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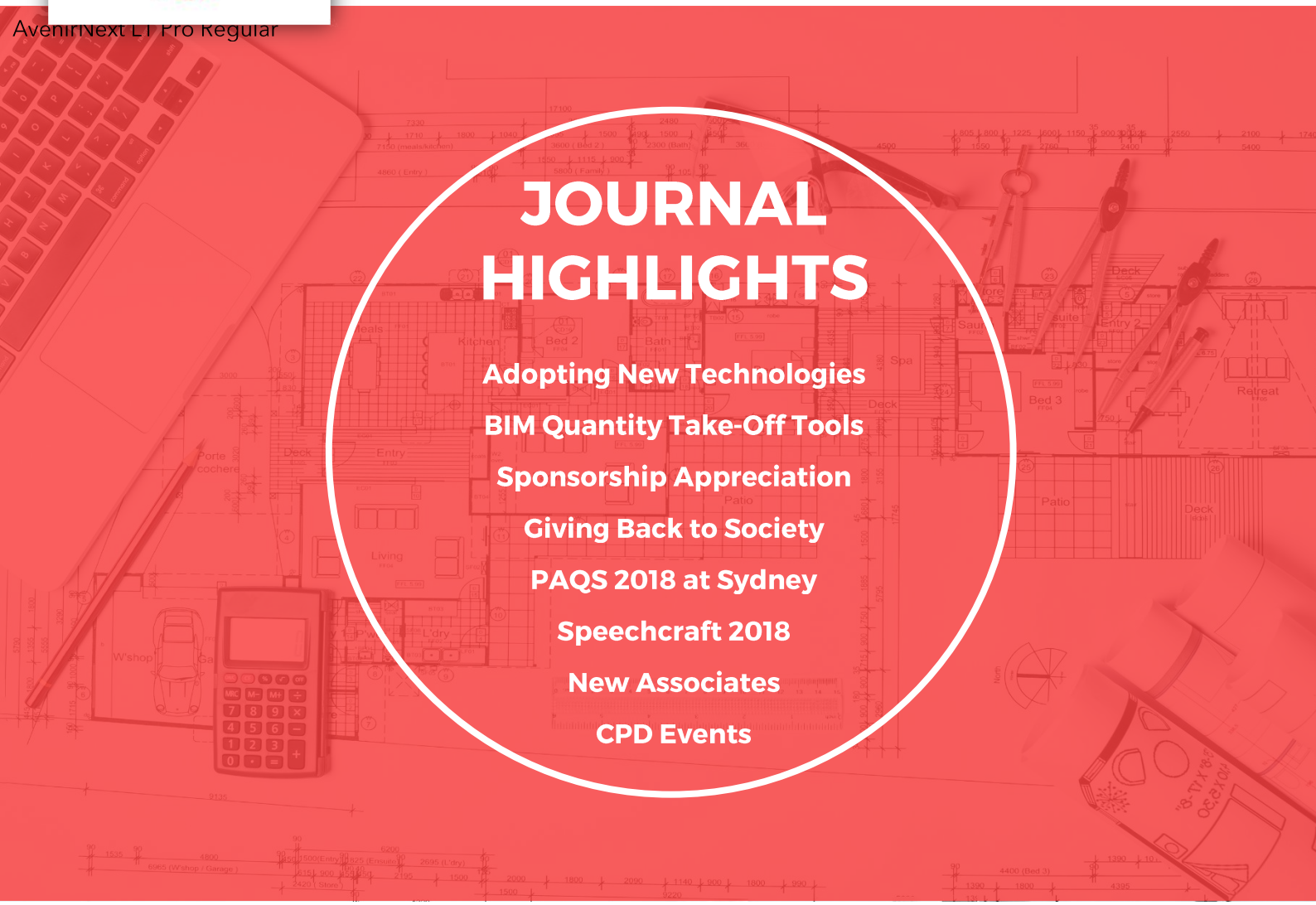

JOURNAL HIGHLIGHTS

Published by:
Institute of Quantity Surveyors, Sri Lanka (IQSSL)

Speechcraft 2018

With the aim of developing and nurturing soft skills among quantity surveyors, IQSSL successfully completed the second batch of the Speechcraft programme with the participation of 23 speech crafters under the guidance of Colombo Toastmasters Club and the grand finale was held on 17th May 2018 at the Auditorium of Organisations of Professional Associations, Colombo 07.

