

Assessing the Duties and Competencies of Female Quantity Surveyors

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Abstract

Quantity surveyors (Qs) in developing countries remain tied to their traditional duties. This study aims to investigate the level of duties and competencies of female Qs in the Malaysian construction industry. The research objectives are determined via a questionnaire administered to 37 construction firms around Peninsular Malaysia. In relation to the three types of competencies, female Qs possess mandatory competencies in teamwork and conduct rules, ethics, professional practice, communication, and negotiation. They also possess the core competencies of procurement and tendering, quantification and costing of construction work and project financial control and reporting and optional competencies in project evaluation, contract administration, and contract practice. Their main duties are focused on tasks related to the pre tendering, construction, and project completion stages, which involve final account, cost control, costing, and preparation of financial statements. These duties are significantly correlated with major competencies, such as procurement, quantification, costing of construction work, and project financial control. This study shows that the involvement of female Qs in the construction industry in Malaysia remains dominated by the traditional practices. Based on the profile of the respondents, this study considerably reflects the middle categories of female Qs who work in quantity surveying firms.

Keywords: female QS, competencies, duties, construction industry, and Malaysia

1. Introduction

The extension of proper skills and competencies is critical and related to the development and continuing relevance of any profession. In the construction industry, the issue of competencies expected from quantity surveyors (Qs) and the issue of understanding the intrinsic dependencies among these competencies remain on the research agenda (Dada & Jagboro, 2012). Qs add value primarily to the financial and contractual management of construction projects at the preconstruction, construction, and post construction stages. They contribute to the overall construction project by acquiring, developing, and deploying appropriate competencies (Nkado & Meyer, 2001). The profession of quantity surveying practiced in Malaysia is similar to that practiced in the United Kingdom and other developed countries.

Lenard (2000) argues that the changing nature of the construction and development industry, such as the adoption of innovative technological processes and development, the training of highly focused professionals, and the emergence of a full range of advanced technologies, necessitates a considerably greater emphasis on job competencies than previously required. Dada and Jagboro (2012) also show that the investigation of QS competencies is significant to researchers in quantity surveying training and practice and in evaluating the performance expectation of QS.

In the majority of developed countries, female representation in the workplace has significantly increased in recent decades, and the number of women entering traditionally male-dominated jobs is increasing because of organizational changes in worksite settings and other economic reasons (Jaafar, Othman, & Jalali, 2014; Jaafar, Puteri Yazrin, Nuruddin, & Jalali, 2014). In the construction industry, women have their own negotiation style and definition on their professional identities (Powell, Bagilhole, & Dainty, 2009).

Several sources of information show the increment in the number of women involved in the job sector worldwide. For example, in the United States, women comprise approximately one-half of the workforce (U.S. Department of Labor, 2011), whereas in the United Kingdom, the female employment rate is “inching closer to men’s all the time” (Li, Devine, & Heath, 2008). In Malaysia, the female employment rate is only 46%, which is

the lowest in the region compared with its neighboring countries, such as Thailand, Singapore, and Indonesia, in which the female employment rate is 70% (my Metro, 2011). In this regard, the Ministry of Women, Family and Community Development realized the need to increase the participation of women in the industry to at least 55% by 2015 (Lingan, 2012). In Malaysia, 30% or 1,500 of the total number of 4,928 registered QSs with the Royal Institution of Surveyors Malaysia in 2011 are female. Based on their employment profile, 42% are involved in quantity surveying, 13% are involved in geomatics and land surveying, 24% are involved in property consultancy and valuation surveying, and 38% are involved in building surveying (Wan Maimun, 2011).

Many studies have focused on women who are employed in the construction industry, but only a limited number of these studies have been specifically conducted to investigate their actual involvement. The duties and competencies of QSs have been reviewed from many perspectives, such as their capability in abstracting and billing the dimensions, measuring site variations, and preparing final accounts (The Kenya Gazette, 1959); technical and management competencies (Nkado & Meyer, 2001); and core, optional, and special competencies (Dada & Jagboro, 2012; Akosile, 2006; Awodele, Akosile, Ogunsemi, & Owoeye, 2007). This study begins with the identification of the duties and competencies of female QSs. Then, the relationship between the duties and competencies of female QSs in Malaysia is examined.

