

Emerging Challenges and Roles for Quantity Surveyors in the Construction Industry

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Received May 6, 2019, Revised May 23, 2019, Accepted Jun. 28, 2019

ABSTRACT

The current ever-changing environment of the construction industry demands Quantity Surveyors to update their knowledge and skills to cope with the changes. In order to provide insights for Quantity Surveyors to be able to manage a construction project productively and increase their ability in accordance with the current demand of the construction industry, this research conduct a questionnaire survey and interviews. As a result, the most critical challenges for Quantity Surveyors are a) Adopting new technologies such as BIM for their current practice, and b) Increasing their knowledge regarding sustainable attributes for a construction project. This research also disclosed that the expected emerging roles for Quantity Surveyors are a) Sustainable Advisory ability, and b) BIM ability for cost management. The research findings are expected to advise the current Quantity Surveyor and Quantity Surveying companies to prepare future competencies in accordance with the global trend.

Keywords: Competency, Quantity Surveyor, BIM, Quantity Surveying, Emerging Role.

INTRODUCTION

The construction industry has been regarded as one of the important national economic growth indexes. Customers' requirements in the construction industry have become more complex and demands for innovative technologies, customised designs and materials, environmental sustainability solutions, and productivity improvement have been increased significantly. As a response to these challenges and to meet the ever-increasing

complexity of construction projects, industry professionals have to be equipped with appropriate competencies and must be committed to continuous developing and deploying new skills. As Quantity Surveyor (QS) has provided financial services and economic consultations for construction projects, this profession has contributed to the planning and controlling a construction project over the years.

However, as the construction industry confronts more sophisticated customers' requirements that cannot be easily accommodated by the traditional competencies, QS has been demanded to update their skills and competencies by taking new roles and responsibilities such as risk management as well as adopting advanced ICT including Building Information Modelling (BIM) for more accurate and automated cost estimation and planning from the outset of a construction project (Kim and Park, 2018). Quantity Surveying is recently described as a mix of various professions such as contractual law, construction economics, and information management, and construction. Given the fact that all the current required skills and knowledge for QS are complex and challenge to obtain as an individual professional, continuous improvement and learning have become more essential for the success of QS in the construction industry. Indeed, Thayaparan et al. (2011) emphasise on long life commitment to learning as one of the most important characteristics of a successful QS. Said et al. (2010) reveals that the competencies of QSSs are far behind the prospect needs of the future industry. Wao and Flood (2016) asserted that identifying the QSSs' competencies for the future construction industry is essential, and Perera and Pearson (2011) pointed out that the current education system does not fulfil the needs of the construction industry and there is a discrepancy between quantity surveying graduates' skills and requirements of the industry. Shafiei and Said (2010) discuss that QSSs'

competencies are difficult to pin down due to their complex role and the involvement of their knowledge and skills in various disciplines. Ismail et al. (2016) asserted that new technologies such as BIM are only applied in large-scale projects and the majority of the QSs have lack of adoption of these advanced technologies.

It is critical for QSs to recognise the future business directions and improve their ability to respond rapidly to abrupt changes in order to guarantee their careers in the competitive modern construction industry (Wao, 2016; Drogemuller et al., 2017; Phaho and Pouris, 2008). Furthermore, the absence of the competency-level benchmarking led to a dissatisfaction with the competencies of the graduate QSs within the industry (Xia et al., 2016).

CHALLENGES IN IMPROVING QUANTITY SURVEYOR'S COMPETENCY

The current areas of expertise of QSs are extended to various sectors such as taxation, insurance, valuation, finance, and manufacturing over time (Olanrewaju, 2016). Risk management, quality management and financial project appraisal are also required as new emerging competencies for QS (Yogeshwaran and Perera, 2018). Furthermore, as the construction industry strives to adopt advanced digital technologies such as BIM to improve productivity and maximise profits (Kim et al., 2016; Gunderson and Gloeckner, 2011), BIM and emerging technologies for cost estimating and planning as well as effective risk management and value engineering has been increasingly demanded (Prince et al., 2018; Kim and Park, 2018).

Yogeshwaran and Perera (2018) define competency as a collection of skills that an individual must possess to perform a specific job satisfactory (Olawumi and Ayegun, 2016). Australian Institute of Quantity Surveyors (2012) emphasises on cost and

contract management, project financial control, construction technology, and conflict avoidance. Royal Institute of Chartered Surveyors (2015) identifies dispute resolution, procurement and tendering, business planning, sustainability consultancy, accounting principles, ethics and professional practice, and client care as the core competencies of an expert QSs. Cunningham (2014) and Shafie et al. (2014) asserted that adopting and utilising soft skills is essential for QSs to improve their competencies in terms of communication, critical thinking and decision-making ability.

