quantity surveyor including ability to give motivate to team member (0.656, 10th rank), followed by ability to take responsibilities of the task (0.689, 16th rank) and ability to lead and give guidance to team member (0.630, 17th rank). Clayton (2015) supported that the factors contributed to poor leadership skills possessed by the fresh graduate quantity surveyor were lack of working experiences in time management, planning and organizing of work and problem identification and solving.

Last but not least, the respondents ranked the higher order thinking skills as the least satisfied skills possessed by fresh graduate quantity surveyor with only 0.630 of RII's weightage. The respondents rated the four sub-employability skills under the higher order thinking skills as less satisfied skills possessed by fresh graduate quantity surveyor including ability to identify the problem, analyse and give solution (0.648, 12th rank), followed by ability to explain and analyse the data and information (0.644, 13th rank), ability to think critically (0.633, 16th rank) and ability to make judgement (0.630, 17th rank).

4.2.2.3 Kruskal-Wallis Test for Satisfaction on Employability Skills

Kruskal-Wallis Test was conducted to examine the significant difference in rating the satisfaction on the employability skills between the consultant firm, contractor firm and developer as shown in the Table 4.14. The alpha value used in this analysis was 0.05 and the degree of freedom was 2. By referring Chi-square

Table, the critical value was 5.991 which means that when the critical value is greater than 5.991, there is a significant difference between the independent groups.

Table 4.14 Kruskal-Wallis Test for the Satisfaction of Employability Skills

Employability skills	Chi-square	Asymp. Sig.
Communication skills		
Ability to speak fluently in Bahasa Malaysia, English and other languages.	2.577	0.276
Ability to write effectively in Bahasa Malaysia, English and other languages.	1.854	0.396
Ability to listen attentively and give appropriate feedback.	1.180	0.554
Ability to convey information clearly and effectively to reach common understanding.	5.458	0.065
Ability to present information or project confidently.	4.058	0.131
Computer and information technology literacy		
Ability to operate the basic computer functions such as Excel, Word, Power point, etc.	3.329	0.189
Ability to use the advance software such as Auto Cad, Revit, and etc.	1.929	0.381
Ability to search and manage the information from various sources.	0.255	0.880
Higher order thinking skills		
Ability to identify the problem, analyse and give appropriate solutions.	0.108	0.947
Ability to explain, analyse and evaluate the data and information.	0.384	0.825
Ability to make necessary judgement or decisions.	0.848	0.654
Ability to think critically or think-out-of-the-box to generate creative ideas	1.601	0.449
Leadership skills		
Ability to lead and give guidance to the team members.	1.659	0.436
Ability to give motivate to the team member.	4.300	0.116
Ability to take responsibilities of the task.	0.682	0.711

Interpersonal skills		
Ability to interact/ network with others in an organization.	1.773	0.412
Ability to negotiate to reach consensus.	0.854	0.652
Ability to deal with superiors.	0.672	0.715
Ability to encourage and motivate others.	1.565	0.457
Teamwork		
Ability to work with other in different background, ethnic, race, gender and age.	0.649	0.723
Ability to share information with others.	0.041	0.980
Ability to contribute to the team to reach goals.	0.930	0.628
Management skills		
Ability to plan and organize the work.	3.074	0.215
Ability to complete the work in efficiency and structured manner.	1.315	0.518
Ability to allocate the time well and complete task within deadline.	0.397	0.820
Ability to meet the identified standard or expected result when performing a job.	0.720	0.698
Ability to adapt in new situation or environment	0.059	0.971
Ability to work independently and under pressure.	1.029	0.598

By referring the Table 4.14, all the employability skills' critical values were in the range of 0.041 to 5.458 which lesser than 5.991 while the asymptotic significant values were greater than 0.050. Therefore, there were no significant difference in rating the satisfaction on 28 employability skills between the consultant firm, contractor firm and developer.

4.2.3 Comparison between Importance & Satisfaction of employability Skills

After the importance and satisfaction of employability skills were discussed separately in the previous section, the difference (Diff.) in relative importance index between importance and satisfaction of employability skills can be observed in Table 4.15. The differences were calculated as below:

Differences = RII of Satisfaction on Employability Skills - RII of Importance of Employability Skills.

Table 4.15 Comparison between Importance and Satisfaction of Employability Skills

Employability Skills	Importance	Satisfaction	Diff.
Communication skills			
Ability to speak fluently in Bahasa Malaysia, English and other languages.	0.841	0.652	-0.189
Ability to write effectively in Bahasa Malaysia, English and other languages.	0.793	0.693	-0.100
Ability to listen attentively and give appropriate feedback.	0.819	0.693	-0.126
Ability to convey information clearly and effectively to reach common understanding.	0.807	0.656	-0.152
Ability to present information or project confidently.	0.807	0.633	-0.174
Computer and information technology literacy			
Ability to operate the basic computer functions such as Excel, Word, Power point, etc.	0.893	0.763	-0.130
Ability to use the advance software such as Auto Cad, Revit, and etc.	0.811	0.722	-0.089
Ability to search and manage the information from various sources.	0.804	0.689	-0.115
Higher order thinking skills			
Ability to identify the problem, analyse and give appropriate solutions.	0.811	0.648	-0.163