This paper is organized into three sections. First, the initial research that grounds this study is introduced. Second, the major literature on the duties, competencies, and QSs is surveyed. Then, these factors are examined alongside the respondent group through an analysis of data to draw conclusions regarding the contributions of these factors to the duties and competency levels of female QSs and the possible correlation between them.

2. Literature Review

2.1 Duties of QSs

Ashworth and Hogg (2007) determine that the traditional activities of QSs that are continued to be practiced include single-rate approximate estimates, cost planning, procurement advice, measurement and quantification, document preparation (particularly bills of quantities), cost control during construction, interim valuations and payments, financial statements, final account preparation and agreement, and settlement of contractual claims. However, in recent years, the activities of QSs have been broadened to include *inter alia*, project management, and facilities management (Crafford & Smallwood, 2007). Ashworth and Hogg (2007) determine that other evolved activities include new tasks for project development, such as investment appraisal, whole life cycle costing (WLCC), value management, risk analysis, insolvency services, cost engineering services, environmental services measurement and costing, technical auditing, planning and supervision, valuation for insurance purposes, and administration maintenance programs.

The Royal Institution of Chartered Surveyors (RICS) (2008) also provides guidelines for QS tasks, which also involve project development from the initial stage until project completion.

2.2 Competency and QS

“Competency” is defined as a capability or ability and is a set of related but different kinds of behavior organized around an underlying construct, called “intent.” The different kinds of behaviors are alternate manifestations of the same intent, which appropriate to various situations or times (Boyatzis, 2008). Competency is a description of an action, a mode of behavior, or an outcome that a person should be able to demonstrate and is the ability to transfer skills and knowledge to new situations within the occupational area (Holmes & Joyce, 1993). Parry (1996) relates competency with knowledge, skills, and attitudes that affect a major part of one’s job (a role or responsibility) and that correlates with one’s performance in a job.

According to the RICS (1998), the basic competencies that should be common to all construction professions under the RICS structure include personal and interpersonal skills, business skills, and knowledge of information technology, professional practice, law, measurement, and mapping. According to the RICS, the core competencies of QSs include the provision of construction technology and environmental services; knowledge of the relationship between economics and construction; and procurement, financial, and management skills. The optional competencies also reflect the areas of specialization or future career diversification, such as arbitration, dispute procedures and other resolutions, development appraisal, facility management, insolvency, insurance, project management, investment, research methodologies and technologies, taxation allowances, and grants and valuation. In 1999, the Australian Institute of Quantity Surveyors, RICS, and Pacific Association of Quantity Surveyors developed the most comprehensive QS competency model, which includes strategic planning, budgetary process, cost estimating, cost planning, procurement advice, documentation, construction account management, construction change management, and feasibility studies. In 2008, RICS authoritatively drafted the

requirements for the assessment of professional competence by listing the competencies required for QS in three distinct categories, namely, mandatory, core, and optional competencies.

3. Research Methodology

3.1 Sample and Data Collection

A quantitative method was used to collect the primary data via the postal method. Postal questionnaires in self-addressed envelopes were sent to 100 QS firms throughout Peninsular Malaysia on March 12, 2012. By April 30, 2012, 37 firms returned the completed questionnaires to the researcher. Thus, the effective research respondents were 37 ($N=37$), which corresponded to a response rate of 37%. This study used a structured questionnaire to collect data. The data collected were analyzed through the Statistical Package for Social Sciences (version 17). As such, the particular statistical analysis method used in this study was a descriptive statistics method. Several descriptive statistics could be obtained from the variables of the data collected, such as the mean, standard deviation, and range of scores. According to Naoum (1998), the measures of central tendency can be used to determine the mean for all the levels of abilities and the levels of competencies of the respondents.

