FOCUS

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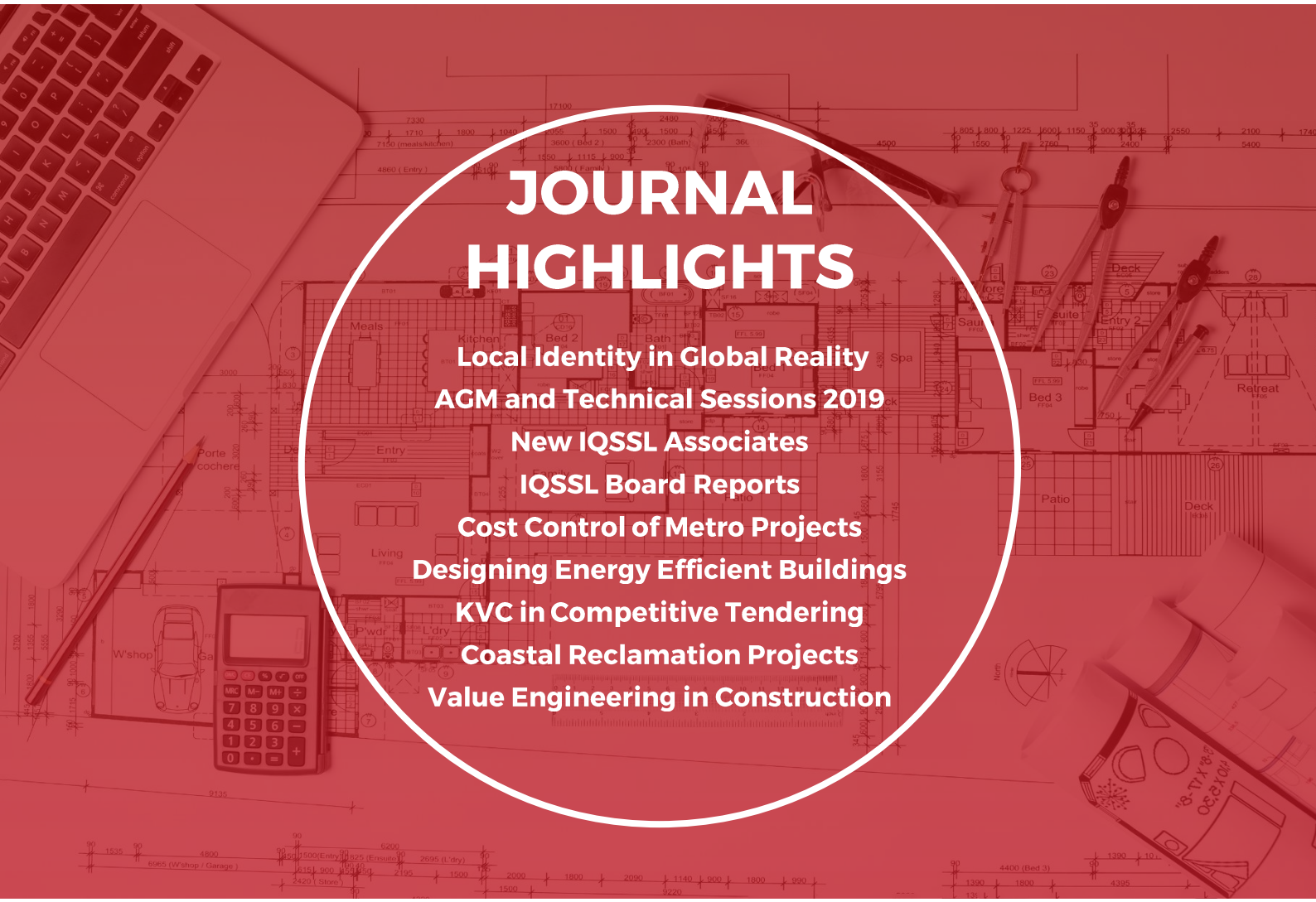

JOURNAL HIGHLIGHTS

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

Annual General Meeting 2018-2019

Institute of Quantity Surveyors Sri Lanka (IQSSL) has taken up "**Local Identity in Global Reality: Protectionism vs. Globalism (Case of Construction Industry)**" as the theme for the Annual Forum 2019.

The Annual General Meeting (AGM) 2018/2019 and the Annual Forum 2019 are scheduled to be held on 15th March 2019 from 2:00 PM onwards at Union Ballroom, Hilton Colombo Residences Union Place, Colombo 02. An interactive session on the theme for 2019 will be held in which the IQSSL members will express their informed viewpoints.

The proceedings of the AGM will start at 3:00 PM with the attendance of corporate members of IQSSL of good standing. The AGM will be followed by the Annual Forum which will take place at the same venue.

The keynote speech will be delivered by Mr. Thilan Wijesinghe, the Chairman and acting CEO of the Public Private Partnership Unit of the Finance Ministry, followed by a panel discussion with the participation of eminent professionals and dignitaries in the construction industry. There will be a fellowship after the panel discussion.

Annual Technical Session 2019

Institute of Quantity Surveyors Sri Lanka has taken up "**Quantity Surveyor's Adaptability to a Challenging Economy**" as the official theme for the IQSSL Technical sessions 2019.

The Technical Sessions 2019 will be held at Bandaranaike Memorial International Conference Hall (BMICH) at Colombo 07 from 8:30 AM to 3:00 PM on the 14th of March 2019. The keynote speech will be delivered by Dr. Chandana Jayalath.

IQSSL Executive Council

Seated (Left to Right):
Ch.QS. Prof. Kanchana Perera (Member), Ch.QS. Jagath Basnayake (Treasurer), Ch.QS. Champa Liyanage (Secretary), Ch.QS. Upul Shantha (President), Ch.QS. Nishantha Wickremasinghe (Past President), Ch.QS. Lalith Ratnayake (Vice President), Ch.QS. Anoma Gunasekera (Member).

Standing (Left to Right):
Ch.QS. Rajitha Dassanayake (Assistant Treasurer), Ch.QS. Suranga Jayasena (Member), Ch.QS. Thilanka Wijesinghe (Member), Ch.QS. Majith Kodithuwakku (Member), Ch.QS. Duleesha Wijesiri (Member), Ch.QS. Hasitha Gunasekera (Member), Ch.QS. Indunil Seneviratne (Member), Ch.QS. Senerath Wetthasinghe (Assistant Secretary), Ch.QS. Mahinda Gunawardene (Member), Ch.QS. Nandun Fernando (Member).

IQSSL Journal Theme Article

Local Identity in Global Reality – Protectionism vs. Globalism (Case of Construction Industry)

Ch.QS. Tilanka Wijesinghe

Background

The local construction industry has been gradually budged towards the foreign financing and investments with a significant 'import' component in the overall supply chain. In this process, it is evident that the local construction stake holders are feeling deprived of the globalisation impact and openness in this economic activity than it was and fusillades directed at the policy makers of not having required regulatory framework, in particular by the SME's and professionals. Whereas, some local sector clients began harnessing the benefits of competitive advantage in using foreign builders and investors. Local builders of higher grades (according to the national grading system of contractors) too are looking for joint venture arrangements and attempting to find survival in fitting into the global changes. It may be noteworthy to mention that foreign funded projects are operated on priority conditions to procure major products and services from the donor countries, which adds to the survival difficulties. Unlike in other industries, where imports are processed and re-exported giving value addition to the products or services, in the case of construction all most all imports are consumed locally contributing to the deficit in balance of payments. There are accusations that certain products which are imported not fit for local context, specifications or design codes.

On the other hand, Free Tread Agreements **(FTAs)** with certain countries generated huge public attention and uproar. Some have said certain FTA's are unrelenting drudgeries.

It may be said that, due to the fragmented manner in which its structure has been formulated, the Sri Lankan construction industry's ability to respond to global changes is constrained thereby appears not being able to utilise the opportunities or rein the benefits of globalisation. Perhaps certain construction sector stakeholders already in the edge of bankruptcy due to current market economic conditions and some have already retrenched staff adding to unemployment lists including university graduates. However, some have showed no acrimony. Globalism being a practical reality and a global phenomenon refusal of it may not going to be the answer. Thus, it appears that this situation should be managed in an acceptable manner without keeping it as a dilemma for long. How this management to be done is not very clear to many and actually is there a policy framework in this regard?

Sri Lankan Identity and National Share

In this backdrop many believe that the national share and the Sri Lankan identity in the Construction Industry is heavily challenged and compromised. The complaint seems to be the policies, and lack of macro level regulations and strategic approach. Whether the local identity can be protected within the globalisation, remains as a question.

Sri Lankan presence felt in the global context with regard to the products and services is a key to retain the local identity. In order to achieve this the local product qualities and service levels must be maintained within high standards with continues improvement to be able to gain competitive edge and provide value for money to the clients. High dependency on foreign inputs may tarnish the end-result. There is also a school of thought that it is essential to maintain local culture and architecture in construction products with higher market share of local construction inputs through the enhancement of local production and by curtailing foreign inputs. As such the major disadvantages in competing with imported products could be curtailed through the innovation where the research and development plays a vital role.

Global Reality

Operating in the global socio-economic environment is highly challenging. Efforts to establish the identity may be harassed by several factors.

The most of our systems including the education, legal, standardisation, operation and production heavily affected by the colonisation. Our economic freedom is formed in the precincts of market forces induced by the larger economies on products and services. County's lack of financing capability resulted in lookout for foreign investment or financing which generally result in associated conditions to accommodate product and services form the country or the region of financing. There are few incidents where the investments by foreign entities were on collaborative basis which also were associated with the payback through the operation with conditions of partial or full ownership for a longer duration. There are allegations that we were forced to agree to the conditions of funding agencies of these developments over the country's jurisdiction. Currently the local construction industry highly depended on the imported material and machineries. Bulk of construction inputs manufactured in Sri Lanka also depend on the imported raw materials. Combined with above factors and being a small economy the industry is highly sensitive for global economic fluctuations. The country is fortunate to be located in highly strategic and beneficial location in the global map. This has also been described as the curse. Country attract high attention of stronger nations and therefore highly sensitive to the geopolitical factors.