Ability to explain, analyse and evaluate the data and information.	0.804	0.644	-0.159
Ability to make necessary judgement or decisions.	0.737	0.630	-0.107
Ability to think critically or think-out-of-the-box to generate creative ideas	0.770	0.633	-0.137
Leadership skills			
Ability to lead and give guidance to the team members.	0.704	0.630	-0.074
Ability to give motivate to the team member.	0.700	0.656	-0.044
Ability to take responsibilities of the task.	0.863	0.633	-0.230
Interpersonal skills			
Ability to interact/ network with others in an organization.	0.807	0.689	-0.119
Ability to negotiate to reach consensus.	0.748	0.637	-0.111
Ability to deal with superiors.	0.826	0.667	-0.159
Ability to encourage and motivate others.	0.733	0.641	-0.093
Teamwork			
Ability to work with other in different background, ethnic, race, gender and age	0.774	0.748	-0.026
Ability to share information with others.	0.793	0.730	-0.063
Ability to contribute to the group or team to reach goals.	0.800	0.670	-0.130
Management skills			
Ability to plan and organize the work.	0.852	0.633	-0.219
Ability to complete the work in efficiency and structured manner.	0.856	0.633	-0.222
Ability to allocate the time well and complete task within deadline.	0.893	0.648	-0.244
Ability to meet the identified standard or expected result when performing a job.	0.837	0.648	-0.189
Ability to adapt in new situation or environment	0.822	0.737	-0.085
Ability to work independently and under pressure.	0.841	0.656	-0.185

According to the Table 4.15, the relative importance index's weightage for importance of the employability skills were in the range of 0.700 to 0.893 while the satisfaction of employability skills was in the range of 0.630 to 0.763. The differences between the importance and satisfaction of 28 employability skills were calculated which they were in the range of -0.244 to -0.026. The negative sign showed on the differences indicated that the satisfaction level on the employability skills lower than the importance level rated by the respondents.

Table 4.16 Summary of Comparison between Importance and Satisfaction of Employability Skills

Employability skills	Importance	Satisfaction	Diff.	Rank
Communication skills	0.813	0.665	-0.148	2
Computer and information technology literacy	0.836	0.725	-0.111	6
Higher order thinking skills	0.781	0.639	-0.142	3
Leadership skills	0.756	0.640	-0.116	5
Interpersonal skills	0.779	0.658	-0.121	4
Teamwork skills	0.789	0.716	-0.073	7
Management skills	0.850	0.659	-0.191	1

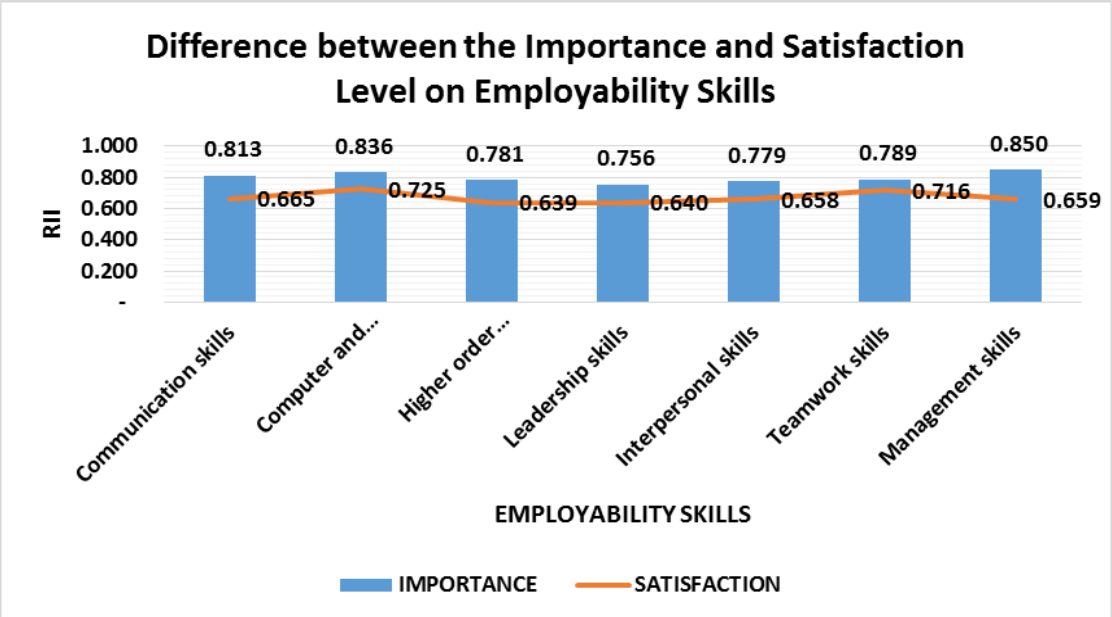

Figure 4.1 Difference between Importance & Satisfaction on Employability Skills

The 28 employability skills were grouped into the seven employability skills. The relative importance index of differences between the importance and satisfaction on employability skills were tabulated as shown in Table 4.16 in order to ease for comparison. In overall, the performance of the employability skills possessed by the fresh graduate quantity surveyor were under the expectation of the respondents as the RII of satisfaction of employability skills were lower than the importance of employability skills as shown in the Figure 4.1.

In order to examine the statistical significant difference between the importance and satisfaction of 28 employability skills, the Wilcoxon Signed Ranks Test was performed as shown in the Table 4.17. There is significant difference when the asymptotic significance value is less than 0.050.