3.2 Measures

Based on the studies of Crafford and Smallwood (2007), Nkado and Meyer (2001), and Oke, Timothy, and Olaniyi (2010), six items were utilized to determine the demographic background of the respondents, such as age, status, highest formal qualification, experience, position in practice, and career aim. Based on the study of Ashworth and Hogg (2007), RICS (2008), and Crafford and Smallwood (2007), 36 roles or activities of QS were listed in the second section. This section intended to obtain the point of views or perspectives of the respondents on the level of their ability in performing their responsibilities. This part consisted of one question that asks the respondents to rate the level of their abilities based on experience using a three-point scale (1, low; 2, medium; and 3, high). The ranges were interpreted as follows: 2.5 to 3, a high level of abilities of female Qs in performing their duties; 1.5 to 2.49, a medium level of abilities; and 1.49 and below, a low level of abilities.

Based on the RICS (2008), 25 items were utilized to determine the level of competence for each quantity surveying competencies. This part consisted of one question. This part was also divided into three subquestions with the following headings: mandatory competencies, core competencies, and optional competencies. This section required the respondents to rate the level of their competence based on experience using a five-point Likert scale, as follows: 1, "not at all competent"; 2, "a little competent"; 3, "moderately competent"; 4, "fairly competent"; and 5, "very competent." The questionnaire included 10 mandatory competencies, 7 core competencies, and 8 optional competencies based on the competency standards of the RICS (2008). The ranges for each result were interpreted as follows: 4.5 to 5, a high level of competence for female Qs (very competent); 3.5 to 4.49, a fair level of competence; 2.5 to 3.49, a medium level of competence; 1.5 to 2.49, a level of little competence; and 1.49 and below, a level of no competence at all.

The researcher employed content validity to ensure that the measure included an adequate and representative set of time that taps the concept (Sekaran, 2003). Mandatory, core, and optional competencies had Cronbach's alpha values of 0.897, 0.923, and 0.921, respectively. The ability of the respondents regarding their QS duties had a Cronbach's alpha value of 0.938. Kline (1999) notes that a cutoff point of 0.7 is suitable for ability test. As a result, none of the main variables was deleted.

4. Analysis

4.1 Demographic Data

The majority of the respondents are 25 to 30 years of age (56.8%). Of the respondents, 18.9% are either under 25 years of age or are within and 31 to 40 years of age, whereas 5.4% are within 41 to 50 years of age. The majority of the respondents are single (56.8%), whereas the remaining 43.2% are married. The majority of the respondents are degree holders (73%), followed by diploma holders (16.2%) and Master's degree holders (10.8%).

The majority of the respondents have a working experience of one to five years (75.7%). The remaining respondents have a working experience of either more than 10 years (13.5%) or 6 to 10 years (10.8%). The majority of the respondents are Qs (51.4%). The remaining respondents are assistant Qs (27%), project executives (13.5%), or contract executives (8.1%). The position of the respondent in the organization is important in rating the level of her competencies because her duties vary depending on her position. In terms of career aim, the majority of the respondents want to be a registered QS (64.9%), followed by respondents who want to quit from the industry after several years (24.3%), respondents who want to join another sector (16.2%),

respondents who want to stay with their current company (13.5%), and respondents who want to start their own firm (13.5%).

4.2 Abilities of Female QSs in Performing Their Duties

Table 1 shows that 8 of the 12 duties of high-level ability female QSs are traditional quantity surveying activities, namely, document preparation, particularly bills of quantities (mean=2.82); measurement and quantification (mean=2.81); final account preparation and agreement (mean=2.69); valuing construction work for interim payments, valuing change, assessing or compiling claims for loss and expense, and agreeing on final accounts (mean=2.64); controlling the cost of the construction process (mean=2.56); cost planning (mean=2.56); financial statements (mean=2.56); and settlement of contractual claims (mean=2.51).

The majority of the medium-range duties are evolved duties performed to add value for the clients (Ashworth and Hogg, 2007). These duties include the following: cost engineering services (2.47), planning and supervision (2.29), employers' agent (2.28), investment appraisal (2.25), insolvency services (2.22), facility management (2.17), administering maintenance programs (2.16), risk analysis (2.14), managing and analyzing risk (2.07), valuation for insurance purposes (2.07), project management (2.07), value management (2.04), technical auditing (2.00), and Whole life cycle costing (1.97). These evolved duties are responses to the potential demise of the bills of quantities. Thus, QSs must explore new potential duties for the continued relevance of their services. Female QSs have more than basic knowledge. However, this knowledge is not yet advanced in conducting these duties because female QSs are not yet exposed to these new duties and because they have less working experience in the construction industry.