Protectionism Methods, Pros and Cons

In the international trades, the protections will be done through tariffs, quotas, subsidies, embargos, exchange rate controls, voluntary export restraints, antidumping regulations and non-tariff barriers in the form of laws, regulations and administrative provisions. **Import tariffs** may have been the most common and main protection method adopted by Sri Lanka. Several major construction inputs including steel, cement and tiles are subject to heavy import tariffs aimed protection of local manufacturing. Sri Lanka enforced the **Anti-Dumping and Countervailing Duties Act, No. 2 of 2018**,

on March 19, 2018. However, the actual implementation involves a lengthy procedure of several steps such as application, submissions, investigation and preliminary determination etc., as defined in the Act itself. **Subsidies** may have not been mainly used as protection measure directly in construction industry related sectors but been used to protect other industries in Sri Lanka especially agriculture. There is huge uproar by the industry stakeholders for the enhancement of **Law, Regulatory and Administrative provisions** to introduce mandatory minimum protections to counter the trade disadvantages created by the similar provisions or other form of protections such as subsidies, quotas, language barriers likewise imposed by the trade partners and other nations; a substantial commitment is yet to be witnessed except for several ad hoc actions such as the establishment of Construction Industry Development Authority (CIDA), defining and registration of Qualified Persons etc. Some of the existing provisions likewise may be redundant due to the lack of legal enforcement power. For an example, although the Joint Venture (JV) with a local party is a requirement for the foreign parties to provide the service in Sri Lanka, there is no proper procedure to register the JVs. **A skill council** to ascertain the skill gap has also been a major demand in the industry.

There are arguments and economic reasoning for the protectionism. One such argument is that the protection will allow the breathing space for the infant industries to grow up and be competitive with the time. Protection will also enable the diversification of the economy through the development of new industries trough the new potentials. Obviously the protections through tariffs will raise the government revenue. Certain key industries of strategic or long term importance with regard to the economic gravity of those industries, safe guard of employments and national security, may require protections during the times of set back and in unfavorable global situations. Protections are validated against the unsafe imported products or products that will be harmful in long term economic or technical concerns considering the protection of consumers. Most of the countries adopted protectionism as crisis intervention and in the turbulent situations. This is also justified through the Keynesian Macroeconomics theories.

There are plenty of counter arguments against the protectionism. Some economists argue that the protectionism will do more harm than the good. The infant industry may never grow up and therefore will operate inefficiently under the cover of protections. Protectionism may lead to retaliations and trade wars therefore will result in higher import prices and higher consumer prices. Control of exchange rates may cause long term inflation. Protectionism will deny the private sector incentives to invest and innovate, therefore can encourage inefficiencies, higher prices which may lead to lower overall demand causing job losses in other industries. This may cause a degree of real economic disorder. If the construction input prices maintained at comparatively higher levels due to the protections, the overall construction price levels will be kept high. This may be detrimental for most of other industries because most of the industries are heavily supported by the Construction industry and therefore the competitive advantage, economic feasibility and advancement of those industries will also be heavily dependent on the construction prices. There are evident that comparatively higher input costs and stringent labour laws discouraged the investments and diverted the investors including several local investors towards the other South Asian countries. Retaliation on protectionism trough trade discriminatory measures may deny our opportunities to explore the benefit from economies of scale in larger markets and will be defied by the global regional trends. Protections through micromanaging will be much more harmful and will cause macroeconomic disequilibria.

Globalisation through Liberalisation and Current Global Trends

Liberalisation will allow benefits of economic harvesting in a common field but with the potential risk of week systems exposed to be harassed by the stronger systems.

Liberalisation and globalisation can **create plenty of opportunities** for market expansion through opening up to lager markets by removal of trade barriers and discriminative provisions. It may expedite and aid the technological transfer. It may also allow for switching between alternative markets during the recessions. Supply side improvements due to the opening up may create high competition thereby a better value for money. The high competition may induce the look out of survival strategies thereby create Incentives for Innovations.

Liberalisation may also be **associated with several threats**. The country can be succumbed to advanced and dynamic technologies and financial strength of the stronger systems. The limited opportunities in the local industry may consumed by the foreigners by denying those of locals due to the recessions and unemployment of larger economies. This could be at a lower cost but also with compromised quality due to the difficulties in verification of qualifications and quality. Although the barriers are removed Sri Lankans ability use the opportunities in some of the countries may be limited by the fact that the mother tongue been used as the working language of those countries. Lack of controls especially in cross border supply and natural presence can cause detrimental effects on quality due to the lack of responsibilities, indemnities and warranties. Worse of all is that there may be possibilities of the country's sovereignty could be affected due to inability of limit or control due to the bound provisions.

It can be important that we **capitalise through our strengths** in globalisation. Country possess a well established education system and educated human capital that can be capable of producing required quality and quantity of the professionals, non-professionals, technical and vocational categories of the human resources requirement of the industry. In addition to the education coupled with countries cultural system can aid in production of highly disciplined, adaptable and controllable work force required by the industry. Country's rich natural resources, natural landscape with bio-diversity, historical and cultural assets and geographically beneficial location in the global map can provide the potentiality for development of various industries. Opening up of the market through liberalisation may allow the exploration these opportunities. This may also aid the development of construction industry since almost all the industries are assisted by the construction industry. The high standard of education including the language ability may enable the Sri Lankans to explore the opportunities in other countries through globalisation.

Understanding our weaknesses in globalisation may help to apply strategic protections in continues liberalisation process. Our production and manufacturing may be mainly hindered by the low productivity, lack of technological development and financing ability. Added to this size of the industry, population and size of the local market may deny the economies of scale. This may in return will deny the opportunity to expand, productivity improvement and the technological advance. This could become a vicious cycle. Further to this the high energy cost affected detrimentally to all the industries. Lack of past project experience and the financial capabilities may thwart the ability of local service providers and suppliers in participation of overseas projects. Country's lack of financial capabilities may also result in lack of shock absorption and therefore the repercussions could be huge in the recessions and disasters. Again the factors could be on a vicious cycle.

Free Tread Agreements (FTAs) between different countries became a global trend during last two decades. Sri Lanka already entered or in the process of entering in to FTAs with certain countries. These agreements will be on selected sectors and segments on four different modes namely, **Mode 1) *Cross Border Supply***, **Mode 2) *Consumption Abroad***, **Mode 3) *Commercial Presence***, **Mode 4) *Presence of Natural Person***. FTAs, may enable removal of trade barriers and discriminative provisions, except for agreed market limitations and national treatments. FTAs can be utilised effectively as reliable means of liberalisation to maintain the equity in the process through the horizontal commitments. FTAs may also enable the flexibility of liberalisations of trade with the selected countries or region. But proper caution, study and home work is important because once liberalised under a FTAs, it may be extremely difficult or virtually impossible to revert back.

Way forward

Both the globalisation and protectionism has its own advantages coupled with the disadvantages. It is important to ascertain the level of liberalisation and protection required for a sustainable development relative with the passage of time. What is most important is a strategic approach. The countries legal system, law and order, business efficacy, general discipline, innovations, infrastructures and the political stability can be improved to live with the unavoidable weaknesses and threats from the globalisation. The pace of globalisation may be a calculated approach where we open up to our strengths while keeping on developing and opening up more. Country could be converted from being a lag starter to a lead starter. Where ever possible the opening up can also manipulate to convert the weaknesses to the strengths. Tariff barriers may not allow unnecessary comfort for the local manufactures to deny incentives for innovations and efficiencies. Challenging but realistic limits can be applied for the protection of infant industries to encourage the development and maturity. Revenue generated through the discriminatory tariffs may be spent in meaningful manner to improve the efficiency and competitiveness of the local industries. Competitiveness can be improved through the innovations and improvisation to deliver the value for money. Investment in research and development activities in a structured and coordinated manner may be essential in achieving innovations and the improvisations. Technological advancement can also be supported through the research and development as well as through the technological transfer aided by the globalisation. Formulation of local standardisation and standard documents to improve the local market share in the construction industry can be done gradually and parallel to the improvement of the quality of local inputs without compromising the quality and economy of construction. A coordinated approach may be required in establishment of local regulatory measures, standard documents, and product and service quality control measures without hampering progression of the construction industry. Higher versatility may allow better opportunity to maintain the local identity in globalisation through harmonising and adaptation. It may be essential to get local banks and financing institutes to move out form their current focus on micro financing and to focus more in macro level investments. Strengthening of balance sheets of Contractors, Consultants, SME sector can be done with the emphasis on the punctual payments. As recommended by many organisations and professional bodies, a skill council may be established to identify the skill gaps and thereby liberalise base on the skill gaps. Country may focus to use the advantage of being island and conveniently located in the global map and closed to the growth poles of the emerging global economy. Sri Lanka is located closed to three countries out of six countries (Brazil, China, India, Indonesia, South Korea, and Russia) account for more than half of all global growth. Construction Industry may be considered as one of the potential areas to cover the deficit of external trade in both goods and services. Despite the trade liberalisation stake holders can formulate their own strategy to acquire and improve global recognition to aid the local identity in the global reality.

- Stakeholders may try to explore the opportunities in globalisation while been improved on the competitiveness and reliability through upgrading and innovation.
- Stakeholders can be proactive and be of self-disciplined and can influence for major improvement in business, legal social and political discipline in the country.
- Local professionals, consultants, contractors, manufacturers, SME's can establish the commercial presence in foreign markets.
- Local professional institutes may enter into reciprocity agreements and be active part of the global umbrella organisations.
- May try to enhance the export through the improvement of local material quality and manufacturing process diversification and sophistication.
- Advisable to create investment friendly local environment with strategic controls and with only the development stimulated protections on.

Strategies to succeed and improve in globalisation shall be given due consideration to the key industry stakeholders such as Contractors, Professionals, Consultants, SME sectors, Suppliers, Subcontractors, Regulatory bodies etc. The constructive and influential participation of these stake holders in developing strategic frame work and action plan is essential for the success.