Furthermore, Cunningham (2013) asserted that QS needs to be able to adapt rapidly with advanced technologies including BIM to secure their future careers. Although there have been efforts to identify the QS's competencies, research has been focused on the current role of QS rather than the future role of QS. In order to embrace new business opportunities and render quality outcomes as a QS profession, it is important to forecast future challenges and evolving roles for QS and prepare to cope with the necessary changes. Thus, this research will investigate the future challenges and roles for QS in the construction industry to provide knowledge to prepare the required competencies for the near future in the construction industry.

METHODOLOGY

This research consists of a web-based questionnaire survey with follow-up semi-structured interviews to identify the future challenges and roles for QSs to cope with the changelogs in the construction industry by preparing and improving their knowledge and skills. A total number of 50 construction and Quantity Surveying professionals, who were identified through professional construction bodies including Royal Institution of Chartered Surveyors, Australian Institute of Quantity Surveyors, Project

Management Institute, and Pacific Association of Quantity Surveyors, were invited for the questionnaire survey.

The questions were categorised into three main questions: a) Participants' demographic profile; b) Future challenges for QSs, and c) Required competencies. The questions were comprised of multiple choices based on 5-point Likert Scale. The semi-structured interviews were conducted after the completion of the questionnaire survey to achieve comprehensive insights and knowledge from the subject experts.

RESULTS

Profile of Respondents

30 responses have been received (60% response rate), and the average experience of the respondents was 7 years. 30% of respondents (9 respondents) has more than 10 years of experience in the Quantity Surveying.

Table 1. Profile of Respondents (n= 30)

Role	Number of Respondents	Percentage (%)
Owner/Executive	2	7
Senior Manager	12	40
Middle Manager	12	40
Entry Level	4	13
Total	30	100

As shown in Table 1, the main target of questionnaire survey was the senior or middle level managers in order to obtain their insights based on two distinct viewpoints as a QS as well as a manager who manages other QSs.

Future Challenges for Quantity Surveyor

TAs shown in Table 2, the most important challenge in the QS field is the constant technological changes and updates. Multiple selections were allowed for the respondents to express their opinions as much and diverse as possible. Majority of the respondents indicated that ‘Emerging ICT’ such as BIM is the greatest challenge for Qs.

Table 2. Top 5 Future Challenges for Quantity Surveyors

Challenge	Frequency (# of Respondents)	Rank
Changes in technology	24	1
Lack of Sustainability Knowledge	19	2
Globalisation	12	3
Demand for Diversified Services	4	4
Competitive Job Market	3	5

Through the interviews, two senior QS mentioned that BIM has been introduced to the construction industry, but no one is sure what are the new roles and responsibilities for a QS in order to embrace BIM. In addition, all entry level Qs concerned about the expectation from their line managers and employers as they ask them to introduce BIM in their practice. In relation to the BIM skills, the entry-level Qs indicated that the current undergraduate courses need to be improved and introduce new technologies including BIM. This finding reveals that Qs are highly required to embrace new technologies, and the current construction management program is not coping with these demands effectively.

The second challenge was 'Sustainable Attribute' in the Quantity Surveying' practice. As a project sponsor or an owner wants to minimise energy consumption and maximise the use of sustainable materials, it has become more complicated to develop an accurate cost estimate and plan. An owner indicated that a building becomes draw more attention when it achieves high rate in sustainability assessment schemes such as Green Star and LEED, and subsequently, an owner can generate revenue faster than before as a building can be rented out faster with premium.

In relation to the sustainable attributes, a senior QS pointed out that project costs for sustainable attributes must be planned from the outset of a project since a project client brief and a conceptual design phase is critical to determine a design intent. Most of the interviewees agreed with the statement, and they indicated that there is a disconnection between QSs and a design team due to a contractual issue, and consequently, a QS get involved when a design is about to be finalised, and this practice renders negative impacts on project costs later as many sustainable attributes cannot be accommodated due to budget issues or unforeseen additional costs for procuring sustainable attributes. Furthermore, respondents also addressed the difficulties to select the right contractors so-called 'Green Contractors' who implement green practices. It is because they are used to use the lowest price or best value contact selection process rather than use sustainable procurement processes. One respondent mentioned that a standardised process or guideline for a green or sustainable procurement will improve QS's competency in procuring a sustainable building.

Globalisation, Demand for Diversified Services, and Competitive Job Market were identified as other challenges, and demand for various services and more competitive job market are caused by the Globalisation of QS roles and working boundaries.