We are extremely thankful to our Course Coordinator T.M. Nadeeka Jayathilaka for the exceptional effort provided for 10 consecutive weeks to fulfil this goal and to all Toastmasters from Colombo Toastmasters Club who supported us in numerous ways.

It is with a humble pride we mention that IQSSL have produced 45 speech crafters as of July 2018. These accomplishments are the pioneering steps taken by IQSSL in order to achieve our ultimate aim of creating our very own fruitful Toastmasters Club at IQSSL.

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Show of Hearts

by College of Quantity Surveying

The College of Quantity Surveying, being one of the reputed educational institutes in Sri Lanka dedicated for Quantity Surveying education, and established under the Institute of Quantity Surveyors Sri Lanka, empowers a wide array of Quantity Surveying programmes and produces numerous professionals annually.

Complementing its academic excellence, it encourages non-academic events that involves entertainment, recreation, joy, inspiration, and social work. The college had organised various events in the past and the students have managed to carry on its legacy fruitfully. Sports days, blood donation campaigns, Pirith ceremonies, college get-together events, as well as charity endeavours are among them.

The "Show of Hearts", organised by the Higher National Diploma batch of 2017, saw its culmination on the 23rd of June, 2018, with tremendous success. This event can be considered as the result of the hard work, dedication, unity, and moral of the students of the HND batch in supporting a good cause. This particular event was organised solely with the intention of giving a hand to under-privileged children in a rural children's home.

'Mahosu', a nonprofit children's home situated in Andiambalama, Katunayake, combats poverty, supporting children in need by providing shelter and a ray of hope to 15 orphaned or abandoned children aged from 8 to 18 years. Our first visit to this home revealed that it was a place that was not well-maintained as evident from the cracked and grubby buildings with immense overgrowth due to a lack of funds. Consequently, we started to renovate the place. As the initial step, all of us got together and collected funds in various ways to repair the buildings, colour wash the premises, provide them a meal, and to conduct an entertainment event for the children.

For everyone's fortune, we managed to accomplish the work as intended. We were able to repair the cracked walls, colour wash the walls, replace broken windows, renovate the bathing area, install a new ceiling in the dining area, purchase new dining tables and chairs, build a volleyball court, followed by a fantastic day filled with fun and laughter for the children.

The entertainment event comprised talent shows and games that were meant to unearth young talents. The children laughed and danced their hearts out for the music and it was pleasing to watch them burst with happiness. This entire endeavour was a highly fulfilling event and it was a sincere privilege to host and take part in this memorable charity event, supporting the less fortunate.

Success can be measured in a plethora of ways but the ultimate factor of success that touched our hearts was when we were able to draw smiles on the faces of children who have not felt a ray of happiness in a long time.

Adopting New Technologies

Is it really defying On-site Construction?

M.K.C.S. Wijewickrama and H.S. Jayasena

Department of Building Economics, University of Moratuwa, Sri Lanka

Similar to the other industries, construction industry also endangered to innovative paradigms by taking pace with novel technologies. Undoubtedly, innovative technologies are key contributors to improve the construction productivity while ensuring efficacy in achieving time, cost and quality targets. However, Sri Lankan construction industry is considered as an extreme retarder is adopting new technologies, yet this has even become worse in on-site construction phase. It is a well-known fact that on site construction personnel are in lag of adopting new technologies because most of them are adopting technologies as a respond to the problem encountered in their day to day operations rather than being planned earlier. Thus, the technology adaptation is a hidden aspect in on-site construction phase of Sri Lankan construction industry which should be exposed out to gain significant value addition to the industry.

I. TECHNOLOGY ACCEPTANCE VS. RESISTANCE TO CHANGE (RTC)

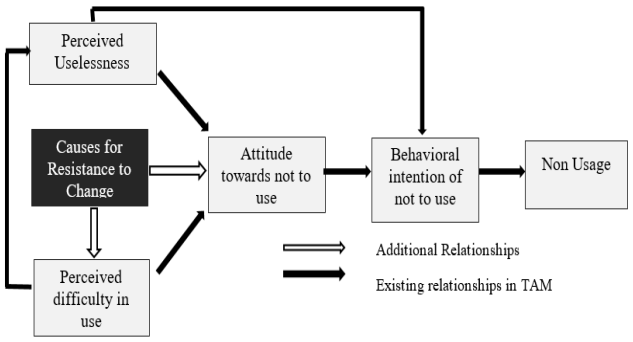

Figure 1: The Extended Technology Acceptance Model

Source: (Biranvand et al., 2015; Nov & Ye, 2008)

Bestowing to theoretical studies, it is essential to embed the technology into the industry, organization and individual levels systematically to have a successful technology diffusion process. Amongst these, entrenching a new technology to individual level is an important and challenging process which always barricaded by the individual psychological constraints lead to Resistance to Change (RTC).

