

## Discourse Process and Discursive Practices in the Profession of Quantity Surveying in Sri Lanka

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**Abstract:** The discourse on profession of quantity surveying exhibits a multi-dimensional role in the construction industry. The defined vital role entails the significance of mounting the scope in contrary to the traditional role with stressing the contribution provided by quantity surveyors through the means of discourse process and associated power relations. Consequently, the present research aims at examining the discourse process and discursive practices allied in profession of quantity surveying in Sri Lanka. In the process, the study has adapted a qualitative research approach while proceeding on data collection through unstructured interviews focusing on 15 number of construction professionals at top- level management, bottom level management as well as quantity surveyors distinctly. The findings obtained by the profound content analysis concise a vast use of English language among quantity surveyors and top-level management and consequently the evaluation of discourse on profession of quantity surveying has discovered a considerable influence on the profession caused by use of English language as a verbal communication tool in being creating power relations in the hierarchy of the construction organizations in Sri Lanka. Hence, the research emphasizes the need of enhancing the scope of this profession in being a mediator of discourse with improving the proficiencies of English language and communication to address the defined gaps.

**Keywords:** Discourse process, Power relations, Quantity Surveying, Sri Lanka.

### Introduction

The construction sector is one of the most energetic and receptive fields in that stimulates the economic growth in a state (Giang, D.T. and Pheng, L.S, 2011). The historic advancement of the construction industry in Sri Lanka has conveyed political as well as economic changes during both pre and post economic liberalization periods (Weddikara and Devapriya,2015). Consequently, the

professions integrated in the industry in general have also affected. The roles of the professions involved in the construction industry, and of quantity surveyors in particular, are also addressing the changes (Ofori and Toor,

2009). Quantity Surveyor was known to offer reactive cost advice that includes cost planning, procurement advice, contract administration and settlement of contractual claims to the client, however, nowadays, the role of Quantity Surveyor has progressed to convert more proactive that has to provide improved value of services to meet customer's desires (Ashworth 2013).

The discourse on profession of quantity surveying exhibits the necessity of a wider scope in its profession in the modern era in contrary to the traditional role. The study conducted by Harun and Torrance in 2006 advocates that quantity surveyors should not contain themselves within the traditional boundaries of cost management. The findings further demonstrate that the quantity surveyors are required to advance their role in new niches, cultivate new knowledge and break into new zones in order to boost their competitiveness. The quantity surveyors are essential to transfer

from being 'thermometer' (reader of temperature) to being a thermostat' (controller of event) in the 21<sup>st</sup> century (Ajanlekoko, 2012). Consequently, the profession. The literature on quantity surveying skill and competence illustrates a multiplicity of perspectives (Dada, J.O, *et al.*, 2012).

In emphasizing the need of reforming, developing and implementing by the Quantity Surveyors, the Pacific Association of Quantity Surveyors (PAQS) has introduced eight key skills in the year of 2001, as they even comply with Sri Lankan context. Consequently, communication skill was a major among the interpreted number of skills with emphasizing the need in empowering discourse on profession of quantity surveying. The quantity surveying competencies lie in the financial and contractual control of the building project as well as the development of soft skills (Leveson, 1996). The research conducted by Hasbullah S., *et ; al*, on Soft Skills Competencies of Quantity Surveying professionals in 2014, emphasizes communication as one of the important prerequisites for quantity surveyors in order to utilize the best. The study infers that it is significant to have the abilities in communicating several languages at any scopes, presenting thoughts and information in written as well as verbally and practicing listening with responding. Hence, this study being one of the initial studies with regard to collaborative professional communication in field quantity surveying in Sri Lanka intends to investigate the discourse process and discursive practices among quantity surveying professionals who interact interlingually for strategic communication purposes namely for managing construction projects across multiple actors in a project that includes contractors, sub-contractors, clients and various professionals.

