EXPLORING THE QUANTITY SURVEYING SERVICES FROM THE EMPLOYERS’ AND GRADUATES’ PERSPECTIVE

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Abstract
A quantity surveyor is a professional working within the construction industry that is concerned with construction economics. The quantity surveyor profession in Malaysia has evolved due to client’s additional needs and requirements. Quantity surveyors not only are requested to perform traditional professional services but are also asking for the demanding services such as productivity improvement, project management, arbitration, risk management, construction financial practice and feasibility study in today’s changing construction industry. Therefore, this paper will identify the traditional and present roles of quantity surveyors and find out the threats to quantity surveyors’ profession in the future. A quantitative method is used through the survey questionnaires to gather data and information from the quantity surveying practitioner and graduates. The research outcome showed that the quantity surveying profession and the graduates are still relevant and stay competitive in the industry.

Keywords: Core competencies, graduates, profession, quantity surveyor, services.

INTRODUCTION

Quantity surveyors are the professionals that play an important role in the construction industry along with the architects, engineers, developers, building proprietors, government bodies and agencies and contractors. Roles of quantity surveyors include cost management, cost planning, project procurement, feasibility studies, contract administration and asset financial management (Shafiei and Said, 2008). As the time passes, it has constantly changed the way of construction business is handled. This change has pushed the quantity surveyors evolving over time to survive and remain viable in their respective field. In order for the profession to survive and evolve with the environment, they depend on the extent of competencies and knowledge (Sonson, 2014, Cartlidge, 2018). A lot of firms are becoming more of a business advisor than a traditional quantity surveyor (Heaton, 2015). Moreover, with technology changing, the quantity surveying profession is going to evolve, while bringing more challenges than ever before (Wong et al., 2014). Thus, evolving as a new breed of quantity surveyors in the modern market, they are currently facing a few problems such as the implementation of Building Information Modeling (BIM) as it will bring a huge impact towards the productivity and quality of the projects. Ineffective data interoperability, slacking of software adaptabilities, unavailable skilled staffs and project inexperience are the examples of technical issues that limited the BIM implementation (Chien et al., 2014). Apart from the usual barriers which constrain change, an additional factor restraining BIM adoption is an inherent conflict of interest within the construction industry. This may be a major deterrent to innovation as it straddles professional boundaries (Olatunji, Sher & Gu., 2010).

ISSUES

According to Rahmani (2010), the changing and shifting scene in the requirements of clients indicated that the clients had their dissatisfaction with the services provided by
construction professionals generally and their continual disappointment with the result that they received. Hence, up to this day, it is very important to refine the services of quantity surveyors for them to play a pro-active and competent role during the progress cycle of projects (Brummer, 2004 cited by Ofori, 2012).

Graduate quantity surveyors acquire their competencies from university education and internship training. However, there is no benchmark for the level of competencies acquired by the graduate through their education as implied by Shafi & Said (2008). Through the absence of benchmark, there is a mismatch of expectation of quantity surveyor graduate competencies by construction industry and the competencies acquired by graduate in university. This has led to dissatisfaction by the industry toward the graduate competencies (Perera et al., 2011).

There is always a strong emphasis to understand the clients’ needs on evolving quantity surveying profession. Therefore, getting feedback from the fresh graduates will be as important as well as from the industry to fully grasp what quantity surveying graduates learnt during their educational period and to see what is lacking from the industry needs. Therefore, getting feedback from both parties are important to understand the needs and to create a solution. This research will identify the competencies of quantity surveying graduates to adapt the changing needs of the construction industry and the threats to quantity surveying' profession in the future.

**LITERATURE REVIEW**

**Changing Roles of Quantity Surveyors**

Competency is described as an action, behaviour or outcome of a person who can transfer the skills and knowledge to act effectively in a job or situation (Klieme et al., 2008). A quantity surveying is a profession for persons who are trained and qualified to provide reliable advice and assist in handling problems arising in the industry (Frei & Mbachu, 2009). According to Male (1990), valuation and measurement are the key competencies which are important for proper cost management in construction projects. Nkado & Meyer (2001) stated that quantity surveying competencies reside in financial and contractual control of the project and proposed to develop their interpersonal skills. Dada & Jagboro (2015) identified the competencies of quantity surveyor include built environment, property economics, technical skills and many more.