Table 4.17 Wilcoxon Signed Ranks Test for Importance and Satisfaction of Employability Skills

Employability Skills		Asymp. Sig. (2-tailed)
Communication skills	Ability to speak fluently in Bahasa Malaysia, English and other languages.	0.000
	Ability to write effectively in Bahasa Malaysia, English and other languages.	0.007
	Ability to listen attentively and give appropriate feedback.	0.000
	Ability to convey information clearly and effectively to reach common understanding.	0.000
	Ability to present information or project confidently.	0.000
Computer and information technology literacy	Ability to operate the basic computer functions such as Excel, Word, Power point	0.000
	Ability to use the advance software such as Auto CAD, Revit, and etc.	0.002
	Ability to search and manage the information from various sources.	0.000
Higher order thinking skills	Ability to identify the problem, analyse and give appropriate solutions.	0.000
	Ability to explain, analyse and evaluate the data and information.	0.000

	Ability to make necessary judgement or decisions.	0.001
	Ability to think critically or think-out-of-the-box to generate creative ideas	0.001
Leadership skills	Ability to lead and give guidance to the team members.	0.017
	Ability to give motivate to the team member.	0.123**
	Ability to take responsibilities of the task.	0.000
Interpersonal skills	Ability to interact/ network with others in an organization.	0.000
	Ability to negotiate to reach consensus.	0.002
	Ability to deal with superiors.	0.000
	Ability to encourage and motivate others.	0.001
Teamwork	Ability to work with other in different background, ethnic, race, gender and age	0.355**
	Ability to share information with others.	0.021
	Ability to contribute to the group or team to reach goals.	0.000
Management skills	Ability to plan and organize the work.	0.000
	Ability to complete the work in efficiency and structured manner.	0.000
	Ability to allocate the time well and complete task within deadline.	0.000
	Ability to meet the identified standard or expected result when performing a job.	0.000
	Ability to adapt in new situation or environment	0.001
	Ability to work independently and under pressure.	0.000

According to Table 4.16, the management skills were the biggest difference between the importance and satisfaction of employability skills with RII 0.191 among the seven employability skills. It was because the six sub-employability skills under the management skills showed the big gap differences especially the ability to allocate the time well and complete the task within deadline with RII 0.244 of

difference. It can be explained that the respondents rated this skills as the most important skills under the management skill, but the performance of fresh graduate quantity surveyors did not meet what the respondents' expectation. Therefore, the biggest gap difference was shown. However, the ability to adapt in new situation or environment was the smallest difference between importance and satisfaction under the management skill with RII 0.085 as the respondents rated it as least important skills but it was most satisfied skills under the management skills. The result subsequently supported the finding from Islam, Hamid and Manaf (2013) as they pointed out that the management skills was the most important skills required by the fresh graduate quantity surveyors, but they were poor in time management and lack of ability to plan and coordinate the given tasks, causing them did not reach what their superior's expectations. Wilcoxon Signed Rank Test subsequently proved that six sub-employability skills under the management skills were statistical significant difference as asymptotic significance values were less than 0.05.

Moreover, communication skills possessed by the fresh graduate quantity surveyor were the second biggest gap difference between importance and satisfaction with RII 0.148. Under the communication skills, four sub-employability skills were discussed. By referring Table 4.15, these four sub-employability skills showed bigger gap difference with the range of RII from -0.189 to -0.100. This result supported the findings from Islam, Hamid and Manaf (2013) and Archer and Davison (2008) because the fresh graduate quantity surveyor now was lack of ability to communicate and express their ideas and information due to poor proficiency in languages and lack of confidence. Thus, their performance on the communication skills was still under the expectation of respondents. There was statistical significant difference when the Wilcoxon Signed Rank Test was carried out because these four sub-employability skills under communication skills were lower than the level of 0.050 asymptotic significance.

The higher order thinking skill was ranked as the third bigger difference between importance and satisfaction of employability skills. The range of difference between importance and satisfaction for four sub-employability skills under higher order thinking skill were 0.163 to -0.107. The ability to identify the problem, analyse and give appropriate solution showed the biggest difference while the ability to make

necessary judgement or decision was the smallest difference under higher order thinking skills. This result was in line with the research from Islam, Hamid and Manaf (2013), indicated that the fresh graduate quantity surveyor was lack of ability in problem identification, analysing skills and giving solutions, even though these skills were important to a fresh graduate quantity surveyor. According to Table 4.17, Wilcoxon Signed Rank Test proved that four sub-employability skills under the higher order thinking skills were statistical significant difference as their asymptotic significance values were less than 0.050.

According to Table 4.16, the fourth rank of the difference between importance and satisfaction was interpersonal skills. There were four sub-employability skills discussed under this skill. The range of their differences were from -0.159 to -0.093 which the ability to deal with superiors was the biggest difference, followed by ability to interact with other in organization, ability to negotiate to reach consensus while the ability to encourage and motivate others was the smallest difference under interpersonal skills. The biggest gap differences of employability skills contributed to statistical significant difference on Wilcoxon Signed Rank Test as their asymptotic significance values were lower than 0.050 as shown in Table 4.17.

In addition, the leadership skill was ranked at the fifth difference between importance and satisfaction of employability skills. Three sub-employability skills were discussed under leadership skill. Among these three sub-skills, the ability to lead and give guidance to the team members and ability to take responsibilities of the tasks showed the difference with -0.074 and -0.230 respectively. The Wilcoxon Signed Rank Test's result showed that these two sub-employability skills were statistical significant difference as their asymptotic significance values were less than the level of 0.050. However, the ability to give motivate to the team members showed the second smallest difference among the 28 employability skills. Thus, it did not give rise significant as its asymptotic significance value was 0.123 which greater than 0.050.

Furthermore, the computer and information literacy was ranked as the second less difference between importance and satisfaction on employability skill. Three

sub-employability skills were discussed under the computer and information literacy skills including the ability to use advance software, search and manage the information from various sources and operate the basic computer function with RII 0.089, 0.115 and 0.130 of importance-satisfaction differences respectively. Although computer and information literacy was the second smallest gap between importance and satisfaction on employability skills, they were still statistical significant difference because their asymptotic significant values were less than 0.050 in the result of Wilcoxon Signed Rank Test as shown in Table 4.17.