### **Problem Statement**

The discourse process and discursive practices in the profession of quantity surveying entails a multi-dimensional role with multiple actors involved. The

the discourse on optimism career suggests enhancing multiplicity perspectives into

construction organizations in Sri Lanka are structured in a hierarchical configuration in common which requires a series of communication events in different strata. A large amount of information generated at the top level of the organization will not reach its anticipated destination because each level within a hierarchy will act as a filter, preventing and distorting information flow as it passes down and up to the next levels (Smith *et al*, 1997). Hence, this study intends to examine the discourse process and discursive practices in the quantity surveying career in Sri Lankan context and its subsequent impact towards the profession.

### **Objectives**

1. To examine the nature of communication in construction organizations in Sri Lanka.
2. To identify the present discourse process & discursive practices in profession of quantity surveying in Sri Lanka.
3. To evaluate the pros and cons in the discourse process and its subsequent impact.
4. To forecast the learning experiences to enhance the discursive competence of the Quantity Surveying Career in Sri Lanka.

### **Significance of the Study**

The studies on discourse exposed by the researchers' long ages back have found that the discourse is an indication of social conversation. The discipline of discourse studies emphasizes that discursive social interaction can reveal language use and thought, and that real-life, naturally-occurring discourse as language use, communication and interaction in social context can provide insights about the manifestations, enactments and reproduction of such phenomena

as group relations, organizations, institutions, processes, routines and structures (van Dijk, 1997).

Although the previous studies were focused on the theories and concepts of discourse studies and profession of quantity surveying distinctly, no study has surveyed the impact of discourses of integration and communication in construction organizations and associated effects towards the profession of Quantity Surveying in Sri Lanka. Hence, the present study becomes significant as it emphasizes the impact of communication towards the profession of quantity surveying within the Sri Lankan perspective.

## Literature Review

### *Discourse*

The interpretation of McArthur in 1996 explicates that, etymologically, the term 'discourse' dates back to the 14<sup>th</sup> century where it has been formed by the Latin term '*discursus*' which means a '*conversation*'. Although the term 'discourse' is defined as 'a serious speech or piece of writing on a particular subject' in the Longman Dictionary of Contemporary English (2001), the identical term has diverse interpretations in being a social dialogue. Hence, it is considered that the term 'discourse' can be illuminated by the means of different themes. The findings of Carter in 1993 clarifies the term of 'discourse' in major two forms as a reference on topics or languages used in certain frameworks and as a state of written and spoken contexts. As these majors became criticized by several scholars as not well defined, Nuan in 1993 demonstrates that these majors are sometimes used interchangeably and, in many instances, treated differently. The larger units such as paragraphs, conversations and interviews all seem to fall under the rubric of 'discourse' since they are linguistic performances complete in themselves (Touria Drid, 2010).

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naturally-occurring discourse as language use, communication and interaction in social context can provide insights about the manifestations, enactments and reproduction of such phenomena as group relations, organizations, institutions, processes, routines and structures (van Dijk, 1997). In drawing considerations into a wider scope, the study conducted by James Paul in 1991, interprets social languages in term of a tool in addressing the role of language in discourse as "I will use the term "social languages" to talk about the role of language in discourses. But as I said, Discourses always involve more than language" with emphasizing the mean of discourse in a greater extend rather than being just a language.

A more general use of the word 'discourse' has been made to study the broader functional uses of language in social contexts, and the purpose is to come to understand how the language we use is based on the social environments in which we use that language. (Scollon and Scollon 2001).

The analysis by Norman Fairclough in 1989 provides a greater explanation on the perspective of discourse. Consequently, discourses are specified as social conditions of productions and social conditions of interpretation. The author has stressed major levels of social conditions as social situation, social institution and society as a whole. Hence, the following model illustrate the range of discourse in being texts, interactions and contexts. Accordingly, the current research points the discourse process in profession of quantity surveying with prioritizing the discourses that the quantity surveyors are associated with in being a part of the communication process within construction organizations in Sri Lanka.