Change is a ubiquitous aspect to which people respond in different ways. Some people gladly embrace the novel changes whereas others attempt to avoid it or resist it whenever possible. Generally, RTC is considered as one trait of individual behaviour which critically influence the technology acceptance within an organization. As per Oreg (2003), RTC is "an individual's tendency to resist and avoid making changes, to devalue change generally, and to find change aversive across diverse context and types of change" (p. 680). There are number of causes of RTC which can be categorized as individual and organisational factors. To recapitulate, it is evident that introduction of new technologies often create a revolutionary change and this change extremely transform the status quo of users to which they averse and evade.

Technology Acceptance Model (TAM) which was developed by Davis (1989) clearly explicates the effect of new technologies on its users' behaviour. According to this model 'Perceived Usefulness' (PU) and 'Perceived Ease of Use' (PEOU) are the primary constructs which are relevance to the acceptance of technology by a new user. According to the definitions given by Davis (1989), PEOU is "the degree to which person believes that using a particular technology would be free from effort" (p. 320) and PU is "the degree to which a person believes that using a particular system would enhance his or her job performance" (p.320). In addition, Attitude toward Use (ATU) and Behavioural Intention to Use (BIU) are equally important constructs which determine whether the end-user will actually accept or reject the new system. However, the original TAM can be criticized, as it only considers the enablers that influence the user's attitude but ignores the negativity of RTC. Thus, Al-Husein and Sadi (2015) and Nov and Ye (2008) introduced an extended TAM by incorporating RTC to surmount this issue and it is illustrated in figure 1. This is the theoretical base which was used to identify the real challenges which barricade the transcending of new technologies to Sri Lankan construction industry.

II. CHALLENGES FOR ON-SITE TECHNOLOGY ADOPTION

Generally, the on-site construction works are handled by three main parties namely, engineers, supervisors and operational site workers. It is important to investigate the challenges they intrinsic to barricade the adaptation of new technologies from each of their perspectives. Figure 2 clearly exhibits the real challenges which inherent with these site personnel on new technology adaptation. All of these challenges are associated with psychological perspectives of these personnel and those expound the inherent perceptions of these personnel which motivate them not to grab a new technology.

