



FOCUS

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1st place

Impact of Tax Reforms on Construction Supply Chain in Sri Lanka

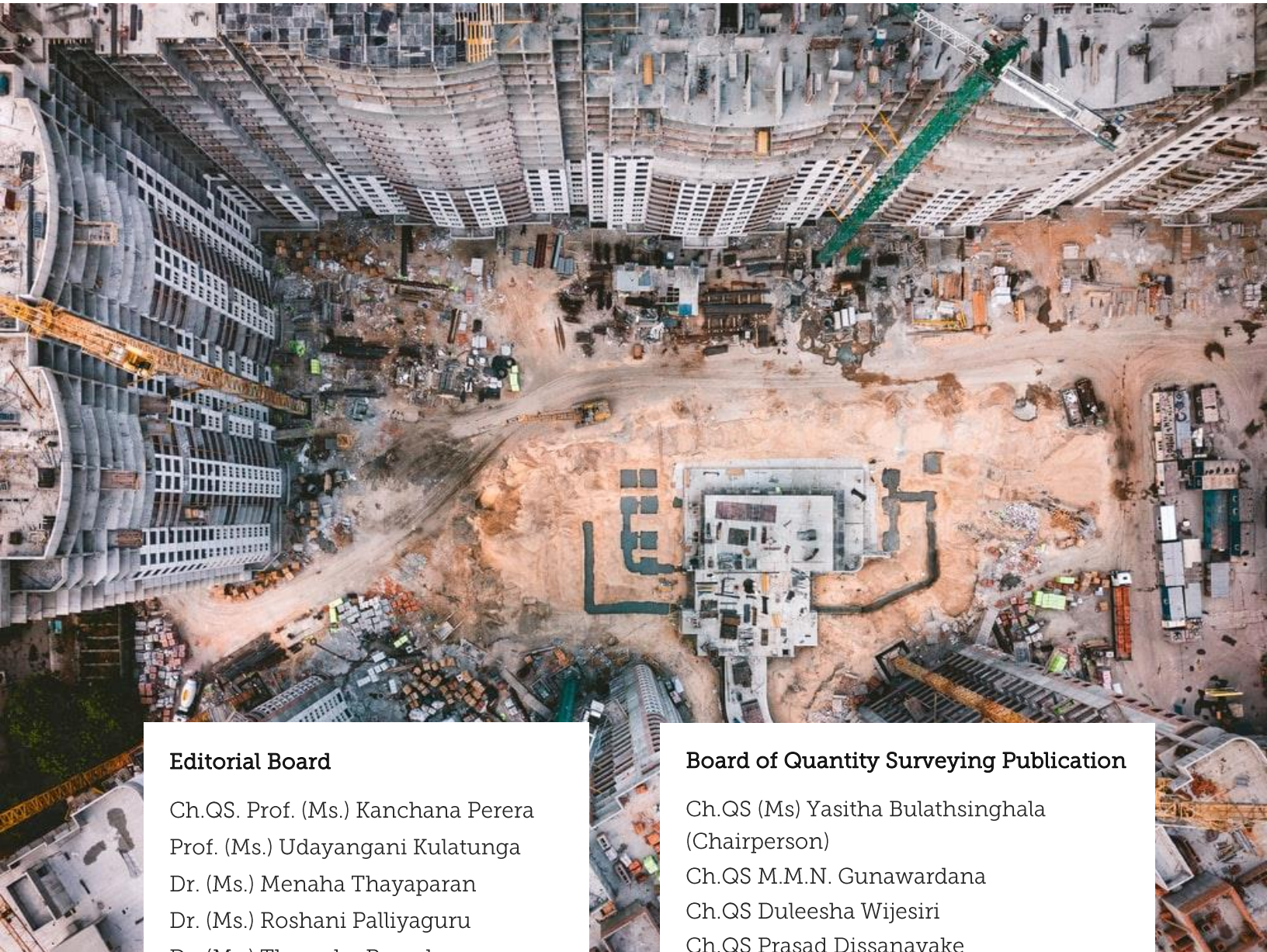
2nd place

A Sri Lankan Perspective on Professional Indemnity Insurance (PII)