Nowadays as technologies and environment continues to advance, transforming various professions as well as removing certain job where it could easily be taken over by technology. According to Frei and Mbachu (2009), quantity surveyors are not different from any other professional jobs, as it also faces a risk of receiving more threats than opportunity. The threats can be the major drawback for a quantity surveying and possibly change the role or completely remove the profession.

As quantity surveyors are constantly being faced with challenges and new opportunities, thereby it is essential for them to continuously enhance the competencies in order to stay competent in the competitive industry. They are to adapt quickly with the environment or else the threats will be imminent. It can be implied that the graduate quantity surveyors need to
develop their skills to diversify into different nature of organizations. By diversifying their roles, it would help the graduates to be more marketable. However, the graduates should not neglect the traditional service as it still plays an importance in the industry despite not being as important as previously.

**New Procurement and Contract Management**

A noticeable revolution in the competencies for quantity surveyors are the client which are seeking for ways to manage contracts (Potts, 2008). Frei et al. (2013) discussed the that new forms of procurement have been designed to counter the traditional procurement as client’s requirement varies. Frei and Mbachu (2009) believe cost plus contract, design and build contracts and turnkey gives a great benefit to the value and it should be used as a basic knowledge by the quantity surveyor. New contract management and new procurement forms such measured term contracts, design management, cost management, cost plus and project delivery partners were developed over the past decades for the benefits of quick contract management and price knowledge.

Even so, different procurement methods require different types of knowledge (El Wardani, 2006). Therefore, the quantity surveyors are encouraged to understand well with different types of procurement method to advise the client on the best options available. Different procurement has different effects on the time and cost. The suitable procurement method will help in concentrating on the work at hand by different contracting parties (Verster, 2006).

**Building Information Technology and Building Integration Modeling**

Technologies have overtaken the way how many things are done, as a result the development of BIM and automatically generated quantities, are considered a potential threat in terms of the quantity surveyor’s technical role (Smith, 2004 and Frei & Mbachu, 2009). As described by Ali et al. (2016), all construction professionals will require for developing and expanding their skill in BIM sooner or later as BIM systems will be at the focus of future virtual projects and information management system. Therefore, BIM qualifications and knowledge will be as important to the professionals to be a key player in the industry (Matipa et al., 2013).

However, there are firms who believed that the implementation of BIM is not a considerable threat to the profession but the BIM integration in the industry is the greatest problem (Wong, 2004). Although, computer usage has increased during the construction periods, but there was never a common ground of software used by different firms, as such an integration recommended by using Building Integration Modeling (BIM). Hence, it is a challenge for the quantity surveyors to acquire as much knowledge and familiarize themselves to different types of BIM software for cost estimation and measurement.

**Resistant to Change**

The construction sector diverse in both engineering and design aspect. However, the utilization of Information Technology (IT) has been lacking in comparison with other industries. It was observed that quantity surveying experience in term of information
technology (IT) applications was relatively low as compared with other developed countries. The construction industry is perhaps conservative in term of IT application, where the industry has a common approach of “wait and see” (Shen et al., 2003). The quantity surveying profession is perhaps still seen as a traditional role and not view as IT capable (Smith, 2004). The current industry still focuses on the quantity surveyors’ traditional role and not improving their services as extra time and cost required to gain those knowledges.

**Competition of Other Professions**

The construction industry market is always in constant competitive state. Smith (2004) mentioned that cost management is not the only exclusive service. Other professions can carry out this service as well and may be providing better quality over it. Frei and Mbachi (2009) also agreed to the current competition from other professions such as accountants, lawyers, property managers, value management consultants and many more, which could provide similar services as a quantity surveyor can be viewed as one of the threats. Due to various professional service requirements, the clients have an increasing need for a profession which can provide all the required services that a modern construction requires.

As viewed by Smith (2004) that there are some firms prioritizing their quantity surveying competencies and expertise on the profession and proceeding on developing this skill. As a matter of fact, firms need to be more flexible and willing to change their standard work practices than to stick with the traditional ways. Not only do the firms must be flexible but quantity surveyor should adapt to the work pattern changes (Dada and Jagboro, 2012). Smith (2004) also agreed that diversification is needed for the quantity surveying profession. By diversifying their scope, the quantity surveyors are able to fulfil clients and industry’s requirement. Quantity surveying can be diversified into various area such as investment appraisal, project planning, project management, contractual dispute resolution, etc. as explained by Fanous (2012) cited by Nnadi et al. (2016).

