# COMPETENCIES OF QUANTITY SURVEYORS IN A DEVELOPING ECONOMY

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**Abstract**
*As a prominent construction professional in the construction industry, quantity surveyor shall be sharp with required competencies to overcome the challenges within a developing economy context. Therefore the study is directed to identify the gap between the current level of competencies and the required level of competencies of quantity surveyors in a developing economy and providing recommendations to bridge the gap. This research was driven into a mixed approach which includes desk review, expert surveys, questionnaire survey and expert interviews as data collection methods in order to accomplish the research aim. Initially a desk review was conducted to identify the competencies of quantity surveyors. Then an expert survey was carried out to build up a list of competencies in given context. After a questionnaire survey was conducted to seek the current level of competencies and then expert interviews were conducted to check the required level of competencies and the collected data were analysed with descriptive statistics to determine the gap. Mean, Standard deviation and Mode were used as analyzing tools to calculate the gap between. Further, recommendations were derived through expert interviews to bridge the identified gap by adapting the content analysis method. Continuous professional development programmes for quantity surveyors and periodical changes to the curriculum of quantity surveying academic courses were the common recommendations given. Within them, it is essential to contain development appraisals, financial management during construction, coordinating cash flows, resolving disputes and BIM management competencies as those are lacking in the given context.*

*Keywords: Competencies, Quantity Surveyors, Developing Economy*

## 1. Introduction

Construction industry is complex, interdependent, and broad as construction projects lead the industry to be more complicated day by day. A static relationship can be seen between construction industry and other sectors of economy. The improved efficiency of construction industry results national economic growth and ensures cost effectiveness and could contribute to cost savings for whole country (Aibinu and Jagboro, 2002).

For analytical purposes, World Economic Situation and Prospects (WESP) classifies all countries of the world into one of three broad cat-egories: developed economies, economies in transition and developing economies (United Nations, 2014). Developing economy has its own characteristics. Agricultural sector of developing countries accounts a major part in the Gross Domestic Production (GDP) (WESP, 2015). Developed countries are more towards to service oriented economies. WESP (2015) and United Nations (2014) have declared that Sri Lanka, India, Pakistan, Nepal and Bangladesh are some of developing countries in Asia. Further, Ehelepola (2016) states that Sri Lanka is a small developing country in South Asia.

According to World Bank (2013) Sri Lanka is a developing country with a growth rate of 4.8%. Construction is the second largest industrial segment in Sri Lankan economy, and have recorded a 6.6 percent growth in 2014 (Central Bank of Sri Lanka, 2014). Construction is a fundamental requirement of a developing economy, because development of other industries and the upliftment of the living status creates a demand on the construction industry, since other industries are heavily depending on construction products. According to Allan et al (2008), a construction boom can be seen in many developing economies. The supply shall meet the demand in order to cater the requirements of developing economy. Increase in economic activities have generated heavy demand for construction

(Chen and Chen, 2010). Developing economy changes the client's needs and wants, and have made construction professionals' involvement more complex such as quantity surveyors, engineers, architects and etc.

Quantity surveying is a crucial profession in current construction industry. Further, Quantity surveyor's contribution on overall construction project performance is given by acquiring, and deploying appropriate competencies (Nkado, 2000). The profession of quantity surveying has come across a threatened situation because of the traditional roles and the performance under the circumstances of developing economy (Nkado and Meyer, 2001). Royal Institution of Chartered Surveyors [RICS] (2014) defines competency as "the skill or ability to perform a task or function". Further, it is a description of an action, a mode of behaviour or outcome that a person should be able to demonstrate, or the ability to transfer skills and knowledge to new situations within the occupational area (Holmes and Joyce, 1993).

A research has been done on the topic "Competencies of Professional Quantity surveyors in a Developing Economy" by R. N. Nkado in year 2000.
According to Nkado (2000), in this research, a model of competencies required by the quantity surveying service providers, is presented with the use of data which were collected by South African quantity surveyors. This research is mainly based on South African context and completed in year 2000, nearly seventeen years ago.

RICS has updated the required competencies with new competencies (RICS, 2014). Australian Institute of Quantity Surveyors (AIQS) has changed competencies throughout this seventeen years. Sri Lankan construction context and South African context are two different contexts. Especially Sri Lankan construction industry shows a rapid growth with the development of economy. Considering the obsolescence, rapid changes in the construction industry as well as the context difference, a research gap has been identified regarding identifying quantity surveying competencies in a developing economy, and addressing the current gap in the industry.