Message from the President

Ch.QS. Upul Shantha

B.Sc.(QS) Hons., P.G. Dip. (Const Mtg), MBA, F.I Q.S.(SL), A.A.I.Q.S

President of Institute of Quantity Surveyors Sri Lanka

It is with great pleasure that I am sending this message on the occasion of Annual General Meeting 2018/2019 of the Institute of Quantity Surveyors Sri Lanka (IQSSL) and the Annual Forum – 2019 themed "Local Identity in Global Reality: Protectionism in Globalism (Case of Construction Industry)."

It is often stressed in many forums that globalisation is inevitable with current technological advancements. There are many instances where globalisation shows positive effects for the betterment of the people and countries whilst in some cases it has apparent negative effects. Today, protectionism is being once again rising as a topic of discussion after decades of support and predominant implementation of globalisation. These discussions have been aggravated with the slow growth in global economy in both developed markets as well as emerging markets.

With regard to the Sri Lankan context, effects of globalisation has been discussed but there is lack of discussion on how to avoid and restrict the negative consequences of the inevitable globalisation. The Sri Lankan construction industry faces many challenges from globalisation while it also undoubtedly leaves us with ample opportunities. Therefore it is high time for all construction industry stakeholders to find and overcome its weaknesses while improving our strengths in the face of globalisation.

IQSSL have taken many steps to educate and empower its membership to be stakeholders of responsible construction industry. This year's theme is very timely and will set the stage for new ways of thinking about Sri Lankan construction industry at the macro level.

I take this opportunity to wish all members of the Institute of Quantity Surveyors Sri Lanka a successful AGM 2018/2019 and Annual Forum 2019.

Message from the Secretary

Ch.QS. (Mrs.) Champa Liyanage

B.Sc.(QS) Hons., M.Sc.(LD), F.I.Q.S.SL

Hony. Secretary

Institute of Quantity Surveyors Sri Lanka

I am privileged to issue this message to the Focus publication, issued parallel to the Annual General Meeting of Institute of Quantity Surveyors Sri Lanka and Annual Forum 2019.

Focus is an important publication published with tireless effort of the Chairman and Board Members of Board of Publication along with immense support of Editorial Board of the Institute of Quantity Surveyors Sri Lanka (IQSSL).

Focus publication is informative with the current news items of IQSSL and valuable articles written by the members of IQSSL and various disciplines related to Quantity Surveying and Construction Industry. The articles published would provide information to our new members to upgrade their knowledge on the matters related to Quantity Surveying.

This special publication of Focus is to mark the AGM 2018/2019 and the Forum 2019 of IQSSL under the theme "Local Identity in Global Reality: Protectionism vs. Globalism (Case of Construction Industry)" We hope that the timely theme would lead to an invaluable and inspiring discussion at the Forum 2019 with contribution of many dignitaries related to Construction Industry.

I make this opportunity to thank President, Board Chairman and Chairperson, Council members, Board members, Overseas Representatives, Resource Person and Editorial Board, Observers to Council Meeting, Staff of IQSSL Secretariat and College of Quantity Surveying and all the Sponsors of the event for their valuable contribution.

Message from the Vice President

Ch.QS. Lalith Ratnayake

B.Sc. (QS) Hons, M.Sc. (PM), F.I.Q.S.SL

Vice President of Institute of Quantity Surveyors Sri Lanka

I write this message on the occasion of AGM and annual events of 2018 / 2019 with great pleasure, as IQSSL is continuing its journey in the advancement of QS profession, on the foundation of robust principles cemented by its founders. With the noteworthy achievements of IQSSL in the past, it has secured current positioning as a professional institute that provides dynamic and valued contribution to the local and global economies.

At present the world is confronted with various challenges including key encounters with climate change, resource scarcity and fast urbanisation. Certain reports indicate around 200,000 people migrating to urban areas daily in the world making demand for infrastructure and affordable housing solutions. Sri Lanka is not an exemption to this phenomenon.

The linear economy where resource extraction, production, distribution, consumption and waste or "take, make, dispose" has evidently no future. Hence, designs and products that can be "made to be made again" powered with renewable energy in a circular economy (production, distribution, consumption, reuse, recycled, make again as much as, distribution…) have become imperative.

It is a known fact that the construction industry is a major contributor to; raw materials extraction, greenhouse gas emission, waste generation and energy use. Though the construction sector has been traditionally slow to adopt new technologies this will get changed very soon, as the adverse impacts have come to the cusp of a crisis. Thus, it can now be seen innovations to reduce; adverse environment impacts, level of resource use and inefficiencies in design / construction processes are being adopted in a comparatively rapid pace. Published literature indicates that world construction industry accounts for about 6% of global GDP and in certain countries it is around 8%. Hence, improvements in productivity with new technologies will have a major impact. Marginal improvement will save huge amount of energy, resources and billions of money. This conveys that QS has to be in forefront in the adaptation to this change, because our forte is effective recourse and commercial management.

Further, the available information suggests that full scale digitalization would reduce annual global costs of nonresidential sector initial construction cost between US$ 0.7 – US$ 1.2 trillian and operational costs by about average US$ 0.4 trillion. In this context the QS professionals will have no option to be docile but get on with global trends in the construction sector. Efforts to be in hackneyed traditional practice or superstitious spleen under the guise of protectionism against global trends, that would provide whopping benefits to the world, will be futile when the portend events to unfold are considered. Globalism in theory has no quantitative restrictions and human face. Therefore, the professionals and businesses those are not having fusion with global trends may get obsolete. However, it must be noted certain mechanisms in the national policy frame works shall be there to facilitate surfing in the new technological wave without getting washed away.

I believe that the participating members will have an opportunity to have good introspection about their future readiness to challenging future with the timely theme of this years' annual events.

I wish a very successful annual forum and technical session 2018 / 2019.

New IQSSL Associates


K.A.T.N. Bandara


H.H. Arseculartne


P.K. Pathmaperuma


W.M.N. Damayanthi


S. Kumaresan


P.A.C. Buddhimali Allis


S. Sasikaran


J.P.K. Sumathipala


A.L.A.H. Priyankara


M.H.S. Kumara


W.P.S. Karunadasa


U.D.N.L. Sampath


B.S.S. Karunaratne


C.I. Ranasinghe


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K.N.B. Amarasooriya


R.M.N.D. Madawala


G. Sivanolipatham


S.A.S.K. Subasinghe


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E.M.G.S.B. Ekanayake


S.A.I.P. Subasinghe


H.M.D.P. Dharmadasa


L.D. Paranamana


H.M.U.P. Harankahawa


H.S. Maduranga


H.M.P.B. Herath


G.B.A. Amarasena


A.D. Hemajith


A.D.S.S. Fernando


K.R.S. Perera


K. Kulatheepan


R.M.A.S. Abeyratne


K.N. Premaratne


R.A.T.L.M. Ranaweera


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S.B.R. Gunawardena


T. Thayakaran


E.P.W.P. Edirisinghe


R. Parathan


W.R.P.S. Jayamal


R.U.S. Ranaweera


K.M.D.K. Bandara


J. Chankeethan


R.P. Uyangoda


L.G.D.P. Amarathunga


H.M.M.S. Herath


P.C.N. Dassanayaka


P. Jeyaruban


B.M.A.B. Basnayake


M.R.M. Fawzan


L.P.T.S. Pathirana

Report of BOM Chairperson

Board of Management of College of Quantity Surveying

It is with great pleasure that BOM report for the year under review is presented. The main responsibilities entrusted to BOM by the Act and the Rules have been well taken care of to fulfil the objectives of the Institute. The College of Quantity Surveying managed by the BOM has shown remarkable progress since its inception in year 2005.

The College currently shelter more than 300 students following Higher National Diploma in Quantity Surveying (HND QS) and Professional Levels courses. Every year the College has enrolled nearly 50 students in HND QS intake. A well balanced resource panel (more than 80 personals) comprising academia and industry experts contribute in conducting current academic programs. The curricula of the courses are well designed and improved timely with the assistance of Board of Quantity Surveying Education and Training to cater for the requirements of the industry and to groom the students with much improved QS core competencies.

This year HND (QS) Course conducted by the College has been accredited by Tertiary and Vocational Education Commission (TVEC) and offered NVQ 6 status valid until November 2021. This long awaited national recognition endorses the quality education delivered by the College. Inquiries have been received from two foreign universities for partnering with the College to conduct their degree programs.

The HND QS and Professional Levels qualifications are recognized by most of the degree awarding institutions in Sri Lanka and some of our alumni got opportunities in local universities and foreign universities as well in continuing graduate or post graduate studies.

The Board always encourages the students of the College in attending extra-curricular activities to improve their social behaviours, capabilities and soft skills. Social event by HND students, cricket match and annual get together by professional level students has now established as the annual events of the College.

BOM maintains the College building to cater for the current academic programs and other events of the Institute. However, the board intends to add some more facilities to uplift the educational environment for the betterment of its users.

BOM always ensures to maintain quality QS education system in challenging and competitive education market. The journey since the inception of the College to reach the current status has been made with the efforts of many contributors. The guidance provided by the Governing Council helped to implement our plans smoothly and it is the strength behind us. Without the untiring, unconditional and silent services rendered by the current board members, Dilani, Subhashini, Prasad and Dr Thanuja, we could not be able to present the College as it is today. The members of the administration staff of the College – Yasitha, Anushanga, Prasanna, Shivoni, Sarath, Sanduni (resigned) and Dhammika (resigned) – have taken the full responsibility of operating the College. The resource panel of the College is also deserved the gratitude for their continuous support and corporation in delivering academic programs and various other activities.

Apart from the duties entrusted, BOM contributes and corporates with the other boards when required. Our future plans include conducting special lectures in identified areas and forming a research unit.

Finally, I would like to thank the founders, previous board chairpersons, board members and all the other contributors who have extended their support towards BOM activities to illumine the image of the College. We, BOM, would hopefully look forward for more successful progress in the coming years too. I wholeheartedly wish the upcoming board to steer and uphold the College to be the leader in quality QS education in Sri Lanka.

Ch. QS. Anoma Gunasekera
B.Sc. (QS), P.G. Dip. (CPM), F.I.Q.S.SL
Chairperson – Board of Management of College of Quantity Surveying
Institute of Quantity Surveyors Sri Lanka

Report of BQSET Chairperson

Board of Quantity Surveying Education and Training

I am pleased to report on the progress made by the Board of Quantity Surveying Education and Training (BQSET) in its activities undertaken during the Session 2017/ 2018.