**Quality of Graduates**

Over the past years, the industrial practitioners have expressed their opinion on the graduates. The employers believe the graduates should be adapting to technical skill task. Practitioners often expressing their opinion about intellectual calibre of quantity surveying graduates is laudable, but the level of technical skill is distressing as expressed by Wilkinson and Hoxley (2005). They were disappointed by the graduate performance specifically with the core skills of measurement and construction knowledge (Smith, 2004). Furthermore, the graduates were found not interested in the traditional measurement role, which result a decline in core competencies and skills. According to Smith (2004), even some quantity surveyors have trouble functioning in their traditional services.

Zou and Darvish (2006) stated that in order to help graduate obtain various attributes expressed by the employers, the graduates should be placed on a more practical assignment with activities that provide hands on work that have real life relevance. This is to allow the graduates to gain useful experience. For example, the graduates should be assigned to various group-work opportunities to allow everyone to develop the teamwork attribute which will come in handy in their professional career. Universities should also allow the students to be exposed with the industry, including site visits and experience guest lecturers to give talks.
Education, Training, Mentorship, Continuing Professional Development (CPD) and Research

The Royal Institution of Chartered Surveyors (RICS) have set out a minimum requirement that members must undergo a minimum of 20 hours of Continuing Professional Development (CPD) training each year by recording it online (RICS, 2018). This is currently seen as a potential process to allow quantity surveyors to have a certain amount of professionalism. The CPD’s benefit is to enhance their professional practice through genuine continuation of education and learning (Lester, 1999). Anyhow, CPD does not only satisfy their professional body’s requirements, but to ensure integrity with colleagues and employers, improve job performance, widen the horizon in term to perform in the current and future role to enable promotion and progression (King, 2004). Verster (2009) suggested there should be a model for maturity which includes education, training, mentorship, continuing professional development (CPD) and research and allows to bridge the gap between formal education providers and providers of the quantity surveying and construction management service to the industry.

RESEARCH METHODOLOGY

This paper aims to investigate consultant quantity surveyors and graduates’ perception towards the change in services that the quantity surveyors are required to perform. Therefore, a survey-based investigation which is one of the quantitative methods are preferred in the assessment. It is considered the most suitable method in this study as it can obtain a large amount of data and permits analysis in statistical form. A questionnaire survey is a standout amongst the best techniques to obtain countless data to accomplish better outcomes, as recommended by Minato (2003). The questionnaire is known as a technique which question people on a point to portraying their feedback as mentioned by Jackson (2011). Questionnaires are sent through website or email, enabling to reach further region.

The data collected are from survey which are distributed to practitioners of quantity surveying firms, fresh graduates and/or final year students from private university. Targeted population were consultancy firms in the Klang Valley and 3 private university fresh graduates and the students in their final years. The selection of fresh graduates with one year working experience are selected as they are still aware of the latest curriculum of the programme structure provided by their respective universities to give their insights whether their knowledge acquired during their studies shall complement the services or skills expected by the employers. Whilst, the final year students’ opinion can still be counted as well as they have already received some exposure of industrial training experience during their internship and their awareness of the latest quantity surveying programme structure provided. According to the BQSM website there are 237 consultancy firm in Klang Valley. For the 3-private universities, there are a total of 199 final year students and/or graduates.

The respondents are required to rate the level of importance by a five-point Likert scale for the types of services performed by the quantity surveyors and the threats faced by them. This is to capture the relative importance index (RII) from data collected (Rooshdi, 2018). As mentioned by Gliem et al. (2003), the RII value of 0.6 to 0.8 is still consider acceptable but 0.8 and above are highly preferable.
FINDINGS

A sum of 237 and 199 survey were dispatched to the focused population of quantity surveying firms in Klang Valley and the graduates of quantity surveying programmes from three private universities. Only 41 responses from the consultants and 43 responses from the graduates were received.