Last but not least, teamwork skill was ranked as the least importance-satisfaction difference as shown in Table 4.16. This result support the finding from AQU Catalunya (2014) as the teamwork skills was the smallest importance-satisfaction difference compare to other employability skills. Under teamwork skill, only the ability to work with other in different background, ethnic, race, gender and age did not show the statistical difference in Wilcoxon Signed Rank Test as its had smallest importance-satisfaction difference among 28 employability skills which was -0.026. On the other hand, the other two sub-employability skills under teamwork skills including ability to share information with others and contributes to the team to reach goals were significant difference in Wilcoxon Signed Rank Test as their importance-satisfaction difference were -0.063 and -0.130 respectively.

In overall, the level of satisfaction on the 28 employability skills possessed by the fresh graduate quantity surveyor were lower than the level of importance rated by the respondents. Therefore, the negative value of differences between importance and satisfaction on employability skills were observed. The big gap between the importance and satisfaction on employability skills contributed to be significant differences on the Wilcoxon Signed Rank Test except ability to give motivate to the team and ability to work with other in different background, ethnic, race, gender and age.

4.3 Fresh Graduate QS' Personal Characteristics that Influence their Employment

There were seven personal characteristics that influences the fresh graduate quantity surveyor's employment discussed in this analysis. The respondents were asked to answer what personal characteristics they will consider when employing a fresh graduate quantity surveyor. The percentage of responses for each characteristic were tabulated as shown in the Table 4.18 by comparing the responses into three organizations including consultant firm, contractor firm and developer.

Table 4.18 Percentage of Personal Characteristics of Fresh Graduate QS that influence their employment

	Consultant firm		Contractor firm		Developer		Overall	
	Yes	No	Yes	No	Yes	No	Yes	No
Gender	13.6%	86.4%	12.0%	88.0%	0.0%	100.0%	11.1%	88.9%
Working related experience / industrial training	86.4%	13.6%	100.0%	0.0%	100.0%	0.0%	94.4%	5.6%
University reputation	63.6%	36.4%	56.0%	44.0%	57.1%	42.9%	59.3%	40.7%
Academic result	72.7%	27.3%	80.0%	20.0%	100.0%	0.0%	79.6%	20.4%
Level of qualification	68.2%	31.8%	76.0%	24.0%	85.7%	14.3%	74.1%	25.9%
Extra-curriculum participation	40.9%	59.1%	48.0%	52.0%	42.9%	57.1%	44.4%	55.6%
Physical appearance	45.5%	54.5%	36.0%	64.0%	42.9%	57.1%	40.7%	59.3%

Based on the Table 4.18, there were 88.9% of the respondents from these three organizations will not consider the fresh graduate quantity surveyors' gender when determine their employment. However, there were still 11.1% of respondents particularly from the consultant firm and contractor firm will consider their gender.

The reason behind that these two firms consider the gender might due to depend on the allocation of work tasks by the employer. Generally, the employer from consultant firm and contractor firm required the fresh graduate quantity surveyor working as site-based such as site valuation and site visit. They think that the construction site was the "man-place" and dangerous which was not suitable for female (Dainty, et al., 2000). Thus, they will engage male fresh graduate to work at site instead of female. However, the female fresh graduate quantity surveyor was always allocated working as the office-based such as doing measurement, paper works, tendering and so on (Mitchell, 2014).

Moreover, majority of the respondents which consisted of 94.4% from three organizations will consider the fresh graduate quantity surveyor's past working experiences or industrial training when engaging them. Most of the time, the employer encouraged the fresh graduate quantity surveyor to has work placement before they graduate. It was because the industrial training allows them to learn beyond the books and practise to apply their skills or theory in the working environment (Finch, 2012). Nevertheless, there were small portion of the respondents (5.6%) from the consultant firm will think that fresh graduate quantity surveyor's past working experiences or industrial training was not their consideration as they thought they still can gain their working experiences after graduation.

There were large portion of the respondents (79.6%) from three organizations which consisted of 72.7% of respondents from consultant firm, 80.0% of respondents from contractor firm and all respondents from developer will think that academic result (CGPA) as a criterion when engaging fresh graduate quantity surveyor. By referring the Table 4.18, there were only 20.4% of respondents from consultant firm and contractor firm will not consider it. The employer think that they were unable to examine the fresh graduate's working performance during interview. Thus, the pointer or grade of their results become initial indicator to evaluate their capabilities to work. They always assumed that the higher the grade obtained by the fresh graduate, the higher their capabilities to work and they can perform well in their workplace (Brown, 2015).

In addition, there were 74.1% of the respondents from these three organization will look into the fresh graduate quantity surveyor's level of qualification or education whether diploma or degree holder when employing them. There were diploma and degree level of the quantity surveying courses provided in Malaysia's higher education institutions including public institutions and private institutions. According to Torpey and Watson (2014), the employers were more likely to employ fresh graduate quantity surveyor who successfully complete their degree course in quantity surveying compare to diploma course because they think that the fresh graduate quantity surveyor's working capabilities can be affected by their level of education.

Based on the Table 4.18, the more than half of the respondents rated that the characteristics of university reputation will became their consideration during employing the fresh graduate quantity surveyor especially the respondents from the consultant firm. There were higher percentage of respondents from consultant firm than the other two organisations will consider the university reputation which consisted of 63.6%. It might due to the higher the reputation of higher education institution, the higher the quality of the fresh graduate quantity surveyor because the respondents spelled out that the institution played an important role in preparing the graduates with relevant skills, attributes and capabilities to meet the needs of construction industry (Thompson, 2014).