Another research is done on the topic "Competencies Expected of Graduate Quantity surveyors by the Construction Industry at Present and Future" by G. Yogeshwaran in 2014. The aim of this research was to identify the gap between competencies of graduate Sri Lankan quantity surveyors and to find required or expected competencies by the construction industry. Nevertheless, this research does not specifically identify what are the competencies of quantity surveyors that shall be specifically developed in a developing economy context. Thus, a clear research gap can be identified in driving a research to identify the competencies of quantity surveyors in a developing economy. Therefore, the aim of this research is to analyse the competencies of quantity surveyors in a developing economy. However, the aim was achieved by fulfilling following objectives.

1.  To identify competencies required by a quantity surveyor in a developing economy.
2.  To determine the gap between required and current competencies.
3.  To provide recommendation to bridge the gap

The competencies considered were limited to which have been defined by professional bodies namely, RICS, Pacific Association of Quantity Surveyors (PAQS), Institute of Quantity Surveyors Sri Lanka (IQSSL) and AIQS. Data collection by questionnaire survey was limited to Sri Lankan construction industry.

## 2. Research Methodology

Research methodology refers to systematical and rational approach of investigation system with a scientific background. Data collection of this research was done by four methods. Adopted methods were desk review, expert survey, questionnaire survey and finally an expert interview round.

A desk review was conducted and competency standards which are published by RICS, AIQS, IQSSL and PAQS were merged together with findings of the study by Yogeshwaran (2014) to develop a common list of competencies required from a quantity surveyor. Then an expert survey was carried out

to validate the common list of competencies and to derive competencies considering the developing economy context.

After questionnaire survey was carried out, adhering to the quantitative approach among the industry practitioners to identify the current level of competencies of quantity surveyors in a developing economy. Respondents were selected through convenience sampling method. Finally, an expert interview round was conducted to identify the required level of competencies construction industry expect out of the quantity surveyors in the given context and to provide recommendations to bridge the gap.

As both quantitative and qualitative methods were adapted mixed approach was used for the study. Mean, median, standard deviation and manual content analysis are the adapted analysis tools for the study.

## 3. Findings and Analysis

Quantity surveyors are one of the professional who involves in the construction process since the inception, until the completion. Brandon (1994) emphasises, quantity surveyor as an essential professional who can make construction projects more feasible with cost effective techniques while adding more value to the ultimate product. Quantity surveyors have to face many challenges and opportunities, but generally opportunities are mainly neglected and challenges do not overcome predominantly due to lack of relevant skills and competencies (Dada and Jagboro, 2012).

There is an expectation that the quantity surveyor's role will develop further in future (Wao and Flood, 2016). As stated in Ashworth et al (2013) quantity surveyors are required to be exploring new potential roles regarding to new opportunities and strengths. Therefore, quantity surveyor's skills and competencies should be updated in order to change their roles with regard to the new market situation.

Competencies of quantity surveyors have been defined in various viewpoints (Nkado and Meyer, 2001). To avoid the mix-up there should be a well-established and well defined and accredited set of competencies for quantity surveying profession. Thus, at the present core competencies of quantity surveyors are outlined by governing professional bodies (Perera et al, 2010).

### 3.1. DESK REVIEW

RICS, PAQS, IQSSL and AIQS are the leading professional bodies which govern quantity surveyors in Sri Lanka (Yogeshwaran et al, 2014). These professional bodies certify the excellence of professional practitioners of quantity surveying and maintain the required standards while governing the accreditation of quantity surveying education and its degree programs. Thus, these professional bodies have individually published sets of competencies expected from quantity surveyors who work in construction industry. Hence an in-detail analysis of competencies published by main quantity surveying professional bodies namely IQSSL, RICS, PAQS and AIQS was carried out as a part of achieving objective one.

### 3.1.1 Yogeshwaran (2014)

This is a research done on the topic "Competencies expected of graduate quantity surveyors by the construction industry at present and future" in 2014. In the path of achieving objective one of the research, a common set of competencies had been prepared studying PAQS, AIQS, RICS and IQSSL quantity surveying competencies. Thematic analysing method was used to analyse the data which had been collected through the desk review. The common set of competencies were categorized under main 23 areas. The list was prepared using RICS Competencies which were outlined in 2013, AIQS competencies published in 1997, PAQS competencies published in 2001 and latest IQSSL competencies. This research was recently done in a systematical manner. The common list of competencies of quantity surveyors had been validated by the experts in the industry and many journal papers have been published based on the research. The common list which was prepared in this research was used in the desk review.