It is encouraging to report here that with the support it received from its several different subcommittees, the BQSET could complete within the Session itself most of the activities it initiated during the Session. The Board also could make satisfactory progress in rest of the activities it initiated during the Session by revising them considerably.

One important activity that BQSET undertook during the Session was the accreditation of quantity surveying degree programmes which has been given high priority by the IQSSL. During the session, one degree programme received accreditation by the Board after an assessment which set a benchmark for accreditation. The Board continued to conduct 'Charter Classes' for candidates planning to sit the APC in February 2018, August 2018 and February 2019. A resolution was adopted at the Extra Ordinary General Meeting held in 2018 to introduce a Special (Temporary) Provision to enable those who have been corporate members of AIQS or RICS for not less than five years to apply for the Associates Membership of IQSSL and to conduct the APC in Middle East countries as well . Consequently, APC could be conducted in Dubai in September 2018. This was the first time in the history of IQSSl, that an APC was conducted overseas for the benefit of members residing outside Sri Lanka. A subsequent APC was also held in Dubai in January 2019. These two APCs were conducted by two panels who proceeded to UAE from Sri Lanka. Another panel conducted an APC in Qatar in February 2019. Altogether, 65 candidates faced the interviews of the APC held in these two countries under the Special (Temporary) Provision. These three APCs were in addition to the two regular APCs that were conducted successfully by BQSET in Sri Lanka.

During the two semesters of the Session, Levels 1, 2 and 3 of the Professional Level Examination of IQSSL were conducted under the new curriculum. BQSET appreciates the contributions made by those members of the IQSSL to its activities by serving as examiners, moderators, supervisors and invigilators of the APC, GMQE and the Professional Level I, II and II Examinations and also as members of the selection panels of Level I of the Professional Level Examination and the Quantity Surveying Practice Module.

The Board is quite pleased with its achievements made during the Session 2017/18, and will strive to do its best to complete at its earliest the pending activities. BQSET hopes to continue to contribute to the progress of the IQSSL and would wish it all success.

Ch.QS. Prof. (Mrs). Kanchana Perera
B.Sc. (QS) Hons., M.Phil, F.I.Q.S.SL, FAIQS, FRICS, ICECA
Chairperson – Board of Quantity Surveying Education and Training (BQSET)
Institute of Quantity Surveyors Sri Lanka

Report of BQSP Chairperson

Board of Quantity Surveying Publications

I am pleased to inform our esteemed IQSSL members on the activities of the Board of Publications that have been successfully accomplished during the past year.

BQSP's main responsibility of communicating information accurately and timely to all members and other stakeholders was fulfilled during the past year.

The 'Focus' e-journal is continued to be published with the immeasurable effort by the editorial board of 'Focus' comprising of Ch.QS. Dr. Chandana Jayalath, Ch.QS Lalith Ratnayake, and Ch.QS. Chamila Amaratunge and the academic staff members of the Department of Building Economics of University of Moratuwa.

I would appreciate board member Ch.QS. Suranga Jayasena for his tireless effort of updating the official IQSSL website to provide current information to the membership.

One of the most challenging tasks assigned to us of publishing a book on the history of IQSSL is progressing. We would greatly appreciate if our readers could forward us information and photographs from past events of the Institute that we could include in the history book.

Furthermore, I take this opportunity to appreciate the support extended by the Governing Council members of IQSSL, Board members of BQSP and the "Focus" Editorial Board, without whose help none of these would have been possible.

BQSP always welcome our members' valuable suggestions for improvement and thereby allow our readers to enjoy these publications. Kindly let us know if there are any topics you would like to see covered in the future.

Ch.QS. Mahinda Gunawardana
FIQSSL
Chaiman – Board of Quantity Surveying Publication
Institute of Quantity Surveyors Sri Lanka

Report of FAB Chairperson

Financial Affairs Board

It is my great pleasure to convey this message on the occasion of Annual General Meeting 2018/2019 and Annual Forum 2019 to be held at the Hilton Residencies, Colombo.

Financial Affairs Board pleasure to state that under the dedicated commitments of board members & executive council, we have succeeded in further strengthening the stability and improvements to our financial reserves during the financial year of 2017/2018. Although majority of our members are employing and residing in overseas, collection of membership subscription fees has been enhanced comparatively, during this financial year. Fixed financial reserves also have been considerably improved as a results of income generated from College of Quantity Surveying and annual subscription fees of the memberships.

We have established an US Dollar foreign currency savings account in Commercial Bank, Borella, and Colombo 08, to facilitate the payment process for our overseas members. In addition to separate accounts of IQSSL and College of Quantity Surveying, we have already established a bank account to make pragmatic administration of processing of funds and expenses for annual sessions, CPD events & various educational events conducted by the Institute.

We have initiated fund management processes to enhance & improve the financial strengthening of the Institute & wish to continue during next financial years with the concurrence of the council.

As we have a dedicated staff at the IQSSL secretariat, we have no doubt in continuing the planned tasks & achievements succeeded during this financial year.

As a Chairperson of the board, I hereby appreciate all board members namely Ch. QS. Rajitha Dissanayake, Ch. QS Sumith Lokuge, Ch. QS Neil Alahakoon, Ch. QS. (Mrs.) Dilrukshi Paranamannage, staff of accounts department and secretariat staff at IQSSL, President, Secretary and other members of Governing Council who had given me remarkable assistance to achieve successful financial year for the IQSSL.

Ch. QS. Mr. Jagath Basnayake
F.I.Q.S.S.L., Assoc. RICS
Chairperson - Financial Affairs Board
Institute of Quantity Surveyors Sri Lanka.

Report of MAB Chairperson

Membership Affairs Board

Membership Affairs Board (MAB) during the period 2017/2018 worked toward the institute's goal of congregating all Sri Lankan Quantity Surveyors under the national institute.

Primary function of the board is to advice the Governing Council on matters relating to membership including granting new memberships and membership upgrades. Further, together with the Board of Quantity Surveying Education & Training, Graduate Member entry route for non-accredited Degree holders was extended during 2018. This will and had enabled non –accredited degree holders to enter the institute's Graduate membership through the GMQE entry examination.

As Chairperson of MAB, I am happy to note that there is a significant interest among non- member Sri Lankan Quantity Surveyors practicing in Sri Lanka as well as abroad to join the institute. Existing members have also shown keen interest in upgrading their membership to match their acquired qualifications and current experience.

Our present membership strength at 7th March 2019 is:

Category	No. of Members 2016	No. of Members 2017	No. of Members 2019 March
Fellow	30	34	34
Associate	240	257	357
Graduate	439	508	563
Technical	248	298	349
Probationary	31	33	37
Students	2,330	2608	2638
Registered	27	27	26
Total	**3345**	**3765**	**4003**

During the last year, we noted membership significant growth in Student, Graduate and Technical membership categories.

Total student membership is about 2,638, with more education opportunities being available in Sri Lanka as well as abroad, we encourage students to explore all membership routes available in reaching the Associate membership. During the year "Fellow Member Applications Assessment Form for Evaluators" was published on the IQSSL web, https://drive.google.com /uc?export=download&id=0B8ydsb3yKaG6TGlzbXF 0YTlJTmc which would help fellow member applicants to do a self-assessment before applying.

Another significant development in the Sri Lankan construction industry is the registration of qualified persons under the Construction Industry Development Authority (CIDA). As per the CIDA Act No 33 of 2014, IQSSL is bound to provide current member lists of good standing as of 1st January and 1st July each year to CIDA. Qualified person's registry for 2018 has been already published. IQSSL has also furnished information 2019 January registry. Therefore, all members are requested to maintain their good standing status by paying their membership fees on time.

I would also like to thank the member of Membership affair Board, namely Ch.QS (Mrs.) Devika Liyanage, Ch.QS Rajitha Dassanayake, Ch.QS. Dr.(Mrs) Anuradha Waidyasekara and Ch.QS Mahinda Gunewardene who worked tirelessly to make the board's affairs a success.

Ch. QS. Indunil Seneviratne
B.Sc.(QS) Hons., M.Sc (Construction. Management) USA, F.I.Q.S.SL
Chairperson – Membership Affaire Board (MAB)
Institute of Quantity Surveyors Sri Lanka.

Report of PAB Chairperson

Professional Affairs Board

With the completion of another eventful year and on this very important day, PAB is pleased to report on the Board activities of the preceding year. PAB is entrusted under the Rules of the Institute to advise the Governing Council on respective matters, including management of disciplinary procedures of the Institute and professional development of the members

During the past year PAB has prioritized and focused on key activities such as enhancing the professional development of members, regularizing and the registration processes required when interacting with various other institutions.

For the professional development of members five general CPDs were conducted during the last term in office. The CPD requirements for IQSSL Members are stipulated under Rule 12 of the Act no 20 of 2007 and CPD compliance is mandatory for maintaining membership. On an ongoing basis, it is needed to undertake minimum 15 hours of CPD activities during one-year period. In order to regulate this requirement, the last term in office a CPD guideline was published where members could identify and select appropriate CPD methods for submission.

PAB closely worked with the Institute in establishing the Service Minute for QS Service. Further under the Governing Council directions, PAB continued its interaction with regulatory authorities and professional institutions. Active participation in CIDA in scrutinizing new publications, participation in various committees, international and local conferences, forums and networking are few of them. As a contribution to improve the quality and integrity of CIDA publications, PAB has supported on reviewing the draft Standard bidding Document (SBD) 02 and 04.

During the past years lack of a proper fee scale was has created difficulties for the both Clients and QS professionals during the process of establishing the fees. In order to mitigate this problem during the last term in office a standard fee scale was published.

Initiation on developing an Estimating guide for the use of members was another milestone in PAB calendar and it will be published in due course. Subcommittee of PAB was formed to initiate the process of establishing a reciprocity agreement with Canadian Institute of Quantity Surveyors (CIQS). Several discussions were held with the CIQS during the past few months in order to exchange the information for finalizing the reciprocity agreement.

Apart from the duties entrusted, PAB contributed to the other Boards when required and to the Governing Council in their activities.