Besides, there were more than half of respondents from three organizations will not consider the fresh graduate quantity surveyor's extra-curriculum participation during engaging them which consisted of 55.6% The result of this research did not work in line with the Chronicle of Higher Education (2012) although the extra-curriculum would help in developing the fresh graduate quantity surveyor's personalities and specialized skills. This finding was same goes to the physical appearance of fresh graduate quantity surveyor. There were 59.3% of respondents will not consider the fresh graduate quantity surveyor's physical appearance. It does not work in line with the research from Pope (2010), Rasmussen (2013) and Armour (2005) that they spelled out that most of the recruiters will consider the fresh graduate quantity surveyor with good looking and good body size when they

screening their resumes. Therefore, they will has high opportunities to get employed than other with plain looking.

Furthermore, there were 17 respondents recommended that they will consider other characteristics of fresh graduate quantity surveyor when employing them as shown in Table 4.19.

Table 4.19 Frequency of Other Characteristics of Fresh Graduate QS

Characteristics	Frequency
Attitude and behaviour	11
Time Flexibility	1
Transportation	2
Salary	1
Ability to answer questions	2

By referring the Table 4.19, it shows that there were 11 respondents recommended that the attitude and behaviour of fresh graduate quantity surveyor were the important criteria to employ them. The attitude of the fresh graduate was defined as an individual's internal mind-set while the behaviour was defined as the action or reaction to response (Mcleod, 2014). Thus, the respondents were more likely to employ the fresh graduate who give a first good impression, appropriate gesture, elegant when communication and willingness or aggressive to learn.

There were two respondents considered the ability of the fresh graduate to answer the interviewer's questions and possess own transportation respectively. They highlighted that the fresh graduate quantity surveyor who able to give appropriate response, be self-confidence and possess high proficiency in language when communicating with the interviewer were increase their opportunities to be employed. Besides, the employer will request the quantity surveyor to visit to the site. Thus, they will employ the employee who able to possess their own transportation or at least having driving licence as their consideration.

The other characteristics of fresh graduate quantity surveyor that the respondent will consider were time flexibility and salary request. The employer might request the quantity surveyor to work overtime or adjust their working schedule according to their progress of work or during the peak time such as tendering of the new project. Lastly, the salary requested by the fresh graduate will be considered when the graduate requests high paid but not correspond with their capabilities.

Kruskal-Wallis Test was conducted to examine the significant difference on the perception of personal characteristics of fresh graduate quantity surveyor between the consultant firm, contractor firm and developer. The alpha value used in this analysis was 0.050 and the degree of freedom was 2. By referring Chi-square Table, the critical value was 5.991 which means that when the critical value is greater than 5.991, there is a significant difference between the independent groups.

Table 4.20 Kruskal Wallis Test for the Characteristics of Fresh Graduate QS

Characteristics	Chi square	Asymp. Sig
Gender	1.018	0.601
Working related experience / industrial training	4.535	0.104
University reputation	0.292	0.864
Academic result	2.394	0.302
Level of qualification : diploma, degree	4.783	0.092
Extra-curriculum participation	0.242	0.886
Physical appearance	0.440	0.803

By referring the Table 4.20, the critical value of seven personal characteristics of fresh graduate were in the range of 0.242 to 4.783 which were lesser than 5.991 while their asymptotic significance's value were in the range of 0.092 to 0.886 which were greater than 0.05. Therefore, there were no statistical significant difference between the respondents from consultant firm, contractor firm and developer in considering the seven personal characteristics of fresh graduate quantity surveyor when employing them.

4.4 The Solutions to Improve the Employability Skills of Fresh Graduate Quantity Surveyor

4.4.1 Cronbach's Alpha Test

Table 4.21 Cronbach's Alpha Test for Solutions to Improve the Employability Skills

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.760	0.756	13

The Cronbach's Alpha Test was conducted to test for the reliability of the 13 solutions to improve the employability skills of fresh graduate quantity surveyor. Based on the result shown in Table 4.21, the Cronbach's Alpha coefficient for the 13 solutions to improve the employability skills was 0.760. There fall within the range of = $0.7 < \alpha < 0.9$ which indicated that there was good internal consistency (Manerikar & Manerikat, 2015).

4.4.2 RII and Ranking for Solution to Improve Employability Skills

13 solutions were asked to examine the respondent's perception to improve the fresh graduate quantity surveyor's employability skills. These questions were asked using 3-points LIKERT scale which:

1 indicating not important;

2 indicating important and

3 indicating very important.

The relative important index (RII) and rank were tabulated as shown in the Table 4.22.

Table 4.22 The Solution to Improve Employability Skills' RII and Ranking

	Degree of Importance			RII	Rank
	(1)	(2)	(3)		
Revise the higher education course structure to be more relevant to the current construction industry's need.	5	30	19	0.753	3
Employability strategies should be an integral part of learning and teaching.	2	40	12	0.728	6
Embedding the graduate employability skills in the learning outcomes for every subject.	4	37	13	0.722	7
Encourage the partnership between higher education institution and experienced quantity surveyor.	14	34	6	0.617	11
Participation of the experienced quantity surveyor in course design or review.	8	36	10	0.679	9
Invite the experienced quantity surveyor or expert as guest to deliver talks and workshop.	14	29	11	0.648	10
Provide more information to students / graduate on how to be employable	2	38	14	0.741	4
Graduate participate in assessment activities to evaluate their strengths and weakness.	2	42	10	0.716	8
Encourage the undergraduate to get work placement and internship	1	25	28	0.833	1
Extend the duration of quantity surveying industrial training period	1	27	26	0.821	2
Encourage the students participate in extra-curriculum.	14	34	6	0.617	11
Graduate prepare themselves and do more research to tailor requirement of employer.	4	38	12	0.716	8
Graduate act actively in various activities such as talks, workshop, etc. to improve their capabilities and competencies.	3	37	14	0.735	5