### 3.1.2 Updating Yogeshwaran (2014)

RICS and AIQS have updated competencies for quantity surveyors after 2014. RICS has published a document," Assessment of professional competence" for the sector of quantity surveying and construction in 2015. AIQS has updated competencies of quantity surveyors in May 2012. A major change can be observed in RICS competencies. RICS 2013 competencies got 10 mandatory competencies, 7 core competencies and 10 optional competencies. But in RICS 2015 update, there are 10 mandatory competencies, 6 core competencies and 11 optional competencies. Building information modelling (BIM) management has been introduced as a new optional competency.

A major change cannot be seen between the AIQS latest update and AIQS Competencies which were used in Yogeshwaran (2014). IQSSL and PAQS competencies have not been changed after 2014. Thus, the common list of competencies was slightly changed according to the changes of the competency standard changes. The common list which was prepared by Yogeshwaran (2014), was updated relevant to the changes in the competencies.

The desk review was mainly focused on AIQS, RICS, IQSSL and PAQS competencies while referring to Yogeshwaran, (2014). Validation of common competency list and identification of crucial competencies of quantity surveyors which are specific for a developing economy is done through an expert survey.

### 3.2 EXPERT SURVEY FINDINGS

Expert survey was conducted to validate the findings of the desk review and to derive competencies of quantity surveyors from the validated common list considering the developing economy context. Four industry experts in field of quantity surveying were participated in the expert survey. Initially the common list of competencies was validated through all four experts who have sophisticated knowledge in the subject of the research.

All four experts validated the desk common list of competencies with minor changes. Two of expertise pointed out that the competency 'Managing risk" which is included in the common list shall be changed as "Managing financial risk", since most of the time quantity surveyors deal with financial risk management rather than other risk management approaches. Therefore, after the validation the competency "Managing risk" was altered as "Managing financial risk". Thus, desk review findings were validated.

Then all those four experts were interviewed to identify the crucial competencies of quantity surveyors in a developing economy, out of the validated common list. All four experts were given same chance to select the competencies out of the given common list. Each selection has given a single mark, and total marks were considered when selecting the paramount important competencies for quantity surveyors in a developing economy. The minimum mark that a competency can get is zero and the highest is four. Competencies which were scored over two has been selected as the crucial or paramount important competencies. The list of competencies is shown within Table 1 under the section findings and analysis. Thus, competencies expect from a quantity surveyor in a developing economy was identified achieving the objective one.

### 3.3 QUESTIONNAIRE SURVEY FINDINGS

A comprehensive questionnaire was prepared and distributed among 53 quantity surveyors who are currently working in the Sri Lankan construction industry which is considered to be a developing economy context. Out of 53 practitioners, 33 quantity surveyors were responded and the collected data were subjected to the analysis.

Respondents were asked to indicate within the given Likert scale from 1-5, current level of competencies possessed by quantity surveyors who are practicing in the Sri Lankan construction industry. This scale was used to give a numerical value to the responses and to take the mean of each quantity surveying competency which was identified as crucial to a developing economy.

Median is the numerical value which separates the higher and lower parts of a data set. The set of data is arranged according to the ascending order and the middle number of the data set will be selected as the median. Median gives an idea that set of data is not skewed by extreme large and small values, compared to mean.

All competencies have scored a very low standard deviation, and it shows that the data does not have a wide spread. Thus, it points out that the data is more concentrated around the mean. The highest standard deviation is 1.22 and it's for the competency "contractual interpretation". Median substantiates that most of the competencies have scored "Average" and "High" level of competent of industry practitioners. Thus, it is rational to take the mean of the data set as the comparative outcome of the questionnaire survey analysis. Findings of questionnaire survey are indicated in the Table 1 given under findings and analysis section.

### 3.4 EXPERT INTERVIEW FINDINGS

With the completion of questionnaire survey, expert interviews were conducted to identify the required level of competencies of quantity surveyors in a developing economy and finally to provide recommendations while achieving objective two and three. The same set of experts who participated in the expert survey while achieving objective one, were interviewed.

Experts were also asked to indicate the required level of competencies within the given Likert scale similar to the one used in questionnaire survey. A mean value was derived from the data collected data out of the four experts. The average value was used to do the comparative analysis.

It could be noticed that measurements, BOQ preparation, tender documentation, interpretation of drawings and documents and professional practice are the highly required competencies out of the quantity surveyors of a developing economy. Carrying out life cycle cost analysis and developing a resource management plan are the least required competencies.

Difference between the required level of competencies and current level of competencies defines the gap, and the lack of the competencies of quantity surveyors in a developing economy. Thus, Table 1 indicates the findings related to objective one (desk review and expert survey) and objective two (questionnaire survey and expert interview) which shows about competencies expect from a quantity surveyor in a developing economy and existing gap between current level of competencies and required level of competencies from a quantity surveyor within the given context.