Table 1. Duties of female QSs

Duties of female QSs	Mean	Standard deviation
Document preparation, particularly bills of quantities (DP) (H)	2.82	0.45
Measurement and quantification (H)	2.81	0.47
Preparing contractual documentation (PC) (H)	2.74	0.51
Managing the tendering process (MP) (H)	2.70	0.52
Final account preparation and agreement (FA) (H)	2.69	0.52
Valuing construction work for interim payments, valuing change, assessing or compiling claims for loss and expense, and agreeing final accounts (VP) (H)	2.64	0.60
Subcontract administration (SA) (H)	2.57	0.56
Controlling the cost of the construction process (CC) (H)	2.56	0.61
Cost planning (CP) (H)	2.56	0.61
Financial statements (FS) (H)	2.56	0.60
Advice on cost limits and budgets	2.53	0.56
Settlement of contractual claims	2.51	0.70
Cost engineering services	2.47	0.62
Planning and supervision	2.29	0.71
Employers' agent	2.28	0.75
Investment appraisal	2.25	0.70
Insolvency services	2.22	0.62
Facility management	2.17	0.59
Administering maintenance programs	2.16	0.58
Risk analysis	2.14	0.58
Managing and analyzing risk	2.07	0.61
Valuation for insurance purposes	2.07	0.66

Project management	2.07	0.69
Value management	2.04	0.69
Technical auditing	2.00	0.68
Whole life cycle costing	1.97	0.71

Scale: less than 1.49 = low; 1.50–2.49= medium; 2.50–3.00 = high

High-level abilities (H); medium-level abilities (M)

4.3 Mandatory Competencies

Table 2 shows the list of variables that measure the level of mandatory, core, and optional competencies of the respondents. A comparison of all competencies shows that teamwork is at the top of the ranking; in essence, female QSs are most competent working in teams and teamwork is one of the mandatory competencies for all QSs. Female QSs are also competent in core competencies, such as procurement and tendering, quantification and costing of construction works, and project financial control or reporting. The core competencies are the specific technical competencies that must be achieved by QS, and they largely define the primary role of QS. However, nearly all optional competencies are at the lowest rank. These competencies include programming and planning, capital allowances, risk management, due diligence, and insurance and corporate recovery and insolvency.

In terms of mandatory competency, female QSs are fairly competent in the following six competencies: teamwork (mean=4.16), conduct rules, ethics, and professional practice (mean=3.78), communication and negotiation (mean=3.68), client care (mean=3.59), data management (mean=3.59), and conflict avoidance, management, and dispute resolution procedures (mean=3.51). In terms of core competency, female QSs are fairly competent in the following six competencies: procurement and tendering (mean=4.14), quantification and costing of construction works (mean=4.05), project financial control or reporting (mean=3.92), contract practice (mean=3.81), design economics and cost planning (mean=3.62), and construction technology and environmental services (mean=3.57). In terms of optional competency, female QSs are fairly competent in the following two competencies: project evaluation (mean=3.86) and contract administration (mean=3.86). The respondents mostly have only moderate competence in other areas.

Table 2. Competency level of female QSs regarding mandatory, core, and optional competencies

Competencies	Mean	Standard deviation
Teamwork (M)	4.16	0.79
Procurement and tendering (C)	4.14	0.91
Quantification and costing of construction works (C)	4.05	0.94
Project financial control or reporting (C)	3.92	0.89
Project evaluation (O)	3.86	0.82
Contract administration(O)	3.86	0.97
Contract practice(O)	3.81	0.84
Conduct rules, ethics, and professional practice (M)	3.78	0.82
Communication and negotiation (M)	3.68	0.74
Design economics and cost planning (C)	3.62	1.00
Client care (M)	3.59	0.86
Data management (M)	3.59	0.86
Construction technology and environmental services (C)	3.57	0.80
Conflict avoidance, management, and dispute resolution procedures (M)	3.51	0.96
Commercial management of construction (C)	3.38	0.82
Sustainability (M)	3.32	0.91