My heartfelt gratitude goes to all the board members and those who voluntarily extended their support towards PAB activities in fostering the Institute's objectives and its advancement.

Ch. QS. Hasitha Gunasekara
B.Sc. (QS) Hons., M.Sc. (PM), Dip. (Arb), F.I.Q.S.SL, MAIQS, MRICS, MCIOB, ACIArb
Chairman – Professional Affairs Board
Institute of Quantity Surveyors Sri Lanka

Report of PRWF Chairperson

Public Relations and Welfare Board

As the chairperson of the Public Relations and Welfare Board of the Institute of Quantity Surveyors Sri Lanka, I hereby place my report regarding activities and tasks achieved and completed during 2017/2018.

The committee members of the Public and Welfare Committee arranged an appreciation award ceremony in 09th November 2018 for the sponsors of AGM and annual session of 2016/2017 in Monarch at Thalawathugoda. The event was successfully completed with the coordination and cooperation of other boards. The IQSSL presence was further established within the industry community by this event. We managed to hold IQSSL council and officials' annual get-together 2018, in December at Waters Edge.

Public Relations and Welfare Board coordinated and made arrangements in collaboration with other boards to hold CPD events conducted by IQSSL. We also supported the event of Annual Get-together of College of Quantity Surveying conducted during the year 2018 at Ape Gama premises.

We supported to hold and conclude successfully the Technical Session at BMICH and, AGM and Annual Forum at Waters Edge, Battaramulla 25th and 26th January 2018 respectively.

We, as members of this committee, are preparing to render our fullest support for this year's Technical Session, AGM and Annual Forum which is scheduled to be held at BMICH and Jaic Hilton, Union Place respectively.

I have to appreciate all committee members namely, Ch. QS. Jagath Basnayake, Ch. QS. Upali Jayalath, Ch. QS. (Mrs.) Kasun Gunasekara, Ch. QS. (Mrs.) Yasitha Bulathsinhala, and Ch.QS. Harshan Amarasekara who contributed and well supported to achieve all tasks and events completed during 2017/2018.

Ch.QS. Rajitha Dasanayake
B.Sc.(QS) Hons. (SL), M.Sc. P.M(SL), FIQS (SL), MRICS, AAIQS
Chairperson - Public Relations and Welfare Board
Institute of Quantity Surveyors Sri Lanka

IQSSL Journal Article

Cost Control Functions of a Quantity Surveyor on Modern Metro Projects

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Introduction

Light Rail Transit (LRT) or modern Metro facilities are considered to be the solution for Traffic congested cities as an eco-friendly transport solution for a country. The LRT systems are focused as a solution to areas with high population density in urban cities in developed and developing countries and such projects have proved to be sustainable with a highest success rate.

The costs of projects are usually multibillion dollars in design, supply & construction, supervision and monitoring during construction, maintenance & operation, safety assessment, land acquisition and various consultancy fees while the benefits are considered as sustainable infrastructure development to enhance the lifestyle of the people, improve connectivity to the other transport modes as a transportation hub with Foreign Direct Investment in to the country, increase in GDP, tourist attraction and as an economic development driver for a country. Government revenue can be considered from ticket sales, lease of retail areas of the stations, sale of station naming rights, advertising, increased tax on properties, hotels businesses and stamp duty on increased land transactions & values.

In order to yield the highest benefit of a Metro project, assimilation of components of urban master plan development with the modes of transportation need to be considered with active contribution from Economists, policy makers, urban planners and Engineers and Quantity Surveyors. The services of Quantity surveyors and engineers during design & tendering and construction stages is vital in view of cost control of the project. For example, if any delays to the design will have impact of millions of dollars cost overrun to the project with domino effect on other sections and ultimately overall delay to the project completion.

This report focuses on important functions of cost control of projects during design & construction stages.

Inherently, LRT project will cost multibillion dollars due to the technical complexities and sophisticated rail systems hence they require cost control, rail system and civil works experts for employer/government and the Engineering/Consultant organisations to monitor and supervise the professional contractors in design, supply of modern engineering elements of track systems, rolling stock, power supply, signalling automatic train control automatic fare collection etc. Engagement of International Safety Auditor (ISA), Operator and Maintainer during the construction stage is also a major task to be fulfilled during the construction stage.

The project has got the elements such as piling ,piers, viaducts, stations, electromechanical works rail systems , track works, stations etc. In general due to the complexities, Metro projects take a considerable time to build and in general in the excess of 4 years. The project stages can be categorised in general as follows:

- Design works,
- Utility diversions remedial works land acquisitions & compensation
- Construction of civil works such as piles, piers, tunnels, viaducts & stations,
- E&M works such as Main power stations, traction power stations,
- Rail systems
- System Operation Demonstration Trial Run

- Defects Liability Period
- Operation & Maintenance

Also due to the inherent complexity of Metro projects; Bills of Quantities are prepared on an elemental basis and the design & Build procurement path is normally used as the most common procurement arrangement within geographically distributed cost centres. As such engagement of professionally qualified cost experts with cost control skills and expertise is most vital. Thus early focus on cost control functions of the Quantity Surveyor in Employer, Consultant and the Engineer organizations during the pre & post contract stages is utmost important.

In cost control functions, the following unique instruments/techniques are envisaged in the rail projects

1. Elemental cost breakdown with geographically distributed cost centers
2. March chart
3. Cost loaded programme
4. Schedule of Interim Milestones completion dates
5. Schedule of liquidated damages
6. Design control points (DCPs)
7. Value Engineering & Value management procedures
8. Proactive measures to safeguard the Employer interest-Employer claims register

Cost Control at Pre-Contract stage:

As projects are highly technical and with complexities, the identification of Employer requirements at the beginning of project is a challenge to the entire project team. As such Employer requirements are provided in the form of performance requirements with a design responsibility assigned to the Contractor with the preliminary design developed by the Consultant at an early stage. As such transformation of Employer/project requirements into a pricing document is considered fundamental in establishing cost control functions at the outset of the project. Those design control points have to be aligned with the design development to avoid future claims by the contractor. Also other work elements as described in the introduction such as civil works (complimentary works, utilities diversions, tunnels, via ducts, track works, stations, elevated sections rolling stock) and Rail system works (Automatic train control, OCC, Platform Screen doors,) are to be aligned into the pricing document with necessary linkage from the specifications through the General and special conditions of contract to avoid unexpected claims from the Contractor.

In general, in bid documents project design is developed up to a level of 30% by the Consultant and all other requirements are given under performance requirements associated with work specifications while assigning the design task to the Contractor with imposing design control points (DCPs) from DCP 1 to 4, on which Employer's approval would be granted as the final design, freezing the design stage. Upon a design freeze, the Contractor should start building the LRT/Metro project. The conditions of contract are typically based on FIDIC Yellow book or similar with bespoke conditions to cater for differing complexities ; as the specifications are complex and detailed, they should be aligned with the condition of contracts; as such early assignment of professional quantity surveyors/ cost control professionals is essential to enable necessary liaison with the technical engineers in preparation of the bid document for the purpose of tendering which will provide a basis for cost control aspects of the project during the project execution.

Cost Control during tender stage

As projects are based on design & build arrangements with preliminary design and performance requirements provided in the tender document, tendering becomes complex and tedious with many tender queries being raised by the bidders to confine the design into a level benchmark into their bid price. All tender queries are answered with aspect of cost control and need to be included into the contract, thus all the tender queries have always an element of cost; hence the function of a cost control team is vital.

Cost control, during Construction stage

- **Interim payments**

  Interim payments are administered through a cost loaded program with quantity surveyors input to the activity progress updates as the project cost is uploaded into the programme.

  Utility diversions and design review payments are administered through actual quantities executed with the unit rates provided in the contract BOQ.

- **Project variations & Value Engineering savings**

  As there are multiple variables associated with vertical and horizontal alignment of the railway track, and facing obstructions, context planning around the stations with existing structures, it is unavoidable to have zero variations on a Metro project. As such sufficiently detailed change control procedure should be instigated to the bid documents outlining of contractor's obligations and Engineer recommendations and employer approvals are required. As there are different trades such as civil works, electromechanical works, with different specialties sufficiently skilled and experienced, quantity surveyors are required to value and follow the change control procedure to the project from the beginning.

  Also it is to be noted, as projects are design & build in nature, the application of value engineering and value management savings in Metro projects are substantial, thus in order to include value engineering procedures into a contract, the management during the project execution role of project cost control team is truly essential and fundamental.

Contract administration & Claims Control

As complexity and risks involved in Metro projects, it is common in employer delay events such as late approvals, delays in providing possession of site issues, acts of god, payment delays and contractor delay events such as delays in submissions of material, design, subcontractors etc; it is unlikely to see Metro projects without contractor claims. Thus Notices to Claims register and maintaining contractual correspondence with proper record keeping should be administered well in advance to avoid payment of unexpected claims to the contractor at the later stage and also in view of managing potential contractual disputes and claims management.

Assignment of ISA, Operator, Maintainer and knowledge transfer to the employer are the most important cost driven contracts to be assigned, as any error or negligence in terms of such engagements may have huge cost impact to projects as the operator and maintainer are long term contracts associated with generally 5 year intervals.

In the process of record keeping as built states of project progress updates are to be maintained with sufficiently detailed correspondence especially with the necessary focus of contractor risk events. As Metro project contractors are well experienced and backed up with expert contract, commercial and cost management skills, they always maintain the proper record keeping with proactive actions taken at the time itself, it is fundamental to maintain on the side of the employer/engineer cost control functions to counter the contractor arguments.

Conclusion

As demonstrated in the foregoing, it is highly recommended and essential to have a sufficiently skilled and dedicated project cost control team with international exposure to manage and maintain the cost control functions of a Metro project from the inception to completion of a project in order to achieve value for money which is the project objectives.