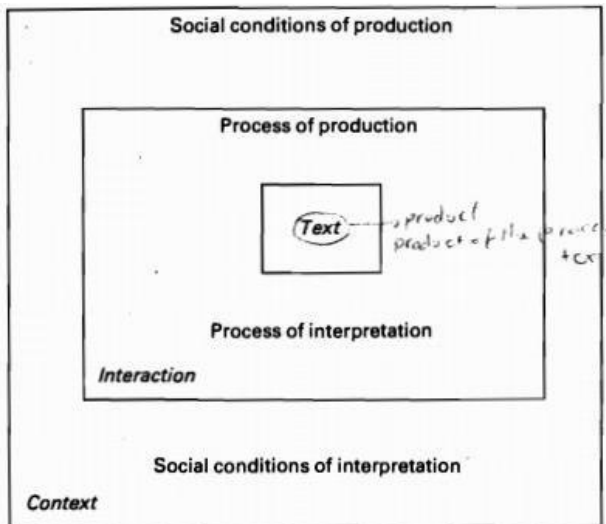


Fig.01: Discourse as text, interaction and content.

### **Work Place Discourse of Quantity Surveying**

In considering the discourse on mandatory key competencies of a quantity surveyor, numerous research studies have discovered the requirement of communication and the use of language as a necessity. The publication on competencies of quantity surveyors required for Assessment of Professional Competence by RICS (2009 and 2012) has evidently designated communication as a leading principle to consider specifically through the areas of construction technology, environmental services and contract administration. In addressing hybridization of communication in context of organizations, Sarangi and Roberts (1999) advocates the need of professionals to display at least three distinguishable but overlapping identities in the profession. The identities are defined by the authors as professional identity, institutional identity and interpersonal identity. The study conducted by Shafie, H., et al., (2014) revealed a specific gap in communication and interpersonal skills exhibited by the quantity surveyors in between the expected skills and the possessed skills by them. The study further emphasized the significance of adaption of communicational skills into the profession of quantity surveying.

### **Communication and Language**

“The conception of language we need for critical language study is discourse, language as social practice determined by social structures” (Norman Fairclough,

1989). Language is a foremost means of communication, and communication almost always take place within some sort of social context by where the effective communication requires an understanding and recognition of the connections between a language and the people who use it (Amberg and Vause, 2009). Ineffective communication has been identified as a problem that can lead to conflict and subsequent litigation (Emmitt and Gorse, 2003). Quantity surveyors in being in the middle point of organizational hierarchy with relating both upper and bottom levels, and as construction professionals are influenced by the custom of language by the means of communication. Interaction between construction professionals will, to a greater or lesser extent, be independent on the language and codes used and how they are received and interpreted (Emmitt and Gorse, 2003). Hence, the assessment on language used in construction organizations can be considered as a critical factor, in evaluating the impact of communication towards the success of the profession of quantity surveying.

### **Feldberg’s model (1975)**

The Feldberg’s model (1975) emphasizes communication in the means of a process. Accordingly, it is considered that the presence of a sender and receiver, as well as the function of a message and a feedback are necessary variables to assess effective communication until the communication terminate. The model further explains the main issues that relates the sender and receiver as followings.

- Needs
- Perceptions
- Goals
- Background

- External pressures
- Expectations and reactions
- Feedback

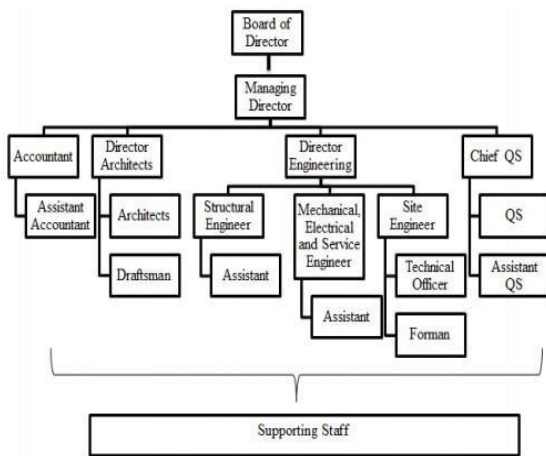


Fig.02: Feldberg's model (1975)

In assessing the requirement of communication that complies with discourse on profession of quantity surveying, Higgin and Jesson, in 1965 have stressed the necessity of communication among the building team in the construction projects in order to develop the custom of interaction. Similarly, the study directed by Lenard and Eckersley (1997) underscored the requirement of having open communications at all levels in the construction organizations. Hence it demonstrates that the quantity surveyors as construction professionals are liable in improving communication the construction process. The efficiency and effectiveness of the construction process strongly depend on the quality of communication (Hoezen *et al*; 2006).