3rd place

Future Application of Digital Twin Concept

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



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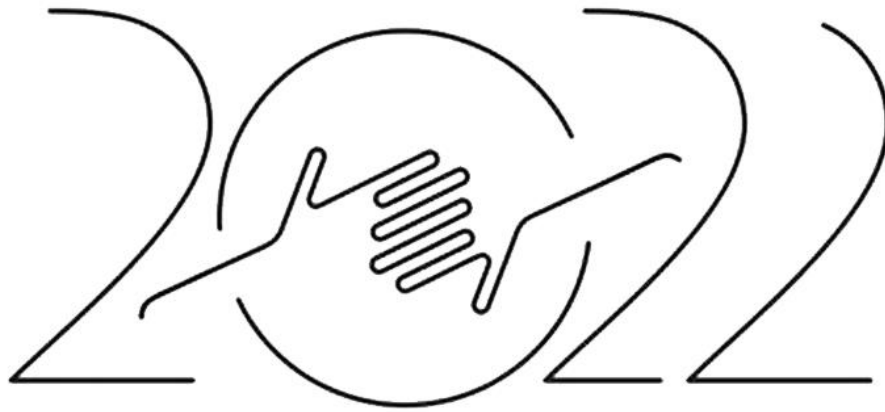
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IQSSL wishes a heartfelt
successful new year to all!

HAPPY NEW YEAR



**IQSSL extends the warmest regards to
our members, students, and well-wishers!**

This year calls us to reach out and lend a
helping hand to each other as we strive to achieve a
higher level of collective prosperity.



Message from the Newly Appointed President



Ch. QS. Prof (Mrs) Kanchana Perera

BSc.(QS) Hons., M.Phil, F.I.Q.S.SL, FAIQS,
FRICS, CQS, ICECA
President - IQSSL

I am pleased to send this message to the first issue of the FOCUS magazine that will be published during my tenure as the President of the Institute of Quantity Surveyors Sri Lanka (IQSSL).

First of all, let me express my sincere gratitude to all members of the IQSSL for entrusting me with the responsibility of leading the Institute, to which I would be fully committed. All the hard work done by my predecessors toward the development of the institute has made my task easy but demanding, because the status quo has to be improved as much as possible.

Let me take this opportunity to congratulate all newly appointed members of the IQSSL Governing Council. You will all have an uphill task of fulfilling industry needs while attending to the mandated objectives of the institute, such as conducting the assessments for professional competencies, attending to membership matters, conducting continuing professional development programs and graduate membership qualifying examinations, raising the standard of the quantity surveying education in the country, and safeguarding the quantity surveying profession.

Today, the IQSSL as a professional body is on par with all other established professional bodies in the country. The IQSSL would not have achieved this present status of it if not for the untiring efforts of all our past presidents and past council members. I truly appreciate their untiring services.

The contributions already made by the IQSSL to the quantity surveying profession in Sri Lanka are quite remarkable.

However, we have a long way to go before we can rest assured that the IQSSL is one of the most outstanding professional bodies in the country. The work involved in registering qualified persons, establishing the service minute, and convincing the government to place quantity surveyors in the state sector at appropriate levels are quite challenging because of the pressure that comes from the members of our allied professions, who have now trespassed quantity surveying boundaries. I would look forward to the active participation of both our local and overseas members in the activities of the Institute. I request all members to be united and start working hand in hand to overcome the challenges that the IQSSL may have to face in the future.

The IQSSL in 2020 obtained a block of land on a 30 year lease to put up our headquarters building. The preliminary work on the building design has already commenced. We need to collect the required funds, commence the construction work, and complete at least a part of the building during the next few years.

Being an optimist, I am confident that the IQSSL will have a fast growth. Let us work together to make IQSSL one of the most outstanding professional bodies in Sri Lanka.

Thank you again for the trust placed in me!