According to Table 4.22, the respondents pointed that the fresh graduate to get work placement and internship was the very important solution to improve their employability skills as it carried the RII's weightage with 0.833. There were 28 respondents rated this solution as the very important solution, followed by 25 respondents rated as important and only one respondent rated it as not important. Asonitou (2014) pointed that the work placement was the most effective method to bridge the gap between the education and requirement of the industry. It allowed the fresh graduate quantity surveyor to explore to real working environment and gain working experience. Throughout the internship, the fresh graduate quantity surveyor can apply their skills learned from their higher education institution to their workplace. For example, the quantity surveyor learns measurement skills in their higher education institution. However, the lecturer only teaches them basic measurement theory to quantify the construction elements. It might be insufficient to apply to all the projects in the future. Thus, the quantity surveyor can learn additional knowledge and skills through internship. Although there was compulsory industrial training program provided to the quantity surveying undergraduate, they were always encouraged to apply work placement during their semester break (The Gallup organization, 2010). Besides, the employer might consider their work placement as an employment criterion after they graduate.

Moreover, the "extension of the duration of quantity surveyor's industrial training" was rated as second important way among the 13 solutions with 0.831 of RII's weightage to improve their employability skills. According to the Table 4.22, there was only one respondent rated this solution as not important while the remaining 53 respondents rated it as important and very important solution. In Malaysia, the quantity surveying industrial training program was a pre-requisite subject to all the undergraduate before completion of study. The duration of the industrial training program normally was set as three to six months (Asonitou, 2014). However, the employer pointed that the duration of industrial training program for quantity surveying undergraduate was insufficient to familiar to all the tasks in their working environment. The employer commented that the fresh graduate quantity surveyor required two to three years of working experiences to familiar the tasks such as measurement, tendering and other documentation work (The Gallup

organization (2010). Thus, they always encouraged the quantity surveying undergraduate to extend their internship period to gain working experiences.

By referring the Table 4.22, the respondents agreed to revise the higher education course structure to be more relevant to the current construction industry's need. It was placed at the third rank among the 13 solutions with 0.753 of RII's weightage. In this changing environment, the requirement of the experienced quantity surveyor also keeps changing in order to adapt the current environment's need. Thus, the quantity surveying course structure should be revised from time to time to fulfil the local construction industries' requirement (Ang, 2015). For example, when there were new technologies such as new construction techniques, software, materials and so on introduce to the public which is relevant to the competencies of quantity surveyor. It should be included in the program syllabus in order to provided updated information to the quantity surveying undergraduate (Chua, 2004). It can allow them to prepare themselves before stepping to the real working environment.

In addition, the result showed in Table 4.22 that the partnership of respondents with higher education institutions and encourage the undergraduate to participate in extra-curriculum were the least important solutions to improve their employability skills. There were 14 respondents ranked it as not important, followed by 34 respondents ranked it as important and only 6 respondents ranked it as very important. Both of the percentage of the respondents rated it as not important was higher than the other 11 solutions which consisted of 25.9%. Therefore, it subsequently contributed to these two solutions carried low RII's weightage with 0.617. Although Ang (2015) suggested that the partnership between the superior with the higher education institution can enhance the fresh graduate quantity surveyor's employability skills, it seem like does not work in line with this research.

4.4.3 Kruskal-Wallis Test and Mann-Whitney U Test

Kruskal-Wallis Test was conducted to examine the significant difference on choosing the solution to enhance the fresh graduate quantity surveyor's

employability skills between the consultant firm, contractor firm and developer as shown in the Table 4.23. The alpha value used in this analysis was 0.05 and the degree of freedom was 2. By referring Chi-square Table, the critical value was 5.991 which means that when the critical value is greater than 5.991, there is a significant difference between the independent groups.

Table 4.23 Kruskal Wallis Test for Solution to Enhance Employability Skills

Solutions	Chi-Square	Asymp. Sig.
Revise the higher education course structure to be more relevant to the current construction industry's need.	*7.603	*0.022
Employability strategies should be an integral part of learning and teaching.	3.058	0.217
Embedding the graduate employability skills in the learning outcomes for every subject.	0.211	0.900
Encourage the partnership between higher education institution and experienced quantity surveyor.	0.363	0.834
Participation of the experienced quantity surveyor in course design or review.	2.501	0.286
Invite the experienced quantity surveyor or expert as guest to deliver talks and workshop.	0.128	0.938
Provide more information to students / graduate on how to be employable	0.268	0.875
Graduate participate in assessment activities to evaluate their strengths and weakness.	0.155	0.926
Encourage the undergraduate to get work placement and internship	0.196	0.906
Extend the duration of quantity surveying industrial training period	0.056	0.972
Encourage the students participate in extra-curriculum.	0.526	0.769
Graduate prepare themselves and do more research to tailor requirement of employer.	0.996	0.608
Graduate act actively in various activities such as talks, workshop, etc. to improve their capabilities and competencies.	0.187	0.911

Among the 13 solutions showed in the Table 4.23, the critical value for 12 solutions to improve the fresh graduate quantity surveyor's employability skills showed no significant difference between the consultant firm, contractor firm and developer because their critical value were in the range of 0.056 to 3.058 which lesser than 5.991 and their asymptotic significance's value were in the range of 0.217 to 0.972 which were greater than 0.05. However, the solution "Revise the higher education course structure to be more relevant to the current construction industry's need" showed significant difference as its critical value was 7.603 which greater than 5.991 and asymptotic significance's value was 0.022 which lesser than 0.050.