The study directed by Mackinder and Marvin in 1982 revealed a significant fact describing that most of the conflicts in organizations are associated with ineffective communication. Accordingly, the study has found a clear difference between formal and informal communication directions which are used in the organizations with causing conflicts. This study has later been the base to the findings by Hill in 1995 which emphasizing that the divorce of design and production could

also be a circumstance of the revealed gap. Similarly it was found that the Opposing interests could lead to hidden agendas with often leading to restricted communications by Brown in 2001. Therefore, the current research has acknowledged the significance of examining the use of communication in construction organizations to determine the perspective of discourse process & practices in the profession of quantity surveying.

### Power Relations

The management structure of construction organizations in Sri Lanka exhibits adopting hierarchy of authority with illustrating the state of the quantity surveyors in the middle level in the organizational hierarchy in reference to the the organizational structures observed as follows.

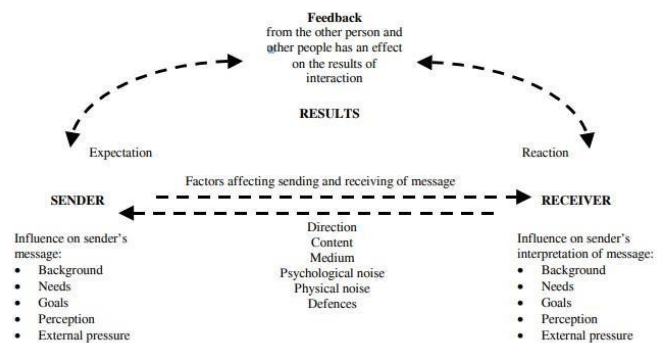


Fig.03: Hierarchy of Construction Organizations in Sri Lanka

The necessity of effective communication among these levels in the organizational hierarchies has been cautioned by the findings of numerous research studies. Communication is a process of meaningful interactions by which meanings are perceived and understandings are reached among human beings (Monajib Mochachari, 2013). The study conducted by Emmitt and Gorse in 2003 illustrated communication as a central to the organization, with the structure, extensiveness and scope of the organization. Communication is seen as the life blood of organizational management (Ewing in Puth, 1994). The quantity surveyors play a significant role in coordinating the upper and the bottom levels of the organizations in being in the middle level of the hierarchy.

Similarly, the findings of the research conducted by Ruuska in 1996 illustrates that while information is flowed from top level to lower level of the organizational hierarchy, data is flowed conversely by lower level to top level as the figure no.02 emphasizes. Hence quantity surveyors are in the midpoint of where the information and data are trading. The employees at all the levels being at top position senior level, middle level, junior level or the lower level staff all has to communicate properly and has to take communication seriously and should have to communicate by following the hierarchy and preferred channels of the organizations (Luthra and Singh, 2015).

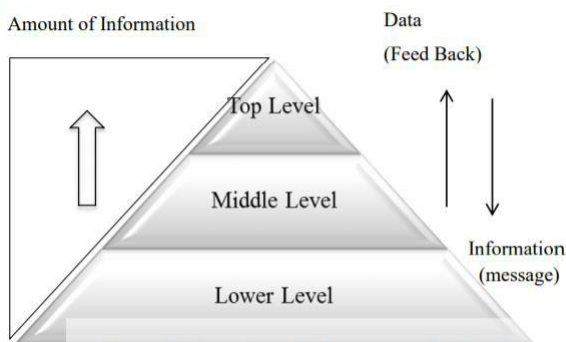


Fig.04 : Process of Communication in Hierarchy

The book of 'Language and Power' published by the great researcher in linguistic, Norman Fairclough (1989) provides a contextual mean on class and power. The author has sharpened that discourse has effects upon social structures, as well as being determined by them, and so contributes to social continuity and social change. In his perspective, the power relations are always relations of struggles whereby social groupings with different interests engage with one another. Subsequently, the explanations reflect the impact of power and power relations on certain social layers by the use of language. Language is both a site of and a stake in class struggle, and those who exercise power through language must constantly be involved in struggle with others to defend or lose their position (Fairclough, 1989). Therefore, this present study aims at examining power relations through the

perspective of profession of quantity surveying in the context of Sri Lanka.