<table>
<thead>
<tr>
<th>Type of Services</th>
<th>Practitioner RII</th>
<th>Practitioner Rank</th>
<th>Graduate RII</th>
<th>Graduate Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract administration</td>
<td>0.873</td>
<td>1</td>
<td>0.819</td>
<td>4</td>
</tr>
<tr>
<td>Tendering</td>
<td>0.854</td>
<td>2</td>
<td>0.860</td>
<td>2</td>
</tr>
<tr>
<td>Bills of Quantities</td>
<td>0.849</td>
<td>3</td>
<td>0.879</td>
<td>1</td>
</tr>
<tr>
<td>Estimating/Cost planning</td>
<td>0.844</td>
<td>4</td>
<td>0.856</td>
<td>3</td>
</tr>
<tr>
<td>Builders Quantities (refer to builder/contractors)</td>
<td>0.834</td>
<td>5</td>
<td>0.814</td>
<td>5</td>
</tr>
<tr>
<td>Procurement</td>
<td>0.815</td>
<td>6</td>
<td>0.819</td>
<td>4</td>
</tr>
<tr>
<td>Specification preparation</td>
<td>0.727</td>
<td>7</td>
<td>0.786</td>
<td>7</td>
</tr>
<tr>
<td>Cost benefit analysis</td>
<td>0.776</td>
<td>1</td>
<td>0.795</td>
<td>4</td>
</tr>
<tr>
<td>Facilities management</td>
<td>0.756</td>
<td>2</td>
<td>0.809</td>
<td>2</td>
</tr>
<tr>
<td>Feasibility study</td>
<td>0.741</td>
<td>3</td>
<td>0.756</td>
<td>8</td>
</tr>
<tr>
<td>Construction Planning</td>
<td>0.722</td>
<td>4</td>
<td>0.791</td>
<td>5</td>
</tr>
<tr>
<td>Arbitration/mediation</td>
<td>0.707</td>
<td>5</td>
<td>0.740</td>
<td>9</td>
</tr>
<tr>
<td>Value management</td>
<td>0.693</td>
<td>6</td>
<td>0.814</td>
<td>1</td>
</tr>
<tr>
<td>Quality management</td>
<td>0.688</td>
<td>7</td>
<td>0.763</td>
<td>7</td>
</tr>
<tr>
<td>Post Occupancy Evaluation</td>
<td>0.688</td>
<td>7</td>
<td>0.716</td>
<td>11</td>
</tr>
<tr>
<td>Lifecycle Costs</td>
<td>0.683</td>
<td>8</td>
<td>0.800</td>
<td>3</td>
</tr>
<tr>
<td>Due diligence reports</td>
<td>0.683</td>
<td>8</td>
<td>0.712</td>
<td>12</td>
</tr>
<tr>
<td>Risk management</td>
<td>0.663</td>
<td>9</td>
<td>0.712</td>
<td>12</td>
</tr>
<tr>
<td>Expert witness</td>
<td>0.659</td>
<td>10</td>
<td>0.716</td>
<td>11</td>
</tr>
<tr>
<td>Insurance valuation</td>
<td>0.629</td>
<td>11</td>
<td>0.721</td>
<td>10</td>
</tr>
<tr>
<td>Tax advice</td>
<td>0.605</td>
<td>12</td>
<td>0.684</td>
<td>13</td>
</tr>
<tr>
<td>Premises Audits</td>
<td>0.600</td>
<td>13</td>
<td>0.712</td>
<td>12</td>
</tr>
<tr>
<td>Infrastructure works</td>
<td>0.790</td>
<td>1</td>
<td>0.781</td>
<td>1</td>
</tr>
<tr>
<td>Civil works</td>
<td>0.780</td>
<td>2</td>
<td>0.730</td>
<td>2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.644</td>
<td>4</td>
<td>0.702</td>
<td>3</td>
</tr>
<tr>
<td>Ship Building</td>
<td>0.590</td>
<td>5</td>
<td>0.609</td>
<td>8</td>
</tr>
<tr>
<td>Petrochemical</td>
<td>0.585</td>
<td>6</td>
<td>0.619</td>
<td>6</td>
</tr>
<tr>
<td>Marine works</td>
<td>0.576</td>
<td>7</td>
<td>0.637</td>
<td>5</td>
</tr>
<tr>
<td>Mining</td>
<td>0.566</td>
<td>8</td>
<td>0.614</td>
<td>7</td>
</tr>
<tr>
<td>Aeronautical</td>
<td>0.551</td>
<td>9</td>
<td>0.619</td>
<td>6</td>
</tr>
</tbody>
</table>

Based on Table 1, the services which are important to both consultants and graduates are displayed. Among the three categories, the is a clear picture that shows the importance of traditional services as it has the highest rank compared to the other services. Among the seven
elements from traditional services, the employers rank contract administration as the most important element. While the graduates perceive preparation of bills of quantities are the most important service to perform. This shows that the current industry is seeking the graduates with more knowledge in contract matters and administration. Thus, the clients are seeking more quantity surveyor with a strong understanding in contract.