As a global resource pool for QS can be utilised via advanced ICT, the globalisation results in various projects requested from various countries. Subsequently, various services are requested based on the geographical location and this requires cultural awareness of QS to work in different project environments. A senior QS, who has experience in the Malaysian construction industry, mentioned that younger generations will face new challenges to work with others from the different cultural background. He provided an example of cost estimation for a construction site as the most of Malaysian construction workers must pray at a certain time for religious reason and this must be accommodated by setting up a prayer room, which has an implication for project costs.

Emerging Roles for Quantity Surveyor

Respondents were asked to provide expected roles for QS that are increasingly being demanded in the construction industry. Multiple selections were allowed for the respondents to express their opinions as much and diverse as possible. As shown in Table 3, there are two most important roles identified, one is Sustainable Advisory ability, and another is BIM ability for effective cost management. All respondents commonly emphasised the importance of proper knowledge in sustainability and BIM not to be left behind the current incessant changes in the construction industry. This finding echo with the previous finding 'Globalisation' as sustainability and BIM is the most important trend that the construction industry focuses on.

Although the emergence of new technologies such as BIM is identified as the greatest challenges, it is expected as one of the important roles for Qs to obtain and practice in the future. All respondents pointed out that the virtuous circle between the University and the industry must be established in order to cope

with the current challenges. Senior Qs agreed that Quantity Surveying firms should invest in adopting new technologies to secure the competitiveness in the global construction market.

Table 3. Top 5 Expected Roles of Quantity Surveyors

Responsibility	Frequency (# of Respondents)	Rank
Sustainable Advisory	19	1
BIM Ability for Cost Management Project & Construction Management	19	1
Dispute Resolution	9	3
Tax Depreciation Services	4	4
	1	5

They also commented that a collaboration between the two parties should be complementary, and so University provides means for the industry to improve their practices and the industry provide a research idea for University to tackle on. Respondents also mentioned the Continuous Professional Development (CPD) activities. As aforementioned, the commitment to continuous knowledge improvement via life-long learning is inevitable. In alignment with this, Senior Qs criticised the CPD events as it fails to provide an opportunity for senior and junior Qs to learn new knowledge and skills. It is mainly because the most of events are mainly designed for simple CPD unit acquisition with contents not reflecting the most recent issues in the construction industry as well as a networking opportunity.

Expected Future Competencies for Quantity Surveyor

Respondents were asked to indicate their opinions regarding the current competency level of Qs. They identified “cost

management” as the top area of the QSs’ expertise, followed by “estimation and financial control”. On the other hand, “sustainability analysis” and “computer literacy” were recognised as the least skills of QSs. These results confirm that QSs have enough knowledge for their traditional services, while their competencies are not advanced enough to address the future industry demands. The findings are consistent with the previous studies outcomes which stated the quantity surveying profession faces significant challenges to comply with the requirement of green building. Moreover, “BIM management” and “suitability analysis” were cited as the top-ranked competencies for QSs to survive in the competitive future construction industry (Table 4). Interview results also indicate the same factors for the required competencies. All the interviewees agreed that quantity surveyors are expected to attain additional knowledge regarding the green building as well as innovative technical methods to sustain their future business in the construction industry. Once more, the results indicate that QSs are expected to expand their traditional core competencies to the new trend of innovative methods and implement sustainable and green approaches.

CONCLUSION

The construction industry focuses on green solutions and advanced technologies such as BIM to enhance sustainability and productivity in their practices. Quantity Surveyors are essential project participants for a construction project, and the current ever-changing environment of the construction industry demands Quantity Surveyors to update their knowledge and skills to cope with the changes. Yet, research indicated that Quantity Surveyors have remained behind in the adoption of sustainable aspects and advanced ICT technologies for their practice. In order to provide

insights for Quantity Surveyors to be able to manage a construction project productively and increase their ability in accordance with the current demand of the construction industry, this research conduct a questionnaire survey and interviews.

As a result, the most critical challenges for Quantity Surveyors are a) Adopting new technologies such as BIM for their current practice, and b) Increasing their knowledge regarding sustainable attributes for a construction project. This research also disclosed that the expected emerging roles for Quantity Surveyors are a) Sustainable Advisory ability, and b) BIM ability for cost management. As sustainability and BIM adoption are the most important global trend in the construction industry, Quantity Surveyors are not free from this trend and need to prepare the future roles. Thus, Quantity Surveyors need to improve their knowledge in sustainable aspects and BIM utilisation for moving forward in the era of industry transformation via advanced digital technologies. The research findings are expected to advise the current Quantity Surveyor and Quantity Surveying companies to prepare future competencies in accordance with the global trend.