### Research Gap

The preceding studies have shown a prudent scope in the areas of discourse analysis and subsequently numerous researches have been subjected to the application of discourse and discourse analysis in the areas of philosophy, linguistic and so on. Correspondingly, the past years have shown a greater interest in analyzing discourse process and communication practices in the professional fields such as healthcare, law, offices of land surveying where communication events play a key role in executing the professional duties successfully. The profession of quantity surveying is one such key profession in the field of engineering sciences where the communication plays a pivotal role in determining the successful outcome of their professional roles. No significant study has been done in Sri Lanka in this regard. This study thus sets out to fill this knowledge gap by examining the impact of discourse process and practices, communication events among construction professional's profession of quantity surveying in Sri Lanka.

### Research Methodology

Research in modest expressions indicates detection of knowledge and a scientific and systematic exploration for proof on a detailed theme or subject, hence research methodology is a systematic approach that a research adopts to achieve the exploration aims (Creswell, 2009). The present study has adopted a qualitative research approach in demonstrating benchmarks of the theme. The population implies to the population which a researcher intends to generalize the study findings (Kombo & Tromp,

2006) while stratified sampling method measures the overall population parameters with greater precision and ensures an extraction of a representative sample from a relatively homogenous population (Kothari, 2004).

Consequently, the study has exploited the professionals of construction industry in Sri Lanka into the cluster of population while utilizing a sample of 15 number of participants by the top-level management, quantity surveyors and bottom level management in both contractor and consultant construction firms. The data collection process of the study has proceeded through unstructured interviews in being derived by the accessible literature models and theories prescribed specifically by Hoezen, M.E.L et al (2006) and Ofori, G., (2009). The analysis of the data has followed in subject to the mode of a content analysis.

**Analysis**

***The nature of communication within construction organizations in Sri Lanka***

The present nature of communication in the construction organizations in Sri Lanka is surveyed with the use of information congregated by interviewing professionals ranked at all hierarchical levels. The nature of the discourse process in the certain organizations is found following two-way communication process throughout the levels of management in overall.

In considering the discursive practices exhibited alone over each level, it is revealed that both verbal and non- verbal practices are major modes in between quantity surveyors and the top level of the management. The assessment of language of which each professional practiced at work displayed a greater degree of using *English* in dealing with non-verbal discursive approaches as well as in majority of verbal manners. A few numbers of professionals in the top level of hierarchy displayed use of *Sinhala* in interacting verbally with quantity surveyors, who are in the middle level in structure.

The discursive practice exhibited among middle and bottom levels of the hierarchy through the flow of information indicated a major use of verbal interactions than non-verbal modes. Moreover, the language of which specifically, majority of the

quantity surveyors used to interact with bottom level is found as *Sinhala* while a few practiced *English* language with senior professionals who are in the bottom level of the organization.

In drawing the consideration on the nature of flowing feedbacks within these structures, the present study revealed a progressive flow of feedback from bottom to the middle level. The explanations given by the middle level correspondents pointed that the relationship of which they display with Technical Officers, Site Supervisors and other professionals in the bottom level enabled obtaining feedbacks daily. For an example, some of the construction organizations are having daily team meetings. The evaluation on the use of language in the flow of feedback from bottom to middle levels, has discovered practicing *Sinhala* language as major by the bottom level management to convey feedbacks.