In non-traditional services, there is a slight difference in terms of requirement from both groups. To compare both ranking, top three services are used as a basis of comparison. The employers view that project management as first (1st), cost benefit analysis as second (2nd) and feasibility study as third(3rd) as important non-traditional services.

Whilst the graduates perceive value management as first (1st), cost benefit analysis as second (2nd) and lifecycle cost as (3rd) to be the important services in that category. This shows that although the graduates place greater remarks on different specialization provided in the non-traditional services. However, the consultants see that a few services are more important than the rest. The reason behind it is that some of the services may not fit for consultant roles but it might be useful for other types of organization e.g., contractor or developer. Based on the consultants’ top three important non-traditional services which are project management, cost benefit analysis and feasibility study, this shows that the employers are looking for a person that is able to prepare a project execution plan, manage a project, maintain the budget and prepare a financial plan. These are depicted as the key services that a consultant quantity surveyor should acquire.

In other fields, the top three services i.e., infrastructure works, civil works and transport were selected by the consultants. While the graduates perceived infrastructure works, civil works and manufacturing as the top three others /non-building services. Based on this information, the is a great similarity between the consultants and graduates with a slight difference in ranking. As shown, the employers believe that civil, infrastructure work and transport should be picked up by the quantity surveying graduates as it placed a great importance for a quantity surveyor.

<table>
<thead>
<tr>
<th>Table 2. Threats to Quantity Surveying Profession</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Threats</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The quality of graduates is deteriorating particularly in terms of core skills in measurement and construction knowledge</td>
</tr>
<tr>
<td>The client’s increasing need for a one-stop service such as total project management or design and build contracting due to the increasing complexity of modern construction</td>
</tr>
<tr>
<td>Inability to change</td>
</tr>
<tr>
<td>Competition from other professions providing substantially similar construction and property-based services to clients</td>
</tr>
<tr>
<td>The development of BIM and automatically generated quantities</td>
</tr>
<tr>
<td>Quantity surveyors still do not function well in their basic or traditional functions, such as estimating, evaluation of variations and finalizing of accounts</td>
</tr>
<tr>
<td>The quantity surveying profession is perhaps more conservative than other professions in terms of IT utilization</td>
</tr>
</tbody>
</table>
Table 2 below shows the threats that could potentially affect the profession. The employers believe that the top threat that is affecting the profession is the graduate’s qualities in terms of their core skills, client’s need of one stop services, the inability to enhance their skills or services and other profession able to provide similar function. As seen by the employers, this top threat revolves around the issues of graduate showing less promising capability in terms of knowledge as well as unable to take the initiative to improve themselves. The second threat is where the clients looking for better control of the contract, which are associated with the price and contract management offered by quantity surveyors. If the graduates do not improve themselves, there could be a risk of other profession taking the role of a quantity surveyor.

The graduates seem to have a different ranking on the threats impose to the profession but with some slight resemblance by choosing the development of BIM to be the most important threat, followed by the client’s increasing need for a one-stop service, the deteriorating graduates in terms of core skills and knowledge and the inability to change. Based on the data collected, the graduates have the similar awareness with the employers. The only difference is that the graduates placed the development of BIM and automatically generated quantities to be the most threatening aspect that a quantity surveyor will face in this generation. The reason behind it is the emphasis on BIM that has been highly advertised and established in Malaysia, which placed a huge demand on several projects (Latiffi et al., 2013). This creates a demand on graduate quantity surveyors to obtain such knowledge to remain viable in the market. By considering the threat and understand the cause of it, this will assist the graduates to prevent it and to counteract the threats. This indeed helps the graduates to stay employable in the industry.

The results have shown that the current industry’s requirement and expectation from the graduates from the employer’s view, the traditional services are the most essential in the quantity surveying profession. The graduates must have these fundamental knowledges to equip themselves before entering the industry. Their knowledge and skills can be enhanced during their internship, given a reasonable period of industrial training experience. This can be a good solution to solve the quality of graduates which is deteriorating particularly in terms of measurement skills. The quality of graduates would affect the number of employments secured by the employers in the future.