Health and safety (M)	3.30	1.02
Accounting principles and procedures (M)	3.16	0.89
Programming and planning (O)	3.08	0.82
Capital allowances (O)	3.08	0.95
Business planning (M)	3.05	0.97
Risk management (O)	3.03	1.04
Due diligence (O)	2.95	0.91
Insurance (O)	2.89	0.84
Corporate recovery and insolvency (O)	2.86	0.97

Scale: Less than 1.49 = not at all competent; 1.50–2.49 = little competent; 2.50–3.49 = moderately competent; 3.50–4.49 = fairly competent; 4.50–5.00 = very competent

M=mandatory; C= core; and O=optional

4.3 Correlation between the Competencies and Duties of Female Qs

Table 3 shows the analysis of the correlation between the duties and competencies of female Qs. Based on the analysis, the first duty, involving final account preparation and agreement, is closely associated with the competencies in teamwork, procurement, quantification, project financial control, project evaluation, contract administration, and contract practice. The second duty, which involves preparation of financial statements, is closely associated with competencies in procurement, quantification, project financial control, project evaluation, communication, and design economics and cost. The third duty, which is cost planning, is closely associated with teamwork, procurement, quantification, project financial control, contract administration, and design economics and cost.

Table 3. Correlation matrix on competencies and duties

	DP	PC	MP	FA	VP	SA	CC	CP	FS
Teamwork	0.211	0.209	0.270	0.445**	0.179	0.064	0.187	0.519**	0.249
Procurement	0.457**	0.421*	0.405*	0.606**	0.190	0.313	0.471**	0.532**	0.552**
Quantification	0.421*	0.435*	0.477**	0.596**	0.214	0.451*	0.569**	0.571**	0.673**
Project financial control	0.311	0.244	0.280	0.600**	0.068	0.276	0.313	0.543**	0.649**
Project evaluation	0.219	0.371*	0.254	0.481**	0.186	0.374*	0.274	0.283	0.484**
Contract administration	0.248	0.303	0.205	0.458**	0.095	0.219	0.330	0.439**	0.404*
Contract practice	0.433*	0.477**	0.311	0.564**	0.317	0.160	0.385*	0.389*	0.379*
Conduct rules and ethics	0.118	0.196	0.192	0.388*	0.202	0.106	0.097	0.301	0.108
Communication	0.135	0.194	0.129	0.303	0.015	0.380*	0.224	0.328	0.470**
Design economics and cost planning	0.152	0.225	0.234	0.405*	-0.042	0.255	0.401*	0.496**	0.583**

**p<0.01

*p<0.05

5. Discussion

This study is conducted to assess the duties and competencies of female Qs in Malaysia. The construction industry is currently witnessing an increased participation of women in the field, although their percentage remains low. As a country experiencing steady growth in economic terms, a high demand for capable and competent Qs exists in the Malaysian construction industry. Dealing with numerous meticulous matters, such as measurement, valuations, and financial scrutiny, this position is apparently appropriate for women. The majority of the respondents in the study are in their middle age category, with half of them being new entrants in the field

and armed with degree qualifications. Most of the respondents hold an executive QS position with an intention to pursue their full professional qualification. In Malaysia, one must register with the Board of Quantity Surveyors Malaysia and pass its professional competence test to qualify as professional QS. The attainment of this registration license increases the confidence of a client with the standard of the intangible service that a QS offers (Fong & Choi, 2009).

The competency level of female QSs is assessed based on their ranking of mandatory, core, and optional competencies. In terms of mandatory competencies, female QSs rated themselves as most competent in teamwork. This observation supports the findings of Conti and Kleiner (1997). This observation is also consistent with the RICS (2008) requirements; in particular, QS must at least be able to demonstrate knowledge and an understanding of the principles, behavior, and dynamics of working in a team. The second highest competency is related to conduct rules, ethics, and professional practice, which somewhat supports the level of professionalism practiced by the respondents and is congruent with the RICS (2008) requirements. These requirements emphasize proper ethics and competency in performing one's duties. Communication and negotiation are ranked as their third mandatory competency, followed by client care and data management.