IQSSL Journal Article

Designing Energy Efficient Buildings: Barriers in the Sri-Lankan Context

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Impact of the construction industry on the environment

The construction industry is a large, dynamic and a multifaceted industry that encompasses developing new structures and engineering projects. The built environment, which is a combination of both buildings and infrastructure, is an integral element of socio-economic development. However, the positive impacts of the construction industry on the economic growth is overshadowed by the industry's negative environmental impacts. Recent studies have proved that the construction industry is responsible for rapid depletion of natural resources, emission of environmental contaminants along with a considerable influence on the occurrence of natural disasters such as floods and landslides. Moreover, the construction sector is a leading contributor for greenhouse gas emissions and waste flows. This shows that the built environment exerts a very high pressure on the natural environment when compared with other industrial sectors. Therefore, it is a timely necessity to regulate construction activity, so as to mitigate the adverse impacts of the industry on the natural environment.

Energy consumption in buildings

Being a very large and diverse industry, construction annually accounts for a significant proportion of the material and energy production across the globe. It has been found that buildings alone consumes a staggering 48% of annual global energy production during the stages of construction, operation, maintenance and deconstruction, which gives a clear indication of the dire need to regulate energy consumption associated with the built environment (Dixit, 2017).

Primarily, energy consumption of buildings is of two major forms as embodied energy (EE) and operational energy (OE). EE is the energy used in manufacture and transport of material, construction, repair and maintenance, demolition and end of life management of demolished material. Alternatively, OE is construed as the energy needed for preserving comfortable conditions within the building and for regular building maintenance. OE includes the primary energy demanded for operating building services such as ventilation, heating, cooling, lighting and hot-water production.

The mainstream literature suggest that although a multitude of researches have been conducted focused on reducing OE, only a very few studies have targeted the aspects of EE. The primary reason for this trend is the majority contribution of OE towards the total life cycle energy consumption of conventional buildings. However, with the rapid development of low energy buildings that use energy efficient equipment and material, the OE demand has reduced significantly, increasing the prominence of EE. It has become evident that the consideration of OE alone, which was the major concern until now for regulating building energy consumption, would not be sufficient to achieve energy efficient buildings. Means of minimizing EE also needs to be factored, in the energy efficiency decision.

The design stage is significant in any construction project, since most crucial project decisions are taken at this stage. Decisions taken during the early design stages has a critical impact on the environmental performance of buildings. Therefore, the design stage seems to be the ideal stage to integrate energy efficiency measures into buildings. However, there are many barriers in moving towards energy efficiency, especially in countries such as Sri Lanka where the general awareness on aspects such as energy efficiency and sustainability are at a very minimum level.

Barriers in achieving energy efficiency in buildings in the Sri Lankan context

Building energy consumption being given marginal consideration in building design, especially in developing countries including Sri Lanka, is identified to be a major barrier in moving towards energy efficiency. As identified previously, design stage is the ideal stage to incorporate energy efficiency measures into buildings since this stage provides the greatest flexibility for change along with lower costs of change. Construction professionals should therefore be encouraged to consider energy efficiency during building design. Similarly, the non-collaborative design approach also impedes the development of energy efficient buildings. A collaborative design environment where the input from different professionals such as architects, engineers, quantity surveyors, environmental consultants and even construction contractors are brought in during design, has been found to facilitate the design of energy efficient buildings. The 2012 London Olympics venue is a prime example for this.

Lack of government regulations on energy efficient design, unfamiliarity among professionals such as architects and engineers on energy efficient design, undermining the potential cost savings that can be achieved through energy efficient design and the comparatively higher initial costs in integration of energy efficiency measures were identified as common barriers in moving towards energy efficiency. Moreover, limited availability and high cost of finance, lack of awareness and information on energy efficiency concepts and measures and the lethargic perspective of building owners and occupants regarding energy efficiency could also be identified.

Certain barriers specific to EE reduction were also identified such as the inadequacy of accurate and comprehensive databases on EE of building materials, complexities associated with EE calculations and published data bases regarding material EE being out of date, making their applicability questionable with changes in manufacturing technologies and mechanisms. The barriers which were identified are summarised under several key areas in Figure 1.

Social/Behavioural related barriers	Knowledge related barriers	Policy related barriers	Market and production related barriers	Financial related barriers	Other barriers
• Multiple decisions to be made, resulting in compromise of energy efficiency • Lack of internalisation of energy related costs • Construction decisions not being focused on potential future cost savings through energy efficiency • Less priority being given for energy efficiency in developing buildings • Attitude and behaviour of the clients regarding energy efficient buildings	• Lack of knowledge about the potential cost savings and benefits of energy efficient buildings among clients • Lack of expertise among construction professionals on building for energy efficiency • Lack of access to third party energy-saving evaluations • Lack of accurate, comprehensive and up to date databases on EE/OE related knowledge	• Lack of regulatory bodies to regulate energy efficiency in buildings • Lack of regulations and standards on energy efficiency of buildings • Lack of subsidies being provided for moving towards energy efficiency	• Non-availability of energy saving systems in the market • Lack of investors to invest in energy efficient products • Lack of appropriate production technologies for developing energy efficient buildings	• Higher initial investment required for energy efficient technologies • Focus on known costs • Limited access to sources of finance	• Energy efficiency not being given due consideration during the building design stage • Non collaborative approach towards building design • Complexities involved in calculating life cycle energy requirements during building design stage

How to overcome these barriers?

A major step in ensuring energy efficiency of built environments is to improve awareness on the need for ensuring energy efficiency and the potential advantages of the adoption of energy efficiency measures, among all stakeholders in the construction industry. Improving awareness has to be done centrally at first. It needs to be commenced with policy makers, the top management of the country and then penetrate down to the lower tiers such as the government officials involved in the planning and decision making related to the construction industry and further down to the regional level such as town councils who are in close contact with the general public. Alongside this, implementing sustainability training and education through the education system also needs to be undertaken.

Significant technological advancements have been made in the field of building energy efficiency, in the global context. These novel technologies need to be adopted to the local construction industry and the use of such novel technologies need to be promoted by the responsible authorities through measures such as tax deductions, advertisements and the provision of technical support. Use of energy modelling and simulation software and collaborative working platforms such as BIM can be recognized as comparatively new technologies that could be adopted which facilitates the development of energy efficient building designs.

Developing a well thought-out regulatory framework for regulating building energy consumption is also a need of the hour. Giving due consideration for energy efficiency in design should be made mandatory through regulations and such regulations should also be enforced effectively.

Setting up industries and markets for less energy intensive construction material has been adopted in many countries across the globe especially for regulating EE associated with upstream manufacturing processes. Recycled concrete and cement stabilized earth bricks are prime examples for this. Similar industries can be set up locally as well. While setting up such industries, the public should also be encouraged to use such material, thereby creating a market pull for these material. Proactive government involvement is essential to implement these measures.

Strengthening industry-university partnerships and investing more on research and development should also be considered. Universities alone cannot carryout research and development since they may not have a very good idea about the issues in the industry nor do they have the financial capacity to implement research outcomes in a large scale, while the industry may also not be able to proceed alone since they may not have knowledge on the state-of-art technologies. Therefore, closer links have to be developed between the universities and the industrial sectors. The "Science Park" in Singapore is a good example for strong industry-university partnerships where both industries and universities come and set up within this park and collaborate to undertake new product developments". Although successful research projects have been undertaken by local universities to develop less energy intensive material such as cement stabilized earth blocks, these outcomes have been limited to research only and they have not been adopted by the industry manufacturers. Avenues need to be created to transfer the research knowledge from the universities to the industry, so that the industry can adopt research findings to their industrial processes

Apart from the above measures, promoting of international knowledge transfer, encouraging to follow energy efficient building design guidelines and mandating environmental impact assessments and material approvals were also can be identified as potential measures for overcoming the barriers towards achieving energy efficiency in built environments.

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IQSSL Journal Article

Exploitation of 'Knowledge Value Chain' Concept in Competitive Tendering

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Introduction

The compelling competitiveness of construction industry has exhorted construction organisations to improve their performance in order to gain competitive advantage, specifically at competitive tendering. Meanwhile, knowledge is the 'lifeblood of an organisation' that ensures organisational survival within the dynamic and competitive environments. Hence, Knowledge Management (KM) amounts to be a critical attribute to gain competitive advantage. Even though the concept of KM is not novel to the construction industry, a proper methodology to implement it is lacking. Absence of systematic KM initiatives within the construction industry would stem the loss of knowledge, resulting in time and cost over-runs, ultimately prejudicing the competitive capacity of organisations. Henceforth, KVC concept is propounded as a KM strategy to recognise value creating KM initiatives, which are essential during competitive tendering and exploit it effectively and efficiently via learning mechanisms, to derive competitive advantage.

Porter's Value Chain and Competitive Advantage

M.E. Porter instigated the concept of value chain, by defining 'Value' as the amount which customers are willing to pay for goods or services offered to them by the organisation. Porter's value chain analyses the strategic activities of an organisation by disaggregating the organisation into value activities, which serve as 'discrete building blocks of competitive advantage'. An organisation attains competitive advantage by providing a higher value to its customers than co-competitors and when the value creating strategy developed by the particular organisation, is not being implemented by the co-competitors. According to Porter, there exist two basic types of competitive advantage as; cost leadership and differentiation. Each value activity of the value chain contributes to the relative cost position of organisation or creates a basis for differentiation. In conclusion, differences among value chains serve as the fundamental source of competitive advantage.

Competitive Tendering in the Construction Industry

Out of numerous procurement methods, competitive tendering is the most frequent and favoured procurement method being adapted in the industry. Construction organisations are profit-driven organisations with the prime goal of profit maximisation. Hence the competitiveness of the procurement method has urged organisations to improve their performance in order to gain competitive advantage over others. Basically, the success of winning a project depends on the tendering strategy adapted by the organisation. Among the two types of competitive advantage, both cost leadership and differentiation are applicable, in winning a tender. Nevertheless, type of competitive advantage to be adhered depends on the type of client. Accordingly, the adopted strategy would be cost leadership for public clients, whereas it is differentiation for most of the private sector clients. Nevertheless, cost leadership refers to the cost structure of the organisation whereby the organisation tends to be the lowest cost producer. Although the concept is applicable to the context of a tender, it precisely discusses the low cost strategy for the entire organisation. Hence, this strategy is most applicable during on-going construction rather than pre-tender stage.