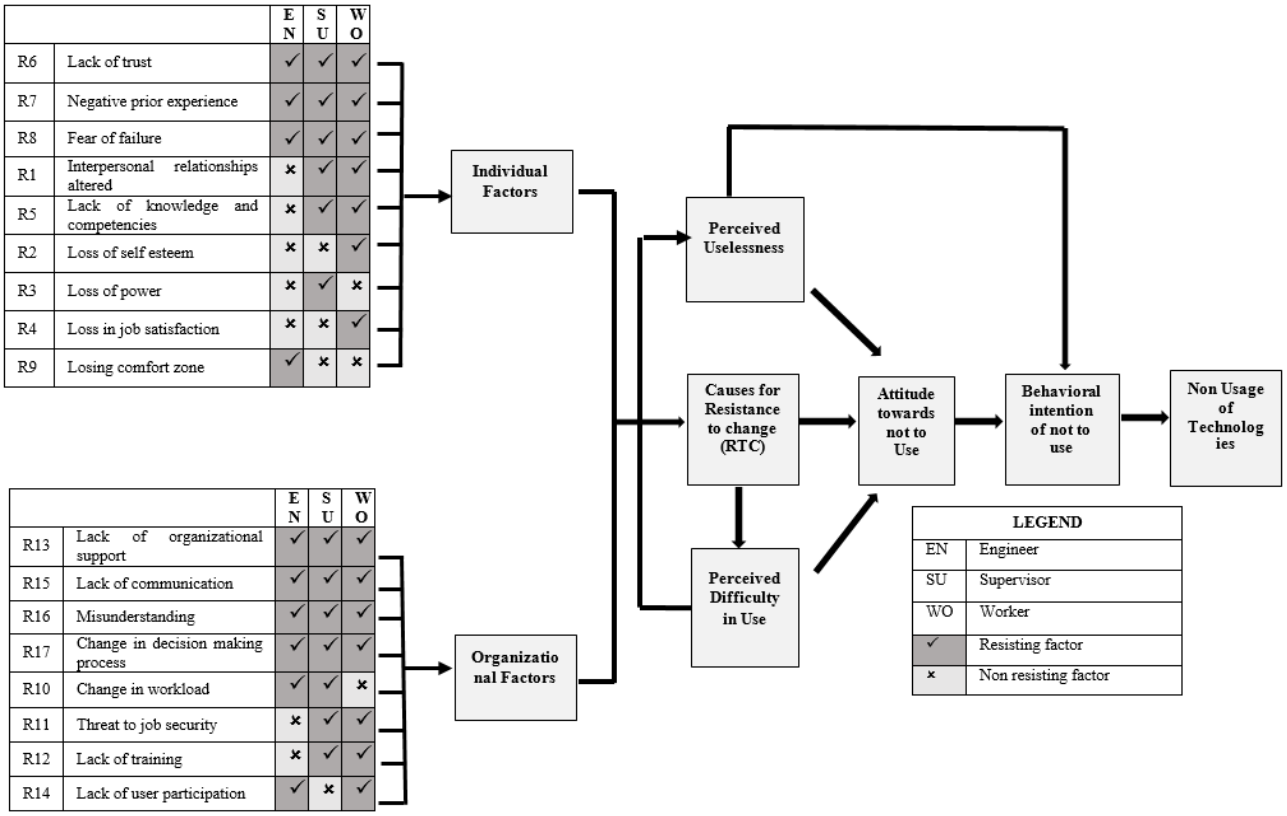

Figure 2: Challenges for On-Site Technology Adaptation

III. CONCLUSIONS

The study has successfully distinguished the challenges faced by the operational level site personnel when implementing a new technology in a construction site. These challenges inevitably create a resistance within these individuals to reject the novel technology and be trapped within the traditional means. The most resisting party for a technological change is an operational worker. Subsequently, the supervisors were the second highest resisting party in the site for a technological change whereas, the site engineers who

This study purely gives the recommendations to the industry practitioners who realize the necessity of transcending new technologies to the real time on-site construction. The industry practitioners should cautiously make this transformation by implementing established change management concepts and with best organizational support.

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How far BIM Quantity Take-Off Tools can Automate To Suit QS's Requirements?

W. Mayouran, H.S. Jayasena and M.K.C.S. Wijewickrama
Department of Building Economics, University of Moratuwa, Sri Lanka

Quantity Take-Off (QTO) is a significant task in any construction project. It is the Quantity Surveyors' (QSs') responsibility to measure and prepare cost estimates of a facility accurately and effectively. Currently, QTO is mostly performed manually using software packages of 2D and 3D Computer Aided Design (CAD) drawings. The increasing complexity of buildings and client's requirements for fast track projects has created traditional QTO more challenging and tedious. Henceforth, Building Information Modelling (BIM) is gaining popularity in most developed construction industries as a contemporary solution for the aforementioned issue. BIM considerably automate the conventional QTO process using BIM QTO tools. However, there is a prospective debate that BIM's capability to automate QTO will eliminate the QS's role within this task. Thus, it is an essential requisite to explore how far BIM QTO tools can automate traditional QTO to suit QS's requirements.

1. QUANTITY INFORMATION EXTRACTION REQUIREMENTS

In each phase of a construction life cycle, there are number of occasions where QS has to measure and record dimensions from both drawings and actual constructions on site. In order to standardize the way of QTO, there are so many Standard Methods of Measurements (SMMs) available in globally. For instance, Standard Methods of Measurement 7 (SMM7), Civil Engineering Standard Methods of Measurement 3 (CESMM3), New Rules of Measurement (NRM) and Sri Lanka Standard 573 (SLS573) are the prevalent SMMs in QTO. These provide a uniform and consistent basis to take off quantities and to prepare Bill of Quantities (BOQ).

Generally, BOQ preparation which is fundamental competency of a QS is possessed with four continuous activities namely taking off, squaring, abstracting and billing. Amongst, the QTO is the first task which should initiate the process by extracting more accurate and precise quantities. Thus, QTO is a vital and primary task in which whole construction project's success will rely upon.

2. BUILDING INFORMATION MODELLING

According to National BIM Standards (2007, NBIMS), "BIM is a digital representation of physical and functional characteristics of a facility" (p. 21). The concept of BIM is to build a facility virtually before building it physically, in order to work out problems and simulate potential impacts. BIM tool is a task specific application used for model generation, drawing production, specification writing, cost estimation, clash and error detection, energy analysis, scheduling and visualizing. In BIM, these tool outputs are often standalone. However, there are exceptional circumstances where output is exported to other tool applications such as QTO to cost estimation and structural reactions to a connection detailing application.