In terms of core competencies, procurement and tendering rank the highest, followed by quantification and costing of construction work and project financial control and reporting. These results are synchronous with the competencies outlined by the RICS (2008), which mentions that QSs should be regarded as advisors or experts on the selection of procurement methods and the advantages and disadvantages accruing to each of the parties involved. The importance of possessing competencies in the other two areas is related to project estimation and control, which is considered a traditional QS role by Ashworth and Hogg (2007). The traditional activities of QSs, particularly in small- to medium-sized practices, include the following: single-rate approximate estimates, cost planning, procurement advice, measurement and quantification, document preparation (particularly bills of quantities), cost control during construction, interim valuations and payments, financial statements, final account preparation and agreement, and settlement of contractual claims. Based on the findings and in the context of the proliferation of small- to medium-sized practices, the duties and competencies of female QSs are considered to be following the traditional practices.

In terms of optional competencies, project evaluation ranks first followed by contract administration and contract practice. For project evaluation, female QSs are considered fairly competent in development appraisal, investment appraisal, cost benefit analysis, and assessment of the financial aspects of feasibility study. According to the RICS (2008), QSs should have a comprehensive knowledge of the various elements of the feasibility study and development appraisal and the factors associated with them. Their understanding of the techniques used in assessing financial viability allows them to advise the clients on the economics of design on the use of value management and on the risks associated with the project. QSs are also expected to perform additional tasks associated with various new procurement methods.

In terms of female QSs duties, the results indicate that female QSs are involved in three major project phases, namely, tendering, construction, and completion. The preparation of tender documents, particularly bills of quantities, reflects the traditional practice of QSs, which is a practice that remains dominant in Malaysia. Following popular belief, women are considered competent with regard to documentation, which is one of the most important aspects of QS activities. Project progress valuations and assessment of contractor's claim and final account are also the major duties of female QSs. The lowest ranking ability level of female QSs is WLCC. This result indicates that female QSs are slightly aware of the concept and practice of WLCC. This result also leads to the conclusion that WLCC is seldom practiced in Malaysia.

Table 3 shows that the correlation results indicate a close relationship between female QS duty in the preparation of final accounts and few competency levels, followed by female QS duty in financial statement and cost planning. Notably, the most significant QS duties are associated with their competencies in procurement, quantification, project financial control, and project evaluation.

6. Conclusion and Recommendation

This study has obtained results that address the first and second objectives. For the first objective, female QSs are fairly competent in the following six mandatory competencies: (1) teamwork, (2) conduct rules, ethics, and professional practice, (3) communication and negotiation, (4) client care, (5) data management, and (6) conflict avoidance, management, and dispute resolution procedures. For the core competencies, female QSs are fairly competent in the following six competencies: (1) procurement and tendering, (2) quantification and costing of construction works, (3) project financial control or reporting, (4) contract practice, (5) design economics and cost planning, and (6) construction technology and environmental services. For optional competencies, female QSs

are fairly competent in two competencies, namely, project evaluation and contract administration.

In terms of their professional duties, female QSs are advanced in performing traditional QS activities based on the results regarding their high levels of abilities. Female QSs are also deemed experts in documentation, particularly in drafting bills of quantities and measurements. Female QSs also have more than a basic knowledge in performing evolved activities but not to the point of experts. In general, in all the 36 duties of QS, female QS performances are at a scale above the low level. Therefore, female QSs have at least a basic knowledge of the duties that straddle traditional and evolved QS duties.

As in any piece of research, the present study has several limitations. Although the conclusions drawn are related directly to the respondent group, they provide a useful addition to the extensive debate in this area. They also identify the key issues that are directly relevant to women in the surveying profession as a whole. Several recommendations for future research are also presented. First, further research can be conducted with a large sample population of female QSs to confirm the findings for all QSs in Malaysia. Future research may also cover a wide scope of the challenges of female QSs in the Malaysian construction industry.

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