REFERENCES

- Australian Institute of Quantity Surveyors. (2012). Competency standards for quantity surveyors construction economics, Sydney: AIQS.
- Cunningham, T. (2014). The work and skills base of the quantity surveyor in Ireland-An introduction. Dublin Institute of Technology. Dublin: Technological University Dublin.
- Dada, J. O. & Musa, N. A. (2016). Key factors affecting the competence of quantity surveyors: Evidence from construction industry stakeholders in Nigeria. *Journal of Engineering, Design and Technology*, 14(3), 461-474.

- Drogemuller, M., Muldoon, R., Stuart, J., Kim, K.P., Ahn, J., & Kim, S. (2017). Exploratory study on cognitive style in a BIM environment in the Australian construction industry, *Management Review: An International Journal*, 12(2), 62-80.
- Gunderson, D. E., & Gloeckner, G. W. (2011). Superintendent competencies and attributes required for success: A national study comparing construction professionals' opinions. *International Journal of Construction Education and Research*, 7(4), 294-311.
- Ismail, N. A. A., Drogemuller, R., Beazley, S., & Owen, R. (2016). A review of BIM capabilities for quantity surveying practice. *MATEC Web of Conferences*. Paper Number: 66-00042. 1-7.
- Kim, K. P., Ma, T., Baryah, A. S., Zhang, C., Hui, K. M. (2016). Investigation of readiness for 4D and 5D BIM adoption in the Australian construction industry, *Management Review: An International Journal*, 11(2), 43-64.
- Kim, K. P., Park, K. S. (2018). Housing information modelling for BIM-embedded housing refurbishment, *Journal of Facilities Management*, 16(3), 299-314.
- Olanrewaju, A. (2016). Measuring the service gaps in the roles of quantity surveyors in the emerging market. *Benchmarking: An International Journal*, 23(5), 1111-1131.
- Olawumi, T. O., & Ayegun, O. A. (2016). Are quantity surveyors competent to value for civil engineering works? Evaluating QSs' competencies and militating factors. *Journal of Education and Practice*, 7(16), 9-18.
- Perera, S. & Pearson, J. (2011). Alignment of professional, academic and industrial development needs for quantity surveyors: the post recession dynamics. RICS Trust Grant Project No:401. Royal Institution of Chartered Surveyors. Newcastle: Nothumbria University.

- Phaho, D. & Pouris, A. (2008). Impact of technology diffusion on the innovation capacity and competitiveness of automotive components SME's in South Africa. *Management Review: An International Journal*, 3(2), 61-92.
- Prince, A.-A., Degraft, O.-M., Erika, P., & David John, E. (2018). Exploratory investigation of challenges and expectations of innovative quantity surveyors and quantity surveying firms in Ghana. *International Journal of Technology*, 9(7), 1480-1489.
- Royal Institute of Chartered Surveyors. (2015). *Assessment of Professional Competence*. London: Royal Town Planning Institute.
- Shafie, H., Khuzzan, S. M. S., & Mohyin, N. A. (2014). Soft skills competencies of quantity surveying graduates in Malaysia: Employers' views and expectations. *International Journal of Built Environment and Sustainability*, 1(1), 9-17.
- Shafiei, M. M., & Said, I. (2010). The competency requirements for quantity surveyors: Enhancing continuous professional development. *Sri Lankan Journal of Human Resource Management*, 1(2), 17-27.
- Thayaparan, M., Siriwardena, M., Amaratunga, R., Malalgoda, C., & Keraminiyage, K. (2011). Lifelong learning and the changing role of quantity surveying profession. 15th Pacific Association of Quantity Surveyors Congress. 351-360.
- Wao, J. O. (2016). Predicting the future of quantity surveying profession in the construction industry. *Journal of Construction Project management and Innovation*, 6(1), 1363-1374.
- Wao, J. O., & Flood, I. (2016). The role of quantity surveyors in the international construction arena. *International Journal of Construction Management*, 16(2), 1-12.

Management Review: An International Journal, 14(1), pp. 1-100 (June 30, 2019).

- Xia, B., Rosly, N., Wu, P., Bridge, A., & Pienaar, J. (2016). Improving sustainability literacy of future quantity surveyors. *Smart and Sustainable Built Environment*, 5(4), 325-339.
- Yogeshwaran, G., & Perera, B. (2018). Competencies expected of graduate quantity surveyors working in developing countries. *Journal of Financial Management of Property and Construction*, 23(2), 202-220.