2.1. BIM QTO Tools

BIM QTO tools are specific software applications that generate specific outcomes of QTO by extracting necessary information from BIM models. These tools are capable of extracting counts, area and volume of spaces and material quantities from BIM models and are able to report this information in various schedules. Thus, there is a potentiality to take of total quantities by using these automated BIM QTO tools.

There are plethora of open and proprietary BIM QTO tools available in the modern construction industry. Most of these tools are capable of handling IFC files. These IFC files are supported by about 150 software applications globally to make a better collaborated working platform for contemporary Architectural, Engineering, Construction and Operations (AECO) Industry. The major BIM QTO tools can be listed as follows;

- Innovaya Visual Estimating (BIM based)
- Vico Office Takeoff Manager (BIM based)
- Tocoman iLink (BIM based)
- Autodesk Quantity Takeoff
- CostX by Exactal
- Primus-IFC by ACCA Software
- Cubit by Buildsoft
- Nomitech: CostOS
- eTakeoff
- Revit by AutoDesk
- SmartBIM QTO
- ITALSOFT

All the aforementioned except eTakeoff software are BIM software suits that support different types of BIM files from other BIM solutions. Although eTakeoff looks like a standard application for on-screen measurement and semi-automated generation of quantities, it can be integrated with BIM. These BIM tools have the capability to get required information from BIM platforms like Revit and manipulate them within their APIs or derive information from BIM platform to them. These extracted quantities can be exported to MS Excel programme. Innovaya, Tocoman and Vico possess API to extract quantity information by using a link between the costing system and BIM platform like Revit. Furthermore, CostX and ITALSOFT use Open Data Base Connectivity (ODBC) which is a tried and true standard useful for integrating data centric applications like specification management and QTO with BIM. Moreover, Vico 3D BIM quantity take-off examines the BIM model geometry, applied special algorithms and produced contribution calibre quantities. From all these applications it is evident that each BIM QTO tools uses different extraction mechanisms that make the QTO process easier and more effective.

3. CHALLENGES IN BIM QUANTITY INFORMATION EXTRACTION

According to the SMMs, there are different types of measurements to be taken when doing QTO. Accordingly, items (counts), linear (length), surface (area), volume and weight are the measurements that should be taken off from a facility to do estimation purposes. However, there are three types of quantity information needed to be extracted from the model when using BIM based QTO tools. These are;

I. Explicitly represented in the model

II. Components that are not explicitly represented but can be inferred

III. Components that are not represented in the model and cannot be inferred.

Even tough, BIM based QTO tools generate plenty of advantages to the modern AECO industry, there are some challenges which inhibit the successful adaptation of BIM. The major challenge is the difficulty to follow the measurement rules in SMMs. Practically, there are some difficulties in following measurement rules that are defined in SMMs by using these QTO tools. Consequently, the standardization and uniformity of estimates will be low and imprecise. Furthermore, different methods of building up BIM models will give out different quantities which is also a predominant challenge which deviate the best quantity surveying practice. When different BIM application are used for the project, all this software is not measuring quantities in the same way. The major cause for this challenge is also the inability to follow a SMMs. For an example, the length of a wall may differ due to the measurement taken from centreline or the external girth based on the application used. Moreover, some applications give the user the flexibility of modelling objects in different ways though quantification does not work with all of them. Selection of right software is also crucial in BIM based QTO. The accuracy and the quality of BIM QTO is highly depend on the quality and quantity of information injected to the model. However, the modern BIM models do not comply with the requirements of QS in perspective of quality of information. This produces difficulties for QS in managing and searching for required information within the model for the development of the estimates.

4. CONCLUSIONS

BIM is experiencing its infant stage in Sri Lankan construction industry. But, it is considered as a revolutionary paradigm throughout the world as the best solution for most of lapses in traditional construction practices. Thus, undeniably BIM will be the future of Sri Lankan construction industry. However, Sri Lankan construction industry possesses a reputed practice of Quantity Surveying. The local QSs are well- competent and always produce a best output from their professional perspective. Thus, stepping from traditional practice to novel BIM base practice will undoubtedly create more challenges and inhibitors. This resistance will even encourage by the challenges that are inherent with BIM based QTO tools. Quantity information extracted from BIM tools must be comply with the requirements of QS in order BIM to become a successful technological paradigm. There are many problems inherent with these available BIM based QTO tools that damage the good quantity surveying practice. Current developments in BIM QTO automation are impressive, but there is no enough evidence concludes that they can satisfy the needs of QSs QTO requirements. For QSs to receive true benefits from the developments in BIM, it is essential to clearly identify the QTO automation capabilities brought with them.