On the other hand, adaptation of low-cost startegy is limited by economies of scale, wherein construtions organisations are necessitated to adhere to diffenrentiation. At instances, differentiation could be practiced by producing differentiated tenders such as Value Engineering proposals. Moreover, local construction industry practices traditional procurement methods where the scope of work and the final product is defined. Even in Design and Build projects, client descries his requirements. Hence, differentiation is claimed to be difficult to practice than cost leadership in the local context. Conclusively, construction organisations may adhere either to cost leadership or differentiation in order to gain competitive advantage at competitive tendering. However, a single strategy must be accompanied in consideration of each individual project, since achieving both types of competitive advantage simultaneously is usually inconsistent.

Knowledge as a Source of Competitive Advantage

The twenty first century being referred to as a knowledge-based economy, knowledge is often recognised as a primary organisational resource, which determines the competitive advantage. According to the Resource Based View (RBV) of an organisation, competitive advantage of an organisation counts upon value, rareness, and inimitability of organisational resources and capabilities and its adoption helps achieve competitive potential. Based on the ground, knowledge can be characterised as a valuable, rare, and inimitable resource contributing towards the competitive advantage. Construction knowledge on the other hand, could either be domain, organisational or project knowledge, amongst which organisational knowledge and project knowledge are considered to be the most contributing factors to competitive advantage. Besides, organisations attain competitive advantage via organisational knowledge rather than domain knowledge. Considering the explicit and tacit classification of knowledge, even though industry is assisted by explicit knowledge, individual organisations are additionally supported by tacit knowledge at different levels. Accordingly, a tender must be higher enough to earn a reasonable profit and lower enough to win the tender and balancing between the two criteria is crucial, which employs knowledge base of an organisation.

What is a 'Knowledge Value Chain'?

Knowledge Value Chain (KVC) is an application of the value chain concept in knowledge development and usage, in order to derive benefits in organisational context. KVC thus encapsulates the dynamic nature of knowledge flows within an organisation rendering its cognitive competence to gain competitive advantage. KVC could be discerned as a KM framework distinguishing the value adding KM activities of an organisation and hence is vital for the effective exploitation of competitive potential of KM. Abundant Knowledge Value Chain Models (KVCMs) are available in extant literature. Amongst which, some KVCMs are based on KM frameworks accompanied by KM activities and some other models are based on Data-Information-Knowledge-Wisdom (DIKW) hierarchy, characterising the transformations in DIKW hierarchy. Furthermore, several other models which cannot be noticeably demarcated under any of the first two types of KVCMs also exist.

Some of the KVCMs which are based on KM frameworks are distinguished as exact replicas of Porter's value chain, substituing the primary and secondary activities with KM activities and associated supportive activities respectively. Several other models diverge from Porter's model skeleton but yet proclaim the core concept of a KVCM based on KM activities. However, KVCMs based on KM activities were criticised by some scholars contemplating that cognitive activities are obscure to be chained by KVCs of knowledge activities acting on knowledge assets of an organisation. Accordingly, KVCMs based on DIKW hierarchy were deemed to chain the cognitive activities acting on the knowledge processes of organisations. Wherein, some of these models were based on the conventional DIKW hierarchy, several others delineated the DIKW transformation in extended and modified configurations. Furthermore, there exist a third category of KVCMs, which neither accompany KM activities nor DIKW transformation. These models vary drastically from one another in terms of the basis, components, model structure and application.

Why is 'Knowledge Value Chain' Called-for in Competitive Tendering?

Construction industry is a knowledge-intensive industry, which relies extensively upon tacit knowledge and project knowledge. Tendering is an essential functional area of a construction organisation, by which the organisation receives jobs. Henceforth, construction organisations need to be

competitive over co-competitors to win jobs. 'Bidding' and 'Billing' are presumed to be core activities of a construction organisation ascertaining the competitive edge. Knowledge is vital for construction organisations to gain competitive advantage in both winning tenders as well as in project implementation. Accordingly, knowledge plays a significant role within the tender process, specifically in tender pricing. The overall project knowledge of organisation and the tacit knowledge of professionals involved play a significant role contributing to gain a competitive advantage. If a particular organisation is equipped with better knowledge in related areas than the co-competitors, it will have a clear-cut competitive advantage over the others. On the other hand, construction organisations are learning organisations. Lessons learned are key drivers of competitive advantage contributing to learning organisations. In order to retain in the unique, dynamic, unpredictable and hence ever-challenging construction industry, organisations must learn and improve continuously.

Moreover, for the survival and thriving in competitive environments, construction organisations are required to escort all probable resources to reach the competitive edge. In the light of RBV of an oragnisation, knowledge is claimed to be a critical organisational resource paving the path to achieve competitive potential. Hence, an appropriate and systematic mechanism to exploit the knowledge base of a construction organisation, proliferating learning cycles to derive a competitive advantage in competitive tendering is essential. Engaging KVC concept thus assists the exploitation of the organisational knowledge resources strategically to direct the organisational efforts towards winning the projects. Hence, KVC concept could be suggested as a KM framework to recognise value creating KM activities attributable for the tendering purposes in order to enhance and systematise the organisational knowledge base, thereby improvising organisational learning to push through the competitive edge.

How to Exploit 'Knowledge Value Chain 'in Competitive Tendering?

Construction industry is claimed to be dynamic and unique, wherein the orthodox cut-paste options are manifested to be unsuccessful. Nevertheless, an established knowledge base would encourage to find future solutions for the future based on the past. On the other hand, extant KVCMs were proposed for generic organisations, on the frame of reference of the holistic view of an organisation. Having affirmed that the concept would be applicable for construction organisations in general, the presented attempt is to narrow down the scope to a specific function; competitive tendering. Accordingly, the efforts must be focused specifically on competitive tendering rather than the entire construction organisation. Furthermore, each individual KVCM proposed hitherto constitutes unique merits and demerits. Hence, a synergy would diminish the drawbacks and bring about a greater mutual effect. Owing to the rationales referred, it is ideal to engage a KVC framework entailing the dominant features of the extant KVCMs with the objective of minimising the drawbacks of extant models as well as to tailor the features to suit competitive tendering within a construction organisations. Likewise, KVC frameworks have been proposed to various domains such as supply chain management, organisational performance and knowledge translation in Public Health Organisations. Correspondingly, a customised KVCM in the form of a KVC framework, integrating befitting KVCMs in the extant literature could be proposed to employ organisational knowledge to yield competitive advantage in competitive tendering.

Conclusions

Tendering is a critical function of a construction organisation. Construction organisations may adhere either to cost leadership or differentiation, in order to be competitive over the co-competitors. Furthermore, knowledge is a crucial oragnisational asset contributing towards competitive advantage of a construction organisation. Accordingly, a KM framework to yield competitive advantage in competitive tendering is discerned as a literature and an industrial requirement. Exploitation of KVC concept to gain competitive advantage in competitive tendering, by employing organisational knowledge within a construction organisation is thus appraised. Different authors have developed different models, which were analysed by categorising into three categories as; 'KVCMs based on KM frameworks', 'KVCMs based on DIKW hierarchy' and 'other KVCMs'. Moreover, the concept has been advanced into various fields in the form of frameworks, but not so far within the construction industry. The mechanism for pragmatic implementation is recommended in the form of a KVC framework, to engage knowledge for value creation in competitive tendering so as to gain competitive advantage.

IQSSL Journal Article

Issues in Implementing Coastal Reclamation Projects in Sri Lanka


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INTRODUCTION

Humans gather around coastal regions due to the richness of natural resources, recreation and logistical purposes. In the recent years, a severe problem of land shortage has been formed in the coastal areas. Countries are extending their city boundaries towards the sea which is known as coastal reclamation. Obtaining accessible land for commercial and business purposes is the objective of coastal reclamation projects. Port cities encourage investments and form economic opportunities, to unleash the economic potential, uplift the quality of life and establish sustainable urban structures. Restoration of the coastline and providing protection to various habitats and species are the environmental benefits of coastal reclamation.

As Sri Lanka is an island with a 1700km long coastline, coastal reclamation projects are very important. In Sri Lanka, 66 percent of the urban land, 67 percent of the industry, and 80 percent of tourism infrastructure are settled in the coastal region and 32 percent of Sri Lankan population lives in coastal areas. Coastal reclamation projects have the potential to create effects in terms of social, economic, environmental and other aspects. Hence this article addresses on the need of identifying challenges of coastal reclamation projects and discovering remedies to overcome them in the Sri Lankan context.

Challenges in Coastal Reclamation Projects

Challenges associated with coastal reclamation projects in Sri Lanka can be categorized in to five main groups as environmental challenges, technical and structural challenges, financial and economic challenges, social challenges and legal challenges.

Environmental Challenges in Coastal Reclamation Projects and Remedies Identified

Maintaining good air quality and reducing dust is a challenge in the coastal reclamation projects as the sand particles can be moved with the wind when pumping sand and the dust can be induced with the temperature. Sprinkling water, installing shower curtains to wet the material loads, installing dust barriers and screens, growing vegetation and pumping material against the wind are remedies that could be undertaken to address this isuue. Vibrations occur due to the compactions in coastal reclamation projects. Use of heavy machineries in projects for the purpose of ground improvements can cause noise and vibration. Generators with silencers, noise curtains, and machinery with auto mated motor systems and vehicles with sound proof units can be used to minimise the vibrations. Conservation of favourable fishery environments is another challenge in coastal reclamation projects. Water currents are changed due to the sand nourishments done in the shore which negatively impacts the fisheries. Regeneration of corals and ecosystems, use of artificial reefs introduction of alternative livelihood programs for fishermen can be identified as remedies for this challenge. Mitigation of the risk of potential floods is another environmental challenge as the underground water flow is blocked due to reclamation activities causing shifts in the shoreline. Construction of central canals, identification of the sea level rise component in the designing phase of these projects and consideration of a retained period for that component.is needed to overcome this challenge. Lowering down the ground water table by connecting it to an existing open water source and re-establishing the natural water flow as the connectivity between the coastal water body and the land can also be done as remedies.