*Table 01: Discursive Practices exhibited in Construction Organizations in Sri Lanka*

Flow	Hierarchy Levels	Discursive Practices	
		Verbal	Non-Verbal
Flow of Information	Top level to Middle level	<ul style="list-style-type: none"> <li>• By word</li> <li>• Telephone calls</li> <li>• Meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Emails</li> <li>• Letters</li> <li>• Drawings, Specifications, and other official documents.</li> </ul>
	Middle level to Bottom level	<ul style="list-style-type: none"> <li>• By word</li> <li>• Telephone calls</li> <li>• Team Meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Notices</li> <li>• Drawings, Specifications, and other official documents.</li> </ul>
Flow of Feedback	Bottom Level to Middle level	<ul style="list-style-type: none"> <li>• By word</li> <li>• Phone calls</li> <li>• Team meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Drawings, Specifications, and other official documents.</li> </ul>
	Middle level to Top level	<ul style="list-style-type: none"> <li>• Reports</li> <li>• Board meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Reports</li> <li>• Board meetings</li> </ul>

In assessing the next phase in the flow of feedback in these construction organizations, the current study has found the quantity surveyors in being in the middle phase of the hierarchy, provide

feedbacks to the top level by non- verbal discursive modes mostly, with presenting a less priority in practicing verbal interactions. Both non-verbal and verbal modes of discourse are found mostly to be practiced in the language of *English* and some of the explanations given by the correspondents in the midlevel of the organizations indicated that although *English* is used wisely, the use of *Sinhala* in verbally varies based on the nature of the professionals who are in the top level management

### ***Analysis on impact of present discourse process & discursive practices in profession of quantity surveying in Sri Lanka***

The findings on the nature of the discourse process revealed in Sri Lankan construction sector provides the base in analyzing the impact of communication towards the discourse on profession of quantity surveying. Consequently, the assessment on degree on the flow of feedback through the key levels of the organizations specified a drop between the flow of feedback from bottom to middle level and middle to top level of the hierarchies. The study revealed that the feedback given by the bottom level to the middle level management of the organizations are much advanced and progressive than the flow of feedback from middle level to the top level. Although the causes for such a gap indicates several facts such as nature of the relationship among different hierarchical phases, leadership style, personal competencies and external influences; the present study has verified the major cause as language proficiency. The correspondent quantity surveyors further indicated the issues and limitations that they had while verbally communicating in the language of English as below.

“We are having issues in dealing in English with our managers and especially in responding to them.”

The Feldberg’s model in 1975 defines the necessity of feedback within the communication process for any organization. Thus, the appraisal stressed on flow of feedback by the current research underscores a defined gap between above and

below the middle level of the hierarchy due to the language proficiency. Hence the study has further analyzed the nature of the language proficiency of all the construction professionals to recognize a common language or a system that would overcome the defined gap. Accordingly, the gradation on language fluency of the professionals examined by the present study explores Sinhala as the language of which majority of professionals in each level are fluent in than English, Tamil and any other language.

In considering the fact of practicing English while exhibiting Sinhala as a common fluent language that majority of the professionals could use specifically for verbal interaction, the research has discovered a tendency of quantity surveyors being indirectly forced to interact in English with the top management of the hierarchy. The following responses obtained by several quantity surveyors, indicate the means as follows.

“We do use English in writing reports, letters and more as the standards that we follow requires to be unique all over, and the verbal communication with senior professionals such as project managers indirectly direct us to use English as a language”.

“Quantity surveyors should be fluent in English not only in documentation, but also in verbal communication to survive in the industry as lack of English competencies will cause conflicts by misunderstanding and more on”.

The findings of interviewing professionals from the top- level management clearly demonstrates that they are more likely to follow English as an administrative tool and a way of controlling subordinates in an effective manner in major. The statement below indicates one of a response obtained by a project manager, emphasizing the need of language as a part of the culture and as a tool of controlling the hierarchy.

“We assess the level of English fluency in recruiting Engineers, Quantity Surveyors and other subordinates as most of the documentations are



formed in English. Verbal communication is also required to perform by them in the same language, as we have the culture of using it in board meetings and in practice. In other hand, it is a way of tool that control them from being much friendly to maintain the professional status”.

### **