IQSSL Student Article Competition 2021

The quarterly publication of the Institute of Quantity Surveyors Sri Lanka (IQSSL), the "Focus" magazine, made it possible for students to publish their articles as a means of broadening the magazine's reach. Thus, the IQSSL launched the "Student Article Competition – 2021" as a venue for students to compose and submit articles for publication in the areas related to Quantity Surveying. They were encouraged to participate in the competition and win awards for displaying their writing talents. The articles were evaluated by two independent expert review panels, which reviewed the submitted articles and selected the winners of the competition.

We are pleased to announce that, as per the recommendations of the expert review panels, the following students came out as the winners from a pool of 25 articles.

1st Place

Impact of Tax Reforms on Construction Supply Chain in Sri Lanka
by A.D.D.J. Chandrasekara,
University of Moratuwa.

2nd Place

A Sri Lankan Quantity Surveyor's perspective on Professional Indemnity Insurance
by A.K.M. Hewage,
University of Vocational Technology.

3rd Place

Future Application of Digital Twin Concept
by M.L.S.S. Fernando,
University of Moratuwa.

It is with immense gratitude that we acknowledge the members of the two independent Expert Review Panels, respectively, in the initial evaluation and the final review.

Members of the initial evaluation panel

Dr. (Ms.) Chandanie Hendiwattage
Dr. (Ms.) Kanchana Ginige
Dr. (Ms.) Menaha Thayaparan
Dr. Gayan Wedawatta
Dr. (Ms.) Nilupa Udawatta
Dr. (Ms.) Krishanthi Seneviratne
Dr. (Ms.) Gayani Karunasena
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Dr. (Ms.) Tharusha Ranadewa

Members of the final review panel

Prof. (Ms.) Yasangika Sandanayake
Prof. (Ms.) Udayangani Kulatunga
Dr. (Ms.) Menaha Thayaparan.



The list of authors of the articles conditionally accepted to be published in future issues of the IQSSL Focus Magazine

Chaveen H. Wickramasuriya	- Colombo School of Construction Technology
Geerthanan Selvathasan	- University of Moratuwa
E.V.J Zoysa	- University of Moratuwa
Vinokaran Kokulan	- ICBT
Umesha Weerapperuma	- University of Moratuwa
M. Kisaanthan	- University of Moratuwa
K. Apinayan	- University of Moratuwa
W G Theekshana	- Colombo School of Construction Technology
Chamodi Piumika Namarathna	- SLIIT
Y. M. S. N. Udawela and W. A. A. A. Wickramarachchi	- International College of Business and Technology (Kandy)
Piyumi Fernando	- SLIIT
Yashodha Ashini Adikari	- Colombo School of Construction Technology
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D.V.H Dodangoda	- KDU - Southern Campus
W.M.Y.S. Wijekoon	- General Sir John Kotelawala Defence University
R. H. Lasan Resil Piyaweera	- University of Moratuwa
J.U Kumarathunga	- SLIIT
R.R. Kumarapathirana	- SLIIT
R.M.K.K.Nuwandhara	- SLIIT
J.A.B. Janardana	- SLIIT

We hereby acknowledge and appreciate the students who participated in the competition.



1st Place

IQSSL Student Article Competition

Impact of Tax Reforms on Construction Supply Chain in Sri Lanka



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University of Moratuwa

Introduction

The construction industry is the beating heart of the development of any nation. Therefore, the construction industry has a direct and indirect influence on all the other aspects of a country (Simo & Edwards, 2008). The studies of Ozkana and Ozknab (2012) point out that the construction industry is the critical driving sector of any country since it has backward and forward linkages with more than 200 sub-industries or sub-sectors. Similarly, the construction industry is sensitive to tax systems and structures (Memon, Rahaman & Aziz, 2011). Value Added Tax (VAT), Income Tax, Withholding Tax, National Built Tax (NBT), Census Tax, Ports and Airports Development Levy, Pay as You Earn, Construction Industry Guarantee Fund, Stamp Duty, and Custom Duty can be identified as the construction-related taxes in Sri Lanka (The Ministry of Finance, 2018).

Christopher (1992) defines construction supply chain as a network of organisations that are interrelated, through upstream and downstream linkages, to produce an end product to the ultimate user. Meng (2012) states that stable supply chains are essential to implement continuous improvement in construction. Correspondingly, Edum-Fotwe, et al. (2001) describe that each phase of the construction supply chain brings together several stakeholders. Furthermore, the findings of Segerstedt and Olofsson (2010) highlight

contractors, clients, suppliers, and manufacturers as the prominent members of the construction supply chain.