Table 32: Findings of expert survey, questionnaire survey and expert interviews

| Area | Competency | Questionnaire Survey Findings (Current level of Competencies) | | | Expert Interview Findings (Required level of Competencies) | Gap |
|---|---|---|---|---|---|---|
| | | Median | SD | Mean | Mean | |
| Cost planning | Analysing alternative design solutions | 3 | 0.92 | 3.03 | 4.00 | 0.97 |
| | Cost controlling during design | 3 | 0.96 | 3.36 | 4.00 | 0.64 |
| | Preparation of cost plans | 3 | 1.18 | 3.48 | 4.50 | 1.02 |
| | Scope audit | 3 | 0.81 | 3.03 | 4.50 | 1.47 |
| Cost estimating | Managing cost data | 4 | 0.70 | 3.64 | 3.75 | 0.11 |
| | Preparation of estimates | 4 | 0.77 | 4.09 | 5.00 | 0.91 |
| | Review, evaluation of estimates | 4 | 0.86 | 4.06 | 5.00 | 0.94 |
| Strategic planning | Preparation of cost benefit analysis | 3 | 0.98 | 2.97 | 4.00 | 1.03 |
| | Economic and financial analysis | 3 | 1.02 | 2.88 | 3.75 | 0.87 |

| Area | Competency | Questionnaire Survey Findings (Current level of Competencies) | | | Expert Interview Findings (Required level of Competencies) | Gap |
|---|---|---|---|---|---|---|
| | | Median | SD | Mean | Mean | |
| | Carrying out development appraisal | 3 | 1.17 | 2.79 | 4.00 | 1.21 |
| Contract administration | Progressive financial monitoring, reporting and controlling during construction | 4 | 0.97 | 3.76 | 5.00 | 1.24 |
| | Recommending progress payments/interim valuation | 4 | 0.88 | 4.18 | 4.50 | 0.32 |
| | Managing claims | 4 | 0.95 | 3.97 | 4.75 | 0.78 |
| | Managing variations | 4 | 0.95 | 4.09 | 4.50 | 0.41 |
| | Final accounts and reporting | 4 | 1.03 | 4.06 | 4.75 | 0.69 |
| | Managing cash flow during construction | 4 | 1.07 | 3.73 | 4.50 | 0.77 |
| | Administering insurance claims | 3 | 1.08 | 3.21 | 4.75 | 1.54 |
| | Administering, managing of subcontracts and controlling subcontract accounts | 4 | 1.04 | 3.82 | 4.75 | 0.93 |
| | Contractual interpretation | 4 | 1.22 | 3.64 | 4.50 | 0.86 |
| Dispute resolution | Resolving disputes | 3 | 0.81 | 2.85 | 4.50 | 1.65 |
| Contract documentation | Establishing client requirements | 4 | 0.83 | 3.67 | 4.00 | 0.33 |
| | Measurement | 3 | 0.61 | 4.42 | 5.00 | 0.58 |
| | Preparation of BOQ | 4 | 0.83 | 4.45 | 5.00 | 0.55 |
| | Developing resource management plan | 3 | 1.09 | 3.18 | 2.75 | -0.43 |
| General procurement advice | Review procurement systems | 3 | 0.98 | 3.48 | 4.00 | 0.52 |
| Tendering process | Managing tendering process | 4 | 0.82 | 3.97 | 4.75 | 0.78 |
| | Tender documentation | 4 | 0.69 | 4.30 | 5.00 | 0.70 |
| Government law and regulation | Knowledge on law, regulations and guidelines related to construction | 3 | 0.87 | 3.48 | 4.75 | 1.27 |
| Construction technology | Knowledge on construction technologies, process and building materials | 4 | 0.95 | 3.70 | 4.25 | 0.55 |
| | Knowledge of principals of construction | 4 | 0.92 | 3.70 | 4.00 | 0.30 |
| | Interpretation of drawings, specification and other documents | 4 | 0.97 | 4.06 | 5.00 | 0.94 |
| | Design and installation of services | 3 | 1.10 | 3.30 | 4.25 | 0.95 |
| Value management | Providing value management services | 3 | 0.91 | 3.09 | 3.75 | 0.66 |
| Life cycle cost analysis | Carrying out life cycle cost analysis | 3 | 0.95 | 2.76 | 2.75 | -0.01 |
| Budgetary process | Coordinating client's cash flow | 3 | 1.19 | 3.21 | 4.75 | 1.54 |
| Financial audit | Knowledge on accounting principles, cash flow, cost reconciliation | 4 | 1.03 | 3.42 | 4.50 | 1.08 |
| Ethics and professional conduct | Professional practice | 4 | 1.04 | 3.73 | 5.00 | 1.27 |
| Feasibility study | Feasibility study | 4 | 1.10 | 3.27 | 4.00 | 0.73 |
| Health and safety | Knowledge on health and safety requirements in construction | 4 | 0.90 | 3.55 | 4.25 | 0.70 |