In order to find out which pair of independent groups showed the significant difference on " revise the higher education course structure to be more relevant to the employer" in Kruskal-Wallis Test, the Mann-Whitney U Test was further to conduct as shown in the Table 4.24.

Table 4.24 Mann-Whitney U Test for the Significant Difference Solution

	Consultant & Contractor	**Consultant & Developer**	**Contractor & Developer**
Revise the higher education course structure to be more relevant to the current construction industry's need.	*0.008	0.746	0.175

The p-value of three pair of independent groups were shown in the Table 4.24. There is a significant difference when the p-value is lesser than 0.050. By referring the Table 4.24, there was a significant difference between the respondents from consultant firm and contractor firm towards "revise the higher education course structure to be more relevant to the employer" as its p-value was 0.008 which lesser than 0.050. Whilst the other two pairs of consultant firms vs. developer and contractor firms vs. developer showed there were no significant difference towards the "revise the higher education course structure to be more relevant to the employer" because their p-values were 0.746 and 0.175 respectively which greater than 0.050.

Table 4.25 Degree of Importance among Three Groups

	Type of organisation	Degree of Importance			RII
		(1)	(2)	(3)	
Revise the higher education course structure to be more relevant to the current construction industry's need.	Consultant firm	0	11	11	0.833
	Contractor firm	5	15	5	0.667
	Developer	0	4	3	0.809

The Table 4.25 shows the relative importance index of three independent groups toward revise the higher education course structure to be more relevant to the current construction industry's need. This table can be used to explain the significant difference between the consultant firm and contractor firm from the result of Mann-Whitney U Test in Table 4.24. The respondents from consultant firm and developer rated this solution as important and very important. However, there were five respondents from contractor firm rated this solution as not important and small portion of respondents rated it as very important. Due to these reasons, contractor firm carried smaller weightage of RII as compare to consultant firm and developer. Besides, there was biggest gap between the contractor firm and consultant firm with 0.166 differences. Therefore, there is significant difference between the consultant firm and contractor firm shown in result of Mann-Whitney U Test in Table 2.24.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

In this chapter, the whole research will be concluded with the achievement of research objectives, limitation of research and recommendation for the future research.

5.1 Summary of findings

This research had successfully achieved four objectives stated in Chapter 1 which were:

1. To examine the experienced quantity surveyor's perception on the importance of employability skills required by fresh graduate quantity surveyor.
2. To examine the experienced quantity surveyor's perception on their satisfaction of employability skills possessed by fresh graduate quantity surveyor.
3. To investigate the experienced quantity surveyor's perception on the influence of fresh graduate quantity surveyor's personal characteristics on employment.
4. To identify the solutions to enhance the employability skills of fresh graduate quantity surveyor.

5.1.1 Objective 1: To examine the experienced QS' perception on the importance of employability skills required by fresh graduate QS.

28 employability skills were grouped into seven main employability skills. RII was calculated and ranked. The experienced quantity surveyor's perception on the importance of the employability skills required by the fresh graduate quantity surveyor were arranged in order as below: -

Rank 1 - Management skills
Rank 2 - Computer and information technology literacy
Rank 3 - Communication skills
Rank 4 - Teamwork
Rank 5 - Higher order thinking skills
Rank 6 - Interpersonal skills
Rank 7 - Leadership skills

The Kruskal-Wallis Test was conducted to examine the significant difference on the perception of the importance of employability skills between the consultant firm, contractor firm and developer. The "ability to identify the problem, analyse and give appropriate solutions" was found as significant difference because its critical value was 7.572 which greater than 5.991 and asymptotic significance was 0.023. Then, the Mann-Whitney U Test showed that the pair of contractor firm and developer was the significant as their p-value was 0.015 which lesser than the level of 0.050.

5.1.2 Objective 2: To examine the experienced QS' perception on the satisfaction of employability skills possessed by the fresh graduate QS.

28 employability skills were grouped into seven main employability skills. RII was calculated and ranked. The experienced quantity surveyor were satisfied with the employability skills possessed by fresh graduate quantity surveyor were arranged in order as below: -

Rank 1 - Computer and information technology literacy
Rank 2 - Teamwork
Rank 3 - Communication skills
Rank 4 - Management skills
Rank 5 - Interpersonal skills
Rank 6 - Leadership skills
Rank 7 - Higher order thinking skills

The Kruskal-Wallis Test was conducted to examine the significant difference between the consultant firm, contractor firm and developer on the satisfaction of employability skills possessed by the fresh graduate quantity surveyor. However, the result indicated that there was no significant difference between the three groups as all the critical values were greater than 5.991.

The Wilcoxon Signed Rank Test showed that there was significant difference between the importance and satisfaction of employability skills except the "ability to give motivate to the team member" and "ability to work with other in different background, ethnic, race, gender and age" because their asymptotic significances were 0.123 and 0.355 respectively. In overall, the satisfaction level on 28 employability skills is low although the importance level rated by the respondents is high. It can be concluded that the satisfaction level on employability skills possessed by fresh graduate quantity surveyor did not meet the respondents' standard or expectation.

5.1.3 Objective 3: To investigate the experienced QS' perception on the influence of fresh graduate QS' personal characteristics on employment.

Throughout this research, the fresh graduate quantity surveyor's personal characteristics that will influence their employment were:

i. Working related experience or industrial training

ii. Academic result
iii. Level of qualification (eg: diploma or degree)
iv. University reputation

However, the characteristics of gender, physical appearance and extra-curriculum participation of fresh graduate quantity surveyor were less influence their employment.