The findings of Zagler and Durnecker (2003) emphasize that the structure of taxation has direct and indirect impacts on the construction supply chain. Correspondingly, the findings of Turnovsky (2000), exemplify that introducing a more flexible and stable tax regime can be beneficial to the construction industry. Therefore, Karim, et al. (2020) suggest that policymakers should get to know the insights of the construction supply chain before initiating significant tax reforms. Accordingly, this paper aims to investigate the impact of tax reforms on the construction supply chain in Sri Lanka.

Methodology

The qualitative research approach was adopted for this research by conducting sixteen semi-structured interviews with stakeholders in the construction supply chain representing contractors, clients, manufacturers, and suppliers through the purposive sampling technique. The qualitative data were analysed using the manual content analysis method. Accordingly, the impact of frequent tax reforms on the construction supply chain is discussed under pertinent subheadings. The profile of interview respondents can be elaborated as follows:

Discipline	Number of Respondents
Clients	4
Contractors	4
Manufacturers	4
Suppliers	4

Table 4.1 Profile of the interview respondents

Research Findings

The findings of the research are elaborated from the following sections.

A. Impact on Clients

All the respondents agreed that contract price can be directly impacted due to tax reforms. Similarly, the client will be forced to initiate a shutdown, extend the contract period, alter the contract by a value engineering proposal, or downsize the employees if the construction cost is augmented by tax reforms. The respondents further pointed out that the client should account for such increased costs in measure and pay contracts that have incorporated changes in the legislation clause. Therefore, the contractor is not impacted by tax reforms under such contracts. Moreover, the abrupt effect of tax reforms is not obliged on the client, being the ultimate user of the construction supply chain.

Furthermore, respondents emphasised that the unstable tax regime would make the initial estimation of a project challenging. Similarly, the majority of the respondents highlighted that the client would encounter significant issues if the inbuilt taxes in rate breakdowns get abolished (e.g.-NBT).

Accordingly, in such situations, the commitment of the client surges, especially when many subcontractors are involved. Moreover, the respondents pointed out with every tax reform, the compliance cost of the client increases to align with the updated tax structure. Eventually concerning all the above circumstances, the client would fail to complete the project within the estimated time frame. Therefore, it is apparent that the client is significantly affected due to sudden tax reforms.

B. Impact on Contractors

The majority of respondents pointed out that, the contractor has to endure the tax increments as costs if other supply chain members evade taxes. Mainly, the contractor has to encounter this effect when fluctuating withholding tax and VAT. Furthermore, the respondents highlighted that contractors can recuperate the impact of tax reforms under measure and pay contracts that have incorporated the changes in the legislation clause. On the contrary, some of the respondents argued that regardless of this mechanism the contractor has to engross the taxes enacted by circulations and the hidden taxes through Harmonized System (HS) Codes.

The respondents further exemplified that such ambiguous circumstances could lead to disputes among contracting parties. Predominantly these excessive taxes force the contractor to downsize the labor force, compromise the quality, or even declare bankruptcy. Accordingly, the respondents argued that the impact on the contractor's cash flow ensues from tax reductions after a material is imported under a higher tax regime.



Therefore, it is apparent that the contractor's cash flow is negatively affected if tax reforms are not signified by price escalations.

C. Impact on Suppliers

Most of the respondents among suppliers viewed that uncertain tax reforms lay the ground for contractual complications. Furthermore, the majority of suppliers attempt to incorporate the impact as a cost to end-users in corresponding reforms. Accordingly, respondents stated that transferring the impact would be impossible and unreasonable if the tax increment is substantial.

Therefore, if such a significant tax increment is comprised in the price, the end-user would be demotivated and potentially withdraw the supplier. The respondents highlighted that the stocks of the suppliers might get obsolete in such situations. The majority of the respondents further emphasized, the supplier is deprived of setting off the taxes (e.g.- Withholding tax) or transferring the impact to other parties if excluded from the tax liable threshold. Hence, a substantial proportion of the supplier's profit will be diminished and cash flow will be adversely affected. Accordingly, it is apparent from the above views that the suppliers have a significant impact from tax reforms.