The respondents were also asked to give their feedbacks on the expectations of quantity surveying services by the clients and ways of improving the performance of graduate quantity surveyors. Based on the consultants/employers’ perspective, they believe that a quantity surveyor should have sufficient skills and expertise in the profession. A quantity surveyor should adapt to the changing environment to remain viable. To ensure high-quality performance of the workforce can be attained through the process of education, training, research, training and Continuing Profession Development (CPD). It can be deduced that the employers seem to be selecting the methods that requires graduates to be adaptable to change, while still having enough professional expertise and skills and good knowledge in information technology (IT).

Even though, the quantity surveyor is the key role and service in the construction industry, this role or service can also be performed by other profession. Therefore, to prevent such event to happen, the quantity surveyors are recommended to have acquired the following skills:
• Apart from fundamental knowledge, hard and soft skills, a right attitude is always very important. With the right attitude, a person can continue to learn, survive, adapt, improve and move on. Without this, the person shall be often stagnant at the same spot.
• The quantity surveyors must not only be competent in the basic roles such as measurement and building economics, but should be also knowledgeable in other aspects, namely contracts, construction law, sustainability and be familiar with the roles of other profession in the construction industry.
• They need to improve their skills in terms of information technology or any new software system to enhance their services. This is to gain additional bonus to remain valuable in the industry.
• The quantity surveyors today must be able to multitask. This is to fulfil the needs of the clients as well as be ready to provide proper advice.
• As from the graduate’s perspective, the quantity surveying graduates should excel in their basic skills and continuously learn and explore to cover a wider scope in the industry. They understand the needs to improve themselves to stay competent and choose the method that will benefit themselves the most. The graduate’s opinion has been summarized as follow:
  • BIM allows quantities to be extracted efficiently, it should be perceived as a tool for quantity surveyors rather than a replacement. The construction industry cannot progress if the graduates have inadequate knowledge on software application.
  • Quantity surveyor shall have enough professional expertise and skills in the core competencies and continue to develop this expertise and quantity surveyor adaptability in the changing market.
  • Willing to adapt and learn the varieties. This profession can be only strong when you have multi knowledge and discipline in many different aspects.
  • Modules should be more focused on the actual site or industry experience. This is to improve more hands-on work rather than purely theory subject.
  • Diversified role of Quantity Surveyors.

Referring to the summary from both employers and graduates’ point of view, their fear especially on the comment that quantity surveyors could be replaced by others fear may not seem to be something new. This may not happen in the actual practice since architects and engineers cannot take over the scope of works of professional quantity surveyors easily. Different professions have different strength and specialization. Similarly, to the quantity surveyors, multitasking can be an issue. The quantity surveyor may take over some of the scope of work of others such as legal, public relation and project monitoring. However, there will still be restriction imposed if quantity surveyor wants to cross over the other professional boundaries, for example, the design which is practiced by architects and engineers for years cannot be easily obtained without a proper professional qualification.

Despite of a huge number of comments from the respondents about the requirement to improve information technology skills during their studies in the universities. In fact, the graduates only received just fundamental knowledge whilst the industries use a lot of diversified software where it would take years to master the software used in the industry. It should not be neglected that the universities must play a big part in providing a proper and up to date course for information technology to ensure their students are well equipped with the
basic knowledge to hasten their learning curve. Gradually, the graduates should be more proactive to gain additional specialized knowledge and experience in using the specialized software provided in their daily works.

CONCLUSION

To wrap up the whole study, the research has investigated the issue identified with the quantity surveyor services, the threats and the techniques to improve graduate competencies. The study is able to recognize the abilities required from quantity surveyors to remain relevant in the current industry. This research can also help university to evaluate the quantity surveying course structure. As a suggestion to industry is that employers should be more supportive to provide opportunity to the graduate to allow them to improve themselves. This way, the graduate can continuously improve their knowledge and expertise. While the university should work together with industry players to provide real simulation or case studies, sites, actual insight of projects to allow the students to gain useful experience knowledge instead of merely theory. Therefore, creating a suitable syllabus is necessary for students to learn and remain relevant after graduating.

REFERENCES