The Kruskal-Wallis Test showed that there was no significant difference between the consultant firm, contractor firm and developer in considering the personal characteristics of fresh graduate quantity surveyor during employing them.

5.1.4 Objectives 4: To identify the solutions to enhance the employability of fresh graduate QS.

There were top five solutions were found to enhance the employability skills of fresh graduate quantity surveyor as below:

Rank 1 - Encourage the undergraduate to get work placement and internship
Rank 2 - Extend the duration of quantity surveying industrial training period
Rank 3 - Revise the higher education course structure to be more relevant to current construction industry's need.
Rank 4 - Provide more information to students / graduate on how to be employable
Rank 5 - Graduate act actively in various activities such as talks, workshop, etc. to improve their capabilities and competencies.

The Kruskal-Wallis Test showed that there was no significant difference between the consultant firm, contractor firm and developer on the solution to enhance the employability skills except the "revise the higher education course structure to be more relevant to the construction industry" as it critical value was 7.603 and asymptotic significance's value was 0.022. The Mann-Whitney U Test showed that

the significant difference was from the pair of consultant firm and contractor firm which their p-value was 0.008.

5.2 Significance of study

The findings of this research will contribute to the undergraduate quantity surveyor and higher education institution. In this competitive era, the experienced quantity surveyors in construction industry expect the fresh graduate quantity surveyors are not only able to possess their basic knowledge, but also the employability skills. Therefore, this research provides the information on what the experienced quantity surveyor's perception on the importance and satisfaction of employability skills toward the fresh graduate quantity surveyor. It create awareness to the undergraduate quantity surveyor in order to prepare themselves with these employability skills before stepping into the real working environment.

Moreover, this research's finding also contributes to the higher education institution. The role of higher education institution is aligned with the local government's agenda to produce qualified, professional and skilled fresh graduate quantity surveyors to the construction industries. This research provides information on what the experienced quantity surveyor's expectation on fresh graduate quantity surveyor and solutions to improve their employability skills. Then, the higher education institution can implement some actions based on the research's finding in order to improve the undergraduate quantity surveyor's employability skills before they graduate.

5.3 Limitation of research

Although this research had achieved the objectives, there are still some limitations found in this research. First, due to time constraint, the research is unable to collect the data from whole Malaysia. Thus, the research only focus on who has at least

three years working experiences as quantity surveyor, estimator or contract administrator working in Klang Valley area.

Second, according to the formula used to calculate the sample size stated in Chapter 3, the sample size of this research should be 196 respondents. The questionnaires were distributed through web-based and walk in method. However, there was low response rate was found in this research. There were only 54 respondents with 20.7% of response rate complete the survey. The sample size of 54 was considered as small because there are so many senior level quantity surveyors in Klang Valley Malaysia.

Third, there was low response rate from the developer. The respondents from developer in this survey was only seven respondents. It considered very small size as compare to respondents from consultant firm and contractor firm with 22 and 25 respectively. The smaller sample size of developer created imbalance situation to this research.

5.4 Recommendation for future research

In this research, the importance of employability skills, satisfaction of employability skills, fresh graduate quantity surveyor's personal characteristics and solutions to enhance the employability skills were discussed. However, there are still some recommendations for the future research which are: -

(a) Conducting the same research by collecting the data from other states in Malaysia in order to compare the experienced quantity surveyor's perception from other states with Klang Valley.

(b) Comparing the experienced quantity surveyors from different size of organizations in order to examine their perceptions toward the fresh graduate quantity surveyor.

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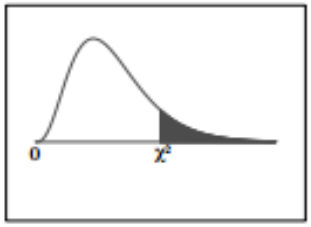
APPENDICES

APPENDIX A: Chi Square Table



The shaded area is equal to α for $\chi^2 = \chi^2_\alpha$.

df	$\chi^2_{.995}$	$\chi^2_{.990}$	$\chi^2_{.975}$	$\chi^2_{.950}$	$\chi^2_{.900}$	$\chi^2_{.100}$	$\chi^2_{.050}$	$\chi^2_{.025}$	$\chi^2_{.010}$	$\chi^2_{.005}$
1	0.000	0.000	0.001	0.004	0.016	2.706	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	1.610	9.236	11.070	12.833	15.086	16.750
6	0.676	0.872	1.237	1.635	2.204	10.645	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.042	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	29.615	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.041	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	15.659	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	35.563	38.885	41.923	45.642	48.290
27	11.808	12.879	14.573	16.151	18.114	36.741	40.113	43.195	46.963	49.645
28	12.461	13.565	15.308	16.928	18.939	37.916	41.337	44.461	48.278	50.993
29	13.121	14.256	16.047	17.708	19.768	39.087	42.557	45.722	49.588	52.336
30	13.787	14.953	16.791	18.493	20.599	40.256	43.773	46.979	50.892	53.672
40	20.707	22.164	24.433	26.509	29.051	51.805	55.758	59.342	63.691	66.766
50	27.991	29.707	32.357	34.764	37.689	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	74.397	79.082	83.298	88.379	91.952
70	43.275	45.442	48.758	51.739	55.329	85.527	90.531	95.023	100.425	104.215
80	51.172	53.540	57.153	60.391	64.278	96.578	101.879	106.629	112.329	116.321
90	59.196	61.754	65.647	69.126	73.291	107.565	113.145	118.136	124.116	128.299
100	67.328	70.065	74.222	77.929	82.358	118.498	124.342	129.561	135.807	140.169

Appendix B: Questionnaires