D. Impact on Manufacturers

The majority of the respondents highlighted that contemporary tax reforms have disregarded manufacturers as construction service providers. Hence the manufacturers are not awarded with recent tax concessions exclusive to the construction industry. Furthermore, the respondents emphasised this unfair circumstance could cause disputes among supply chain affiliates.

Similarly, the manufactures would struggle to recover claimable taxes if excluded from the tax liable threshold.

Therefore, the manufacturers attempt to transfer these tax escalations as costs to prevent the impact on profit margins. The respondents further pointed out that tax reforms directly impact the production cost of manufacturers. Hence the manufacturers would fail to establish a competitive price for products. This circumstance ultimately results in manufactures being obliged to endure the effect of unfavorable tax reforms.

Conclusions

It is apparent that the members of the construction supply chain are impacted directly and indirectly due to sudden and frequent tax reforms. Further, the policymakers should get a better understanding of the construction industry and the supply chain before initiating tax reform. Similarly, the need for a stable national policy on tax reforms is highlighted from the views of the respondents. Finally, the findings exemplify that the issues of supply chain members can be minimised if a structured framework is followed when reforming taxes.

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2nd Place

IQSSL Student Article Competition

A Sri Lankan Quantity Surveyors' Perspective on Professional Indemnity Insurance (PII)

What if your client files a case in the court against you asking for many millions in compensation? He believes that he has to incur the loss due to your negligence/mistake. When a mistake is committed, professionals will pay compensation to their client out of their own pocket which is restricted by the assets they legally own. If their loss is significant enough such that it surpasses the value of assets own by the professional, there should be an alternative method to remedy this issue. Therefore, PII comes in handy as a much needed solution to protect them against these losses.

Though the concept of PII in the construction industry is popular in developed countries, the awareness regarding this concept especially as a construction risk transfer tool is low in Sri Lanka. This article will provide the Sri Lankan Quantity Surveyors' perspective on PII and some insights on the applications of PII in Sri Lanka and their coverage. This will, in turn, aid in developing assurance enhancing quality and standards in the Sri Lankan Construction Industry.



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What is PII?

Professional Indemnity insurance or (PII) is a type of insurance designed for professionals to cover when an error is committed within their professional services. PII is a risk shifting instrument designed to protect disgruntled customers from the negligence of the professionals.

PII provides much required financial protection against the claims made commonly due to,

- a. Professional negligence
- b. Errors and omissions
- c. Non-performance
- d. Breach of contract

In Quantity Surveying, negligence could be found in several forms; mistake in measurements, cost plan, documentation, strategic advice etc. In construction, quantity surveyors, architects, engineers and design professionals have been considerably exposed to numerous consequences of building defects, contractual issues and litigation (Harris, 2005). This reason has made PII become so important to the construction industry.

Without PII, professionals would be vulnerable to indemnity claims from a variety of sources (Jayalath, 2011). Therefore; PI Insurance can affect one's business especially towards the financial status as well as their business reputation.

Does a QS Need Professional Indemnity Insurance?

In the past, Quantity Surveyors had only been dealing with financial management of projects. Jayalath (2013) defined Quantity Surveying as the cost and financial accountant of the construction industry. However, the role of a Quantity Surveyor has evolved dramatically ever since and consequently that made these past accounts of Quantity Surveying outdated. The era of "taking off quantities" has already been passed in the Quantity Surveying profession and in doing so, Quantity Surveyors have explored opportunities beyond their boundaries (Perera, Hemajith et al. 2007).

If the QS is alleged to have provided erroneous/inadequate services to a client, PII provides cover for the compensation payable to the client as well as legal costs in defending the claim. PII contributes to further strengthening the trust between parties involved.

At present, lawsuits against professionals is not uncommon and it is dramatically increasing. It has also become a growing problem as the law has become more concerned to those injured due to the professionals' mistakes (Hussin & Ismail 2016).