Technical and Structural Challenges of Coastal Reclamation Projects and Remedies Identified

Technical and structural aspects are a major concern in implementation of coastal reclamation projects in the Sri Lankan context. Avoiding the ground settlements in the reclaimed lands is a challenge as it leads to building collapses, issues to the verticality of the buildings and other negative impacts to the quality of the reclamation as well as the constructions. Artificial compaction (e.g. Vibro compaction and dynamic compaction) can be used to reduce the short term settlements. However, sand compaction is identified as a costly activity in these projects. Vertical drains can be installed and connected to

a suction pipe to enhance the compaction. Expert knowledge is much needed for most of the works as these projects are quite new and not highly practiced in Sri Lanka. Experts can be hired locally and internationally and outsourcing the contractor and the dredging consultants in coastal reclamation projects can be done. Finding suitable fill materials and required quantities for coastal reclamation projects in Sri Lanka can be identified as another challenge. For example when it comes to material selection, particle size should be in a certain range and the areas where the suitable materials can be found should be identified. Samples should be checked and the radiations of the reclamation materials should be checked. Detailed investigations should be done to find fill material properties and availability. The challenge of ground water penetration into structures can be minimised by maintaining the finish reclaimed level above the high tide level and separating the reclaimed land from the mainland.

Financial and Economic Challenges of Coastal Reclamation Projects and Remedies Identified

The possibility of funding, identifying the ways of financing, allocation of funds to the implementation of the projects, checking the financial feasibility, market surveys on the demand for the reclaimed lands, way of recovering the cost incurred, determining the pay back periods, determining the profits to be gained, checking the financial viability, contribution of these projects to the economic development and other related financial and economic issues are there in coastal reclamation projects. In order to minimize the financial and economic risks involved in coastal reclamation projects it is important to consider the rate of return for the investments. The feasibility check of the investments is important in remedying these challenges. Having diverse ways of income generation without depending solely on one income may reduce the impacts of this challenge and provide remedies for the possible financial losses. There is some unpredictability involved in coastal reclamation projects as these projects are not done overnight. Investors may be looking forward for the recovery expecting a value for the money invested by them and to cover up their financial liabilities with regard to the investments they make. Marketing strategies should be implemented to find investors for further developments as well as investments in these reclaimed lands. The industrial sector, recreational sector and tourism sector can be considered to find the investors. Proper market surveys and feasibility checks should be done during the planning stage of these projects to ensure the fulfilment of the financial and economic objectives.

Social Challenges of Coastal Reclamation Projects and Remedies Identified

In the broader aspect, the whole society may be impacted through the outcomes of these coastal reclamation projects. The loss of livelihoods, generation of social conflicts, social isolations and other social challenges may be involved in these projects. Social conflicts and human rights violations due to costal reclamation projects can also be identified as a challenge.

There are social issues in extracting rock and transporting them for the projects. Possibility of low income groups getting affected and risk of losing the fishing locations due to these projects is a key social concern. Incorporation of local communities, resettling the communities and conducting livelihood support programs for fishermen can be identified as remedies for this particular challenge. Avoiding land and cultural value changes as a challenge in coastal reclamation projects in Sri Lanka is a considerable challenge. Archaeological sites should not be disturbed when implementing these projects. The preservation of these archaeological sites may ensure the existence of the cultural and the land values as the values within are also preserved. Establishment of foreign cultures is likely to happen as economic developments are expected from foreigners in coastal reclamation projects. Consideration of social feasibility and potential social impacts created through coastal reclamation projects should be checked to minimise the land and cultural value changes.

Legal Challenges of Coastal Reclamation Projects and Remedies Identified

The applicable legal frameworks for these reclaimed areas, management of the areas, administrative concerns in the reclaimed lands and the ownership and the declaration as the part of the country are legal concerns identified. Approvals should be obtained to reclaim the land from the sea. There are lots of international companies working in these projects and therefore the situation should be attractive to the investors. There should be tax recessions and promotional schemes for investors. Some administrative issues may be mitigated by the management of the common areas. The land created through the coastal reclamation should be declared as a part of the country. If the reclaimed land is declared as belonging to the country then all the existing rules may be applicable on that land as well. There may be issues as whether to provide these reclaimed lands on lease basis or permanently and these situations have to be addressed based on special considerations.

Conclusions

Five main types of challenges have been identified as environmental, technical and structural, financial and economic, social and legal challenges. These projects may be implemented in a way which the communities are not negatively affected yet benefitted from the outcomes of the projects. Incorporation of the local communities and firms may be done to avoid the formation of isolated communities.

IQSSL Journal Article

Value Engineering in Construction

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Value engineering is based on a methodology formally developed by Lawrence Miles, who worked for the General Electric Company in the USA during the Second World War, in the 1940s. With the war under way, there were shortages of materials and certain finished products. However, manufacturing was running at maximum capacity, and ideas where needed to expand production. Miles was responsible for purchasing raw materials for the General Electric Company and realised that if he was unable to obtain one particular material, then it was necessary to obtain a replacement material that performed the same function. Thus 'value engineering' (VE) began with a creative, team-based approach, which allowed the generation of uncompromised alternatives to the existing solution. VE was first applied to the construction process in the 1960s, mainly by public sector bodies. By the 1970s, the use of VE had become widespread. Indeed, it was often mandatory for general services administration contracts in the United States, and considerable success in its use was recorded.

With the global economy likely to remain subdued over the coming years, construction companies will be operating in an increasingly challenging marketplace. In such an environment, VE in construction is not just another conventional check-box activity but something that could seriously complement the business' existence or at the very least, have a lasting impact on future developments of the industry.

VE is defined as an organized effort directed at analysing the functions of systems, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life-cycle cost, consistent with the required performance, quality, reliability and safety.

Correspondingly, VE is the structured application of proven techniques at various design development phases with the primary aim of undue cost avoidance without sacrificing performance, scope, reliability, safety and quality. The principle involves evaluating the function of the process and/or equipment and focusing on poor value items/functions to identify ideas for lower cost, higher value alternatives. This approach requires extensive team interaction and allows the creative generation of solutions to specific functionality problems, including environmentally-sound and energy-efficient practices and materials.

Value engineering is not simply a cost-cutting exercise; it enhances cost effectiveness and functionality – which is the source of its 'value'. Aside from the cost savings generated, the value engineering process fosters a greater understanding of the project goals and the need for systems integration among the members of the design team. The inclusion of a member of the end-user group on the value engineering team helps examine operational concerns for the base design and the potential alternatives, and gives the users a much clearer understanding of what they are getting.

In terms of value, the main differences between 'value' engineering and cost cutting are summarised as follows:

	Value Engineering	**Cost Cutting**
Principle	Function based	Equipment/material based
Focus	Poor value functions	Big cost items
Results	Increased value	Scope reduction
Optimises	Overall design	Local design
Clarifies	Client requirements	Nothing

Whilst value has a personal perspective and is therefore potentially subjective, value is essentially the ratio of cost to functionality. The cost is the resources used in achieving the function and the function (or purpose) is to satisfy a need. Good value is achieved when the required total performance can be accurately defined and delivered at the lowest life cycle cost to the complete satisfaction of the client. On construction projects, improvements to value could also include enhancing safety in a design, or reducing impacts to the

public by shortening the duration of a construction project.

The primary objective of VE is to remove unnecessary cost with no loss of function. In carrying out a value engineering exercise, the aesthetic design should not be compromised. In essence, the design team must take another look at the design, with a view to identifying unnecessary costs and classifying ways in which they could be removed. Two design teams looking at a common problem may often come up with two different solutions. Since one solution will clearly not be exactly the same cost as the other, then one solution must contain unnecessary cost – that is, provided that the function and quality are the same in both cases. When undertaking VE it is essential to have a thorough understanding of the client's objectives and priorities.

The appropriate time for a VE exercise to take place would be when the original design has not advanced too far. On the other hand, enough of the design must exist to allow the VE exercise to proceed. An early stage in the design, usually when the sketch design is more or less finalised, is the most appropriate time to consider a value engineering exercise. Likewise, in order to comply with clients' budget constraints, the pre-tender cost estimate of the Consultant often triggers the need of VE. However, during the tender stage and also during the construction stage, creative contractors may also have opportunities for significant contributions to make VE for the competitive edge of winning tenders and the effective success of the project, as long as the VE changes proposed to the contract do not affect the timescales or intended purpose.

The VE team will normally consist of five or six people, all professionals with strong links to the construction industry. It would be appropriate for an architect/Engineer and a quantity surveyor of the project to be present, together with an estimator or cost engineer, a structural or civil engineer, and, if possible, the project engineer. At least one of this team should have been part of the original design team. It is of paramount importance that the value engineering team is blessed with creative thinking and an analytical approach to their work.

A standard approach to value engineering is now widely established. The job plan for the VE exercise is divided into five or six phases:

1. Information phase

1.1 Function analysis phase (an American fragmentation)

2. Speculation or creative phase
3. Evaluation or judgement phase
4. Development phase
5. Presentation phase.

At the Presentation phase, the VE team will report their recommendations to the original design team. The recommendations must be communicated clearly and the merits of any suggested change stressed rather than attempting to criticise the original design. A visual presentation plus a written report is normally required. There will also need to be some indication as to how the recommended changes could be implemented. There is little doubt that this is the most difficult part of value engineering, in that it is necessary to convince the original design team that the recommended changes are worthwhile. If the original team have not been party to the value engineering exercise, then there is a danger that they will resent the changes that are being suggested.

There must also be a commitment to the use of value engineering on the part of the client. At the moment, few clients are aware of the existence of value engineering or of the benefits that may accrue. Hopefully this position will change as time goes by, and more and more clients will, depending on the relative cost of the value engineering exercise, expect designs to be subjected to a value engineering assessment.

There is little doubt that value engineering can result in considerable savings in the overall cost of construction, but great care must be taken to ensure that the value engineering team are competent and capable of assessing a design, proposing alternative design solutions, and evaluating the costs as accurately as possible. It is unthinkable that, following a value engineering assessment which anticipates considerable cost savings, it is found that the actual construction is complicated by the selection of unusual materials or techniques which the appointed contractor is unable to handle.

With such limited room for error in a financially constrained climate, the scale and complexity of some of the infrastructure and building construction programmes that are planned over the coming years means that implementation of Value Engineering will inevitably remain a key feature of our industry, despite the best intentions of all parties involved in conventional design, construction and operational processes.

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