| Area | Competency | Questionnaire Survey Findings (Current level of Competencies) | | | Expert Interview Findings (Required level of Competencies) | Gap |
|---|---|---|---|---|---|---|
| | | Median | SD | Mean | Mean | |
| Support competencies | Computer services | 4 | 0.70 | 4.06 | 4.75 | 0.69 |
| | Team working | 4 | 0.79 | 4.24 | 4.50 | 0.26 |
| | Due diligence | 4 | 0.95 | 3.82 | 4.25 | 0.43 |
| | Leadership | 4 | 0.82 | 4.21 | 4.00 | -0.21 |
| | Managing people | 4 | 0.83 | 3.85 | 3.75 | -0.10 |
| | Communication, presentation skills | 4 | 0.97 | 3.85 | 4.75 | 0.90 |
| | Client care | 4 | 0.91 | 3.85 | 4.25 | 0.40 |
| | Economics | 4 | 0.86 | 3.61 | 4.25 | 0.64 |
| | Statistical Analysis | 3 | 0.90 | 3.45 | 3.50 | 0.05 |
| Sustainability | Knowledge on impact of sustainability in construction | 3 | 0.78 | 3.09 | 3.50 | 0.41 |
| Tax depreciation | Tax depreciation | 3 | 1.05 | 3.12 | 3.50 | 0.38 |
| Expert witness | Expert witness | 3 | 1.09 | 3.06 | 3.50 | 0.44 |
| Research and development | Research and development | 3 | 0.80 | 2.91 | 4.00 | 1.09 |
| Building information modelling | BIM management | 2 | 0.83 | 2.06 | 3.50 | 1.44 |

Experts were further asked to provide recommendations to bridge the gap between current and required levels of competencies. A separate sheet of average levels of current competencies was given to all experts which consists of questionnaire survey data analysis. Based on that data the gap has been defined and the recommendations were provided to bridge the gap after observing the relevant gap.

The recommendations were analysed through manual content analysis and findings were further considered to conclude with available recommendations. The recommendations are tabulated in Table 2 as follows.

Table 33: Recommendations made by experts

| Expert | Recommendations |
|---|---|
| A | • Changing the content of the academic courses according to the requirement. <br> • Consecutive continuous professional development programmes. |
| B | • Compulsory continuous professional development programmes for professionals. <br> • Syllabus of the academic courses shall be updated to the current and future requirements of the industry. |
| C | • At present competency level of quantity surveyors in Sri Lanka is superficial. We need standard multi-level competencies for the profession and then develop the bottom up. |
| D | • Increasing required standard continuous professional development hours by regulated bodies. <br> • Content of academic courses can be changed according to the requirements. |

## 4. Conclusions and recommendations

The study was aimed to analyse the competencies of quantity surveyors in a developing economy and the aim was attained through the achievement of identified objectives. Initially set of competencies expected from the quantity surveyors in a developing economy context were identified including 53 competencies under 23 main areas. Then the gap between current and required level of competencies were derived which indicated substantial gap between most of the competencies. Anyhow recommendations were made analysing the expert views.

This research has emphasized the need of continues professional development programmes for the industry practitioners to keep the competency standard of the practitioner in line with the industry requirement. When it considers the developing economy the industry need vary in a quick diverse nature. Thus, it is important to identify the competency gap and allocate continuous professional development programmes to industry practitioners.

Curricula of the academic courses shall be changed in order to cater the rapid changing requirement of the industry. In developing countries, the course content shall be changed periodically to match the industry need, and to providing quantity surveyors who have got enough knowledge, skill and ability to perform the assigned task.

It is paramount important to contain development appraisals, financial management during construction, coordinating cash flows, resolving disputes and BIM management in to the CDP programmes and as well as in the curriculum of academic courses, since it shows a greater inadequacy of competencies in those areas.

By bridging the gap between the industry need and the quantity surveyor's current competency level some major changes could be seen in a developing economy. The high competency levels of quantity surveyors would ensure to address most of the construction related issues risen within the industry in developing economies within the quantity surveying scope.

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