With a plethora of features and benefits, PII is becoming popular in the insurance sector. Here's a rundown to the key features of PII.

PII Proposals / Policy Forms

In case of an issuing a proposal form to Quantity Surveyors to cover their risks, Insurers agree to issue the similar proposal form issued for Engineers in Construction Industry. However, a proposal form specific to the Quantity Surveying profession has not been introduced by Insurers in Sri Lanka.

When a completed proposal form is forwarded to the Insurer, the Insurer may require additional information from the Proposer/Quantity Surveyor such as professional membership, financial capacity, and experience in the field of construction.

In Professional Indemnity Policies main exclusions applicable to the policy will be taken into consideration in the event of a claim which are libel or slander, dishonest/fraudulent/illegal and malicious acts of Insured's Directors/Partners, loss of money or securities by theft or misappropriation by Insured's employees, illegal act or breach of any legislation.

Attention should be paid to the inclusion/Alteration condition, as whilst developing techniques or products by a Manufacturer, entrance of a new Client to an Engineering firm with a higher amount of a contract work. There could be a change in the risk Insured under PI Policy to declare the increase in liability of Quantity Surveyors in the firm which the liability may or may not be accepted by the Insurer.

The liability of the Insurer will be up to the limit of indemnity selected by the Insured/Proposer. If a claim has to be disposed in excess of the limit of indemnity, the liability of the Insurer in respect of the costs and expenses etc., will be the proportion of such costs/expenses etc.



The limit of indemnity bears to the amount paid to dispose the claim. Maximum limit of Indemnity is at the discretion of the Proposer or as stipulated by legislation if applicable.

Premium Computation

In this class of insurance, particulars relating to the Proposer is requested in much greater detail to assess the competency of the Insured/Staff including full details of the Partners/Directors, their qualifications and experience, staff numbers, history of the firm, anticipated last two years gross fees or income, and full details of any dismissals or contemplated dismissal of Staff for neglect/omission or error.

Nevertheless, there is a dire need of introducing a reasonable premium value that can be paid by all the professionals in the Sri Lankan context. Further, when PII is taken for the Individual QS it should be more simplified.

Duration of the Policy

Once the PI policy is issued, it will continue to be in force until the expiry date, or project period and time shown in the policy. However, there are circumstances under which a policy may terminate before the normal expiry date. Examples are; by mutual consent of the policy, by the Insurers as stipulated in the cancellation condition, by a change in the identity or the destruction of the subject matter, by payment of a total loss claim by the Insurer where the Indemnity is limited to a stated amount, by order of the Court etc.

Is Professional Indemnity Insurance Compulsory?

In the construction industry in Sri Lanka, whether or not PII is taken solely depends on the client's requirement whereas in other countries certain professionals are legally obliged to have PII.

If a QS needs PII for a specific contract, it's likely that the client will have specified a minimum amount which is often the case in Sri Lanka.

Despite how large or small a company, without PII cover the company's financial position could be left vulnerable if a claim is brought against it. Therefore, adequate insurance in place will give peace of mind when working on project as a mistake in a project can change working dynamics overnight.

In conclusion, PII can effectively be used as a risk shifting method. Despite the knowledge on PII in the construction professionals in Sri Lanka, there is a lack of its use. There is a dire need for greater awareness on the concept and application of PII, emphasis on the construction industry.

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3rd Place

IQSSL Student Article Competition

Future Application of Digital Twin Concept



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Introduction

The construction industry is the lifeline of most economies in the world. Similarly, it is a major industry that utilises natural resources and is interconnected with other industries to support the global economic system. Construction is a highly labour-intensive industry that utilises limited technology even in the 21st century. Tailor-made construction output (uniqueness) and the limited research and development have become the key issue for the lack of technological development of the industry (Dou, et al., 2019). COVID 19 pandemic has affected the continuation and the development of the industry due to the implementation of new norms and travel restrictions. The COVID 19 pandemic has become a revelation for the development of the construction industry from a technological perspective.