IQSSL Attends PAQS Conference 2018 in Sydney

A 12-member strong delegation representing Institute of Quantity Surveyors Sri Lanka led by President Ch.QS G.M Upul Shantha participated in the 22nd Annual PAQS Conference & 11th ICEC World Congress held at the International Convention Centre in Sydney, Australia from 18th to 20th November 2018. This much anticipated event was organised under the theme of "Grassroots to Concrete Jungle: Dynamics in the Built Environment" and was well represented by over 500 delegates from all around the world.

Many renowned speakers from various countries such as Australia, Canada, Malaysia, Sri Lanka, Hong Kong, Singapore and South Africa presented on a number of key subject areas such as BIM, Sustainability, Cost Management, Innovation in Construction, Life Cycle Costing to name a few. The conference encapsulated how the Quantity Surveying profession is currently going through a rapid evolution around the world with the advent of new technologies. It will be of paramount importance for the Quantity Surveying profession in Sri Lanka to move along with the changes taking place worldwide and IQSSL exchanged valuable ideas with other international professional institutes around the world to take the profession to the next generation.

Further, the PAQS Young Quantity Surveyors (YQS) Programme was held on 15th and 16th of November, parallel to the Main PAQS Conference. Representatives from IQSSL actively attended the YQS Programme and we are proud to announce that Ch. QS Hasitha Gunasekara (Chairman of Professional Affairs Board, IQSSL) was appointed as the President of the PAQS Young Quantity Surveyors Group for the Year 2019/20.

Prior to the Main Conference, PAQS Committee meetings were held from 16th November 2018 onwards. As a member of the PAQS, the delegates representing IQSSL actively participated in the meetings of the PAQS BIM Committee, Sustainability Committee, Research Committee and Education Committee. The delegates from IQSSL elaborates the various developments in Sri Lanka in the respective subjects. The next PAQS conference will be held in Malaysian in the Year 2019.

CPD Events Conducted by IQSSL for 2018/2019

Quantity Surveyors and Chartered Quantity Surveyors (members of Institute of Quantity Surveyors Sri Lanka) undertake CPD activities in order to maintain and extend their knowledge, skills and judgment. Main objective of CPD is to equip the members in their planned career path and updating with the knowledge suite to the future.

During the recent past it was observed that even though the IQSSL members obtain knowledge on core competencies of the QS practice, they are falling behind when updating their knowledge to match with the moving industry. In order to overcome this situation, IQSSL has mandated it membership to demonstrate 15 hours of CPD participation during each year.

During the period of 2018/ 2019 IQSSL has conducted four CPD sessions including the annual technical sessions held in January 2018.

CPD No	Title	Date	Time	Venue	Speaker
1	**Next Generation Technology for Quantity Surveying and Cost Engineering Documentation**	25th January 2018	12:00 – 5:00 PM	OPA Auditorium	Annual Technical Session 2018/2019
2	**Brief of Changes From FIDIC 1999 To 2017 (Red Book)**	22nd March 2018	1:30 – 5:30 PM	Auditorium, Hector Kobbekaduwa Agrarian Research and Training Institute.	Ch. QS Lalith Ratnayake Ch. QS Tilak Kolonne (Including Technical Presentation)
3	**Estimation Techniques**	29th August 2018	1:30 - 4:30 PM	OPA Auditorium	Ch. QS Mrs. Subhashini Dasanayake Ch. QS K. A. Majith Rasila Ch. QS Tilanka Wijesinghe Ch. QS Ajith Priyanka Karunarathne Presentation and Panel Discussion
4	**QS Role in Dispute Prevention and Fundamentals of Adjudication and Arbitration Processes**	16th November 2018	2:00 – 5:00 PM	OPA Auditorium	Ch. QS Mr. J. A. Jayantha C. Jayakody

Sponsorship Appreciation Event 2018

The annual appreciation of AGM sponsors was held on Friday the 9th of November, 2018, at Hotel Grand Monarch in Thalawathugoda. All the sponsors who have made IQSSL AGM 2018 event a success attended this ceremony.

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