The construction industry has been developed with the overview of delivering projects with higher efficiency. Therefore, financial feasibility has become a key aspect for the involvement of construction technology. In the modern world, several applications and developments have been affecting the construction sector to improve the quality of the service to the community. Meanwhile, the construction technological developments are addressing resource scarcity.

Digital Twin Concept

The digital twin is a model developed based on real-world data to create an innovative design for the future development of the construction (ARUP, 2019). The digital twin is a constructive model that has been developed to address the maintenance approach of real-world construction development. The concept of the digital twin has a diversified scope addressing the building and civil engineering construction sector. It was first initiated in 1936 and continued the process with the Apollo project at NASA (Rosen, et al., 2015). The development of the digital twin concept facilitates the construction team and the management team to evaluate the behaviour of the computerised model to predict the operational aspects of the construction project. It helps to address the future developments of the project via real-time monitoring.

According to Kaewunruen and Xu (2018), the Digital twin concept is known as an extension of BIM with the incorporation of software, sensors, and real-time data collection components. However, the digital

twin is a modern technological development that is differentiating from the BIM application with several other features. Furthermore, the digital twin concept is a combination of engineering, architectural and construction supply chain (Patterson & Ruh, 2019).

Applications of Digital Twin Concept

The digital twin concept is mainly applied in developed countries due to the excessive cost of the implementation and the maintenance process. The digital twin is commonly applied for aerospace vehicles, mechanical considerations, and thermal aspects. Friedrich Dallinger has elaborated that the digital twin concept is a combination of planning, material utilisation, productivity, reliability, and system intelligence to cater for the modern needs of the construction industry (Kareta, 2019). Internet of things, big data, artificial intelligence and software analytics have been incorporated in the digital twin to ensure the delivery of reliable results in the process. The use of the particular concept enhances cost management and minimises the excessive cost of the building maintenance process. Moreover, it avoids interruptive breakdowns of the buildings and their integrated systems while smoothening the process with the integration of past and present data.

Digital Twin Concept in Construction Industry

The digital twin has been applied in the modern modular construction sector to provide cradle to grave solutions to the construction process.

It is applied in the London railway system and the exhibit multi-storey building (28 and 29 storey apartment towers), which was constructed in Melbourne using sustainable timber with the incorporation of the digital twin to the modular construction process (Patterson & Ruh, 2019).

Despite, the economic challenges London railway system has applied the digital twin concept to increase the constructability of the future railway system with a higher positive impact of financial, economic, and environmental aspects. Nevertheless, lack of knowledge and experience has affected the development of the digital twin concept in the modern construction sector.

The global construction industry has started transforming from the BIM to the digital twin due to an increase in efficiency and the practicality of the system. Swanson (2020) elaborated that the digital twin "is not just replacing the people it is about enabling them to do more complex tasks faster and better". The application of the digital twin enables the futuristic planning of building and civil engineering projects. Improved resource management, identification of project risks, and effective maintainability are the key advantages of the digital twin concept. The digital twin concept is applicable to analyse the social and environmental impacts to the building or infrastructure during its lifecycle. In other words, the digital twin is a better version of BIM 7D to address the critical issues in the industry. Further, it supports the industry professionals to investigate and obtain innovative decisions to facilitate quality construction output.



Conclusion

The digital twin is the modification of the technology applied in the construction industry with a futuristic overview to address the modern construction issues. It applies to avoid repetition of the construction barriers and to make predictive solutions to the development process. The construction industry requires strong implementation and awareness of the digital twin concept. It has to be started with the differentiation of BIM and digital twin in terms of its application and usage. From the Sri Lankan perspective, it is the future of sustainable development adhering to the sustainable goals in the local construction sector. Mainly this modern technology is applicable for mixed development projects and for infrastructural development to address the public interest. In conclusion, this is the ideal technological implication of the construction sector that transforms the entire process with the incorporation of modern hardware and software-based technology.

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New Associate Members 2021



Ms. W.A.G.T.
Muthukumarana



Mr. S.
Parthiban



Ms. D.M.N.M.
Dissanayake



Mr. A.
Jayawardena



Mr. W.A.J.N.
Rupasinghe



Ms. R.M.S.
Dissanayake



Mr. K.M.C.
Suranga



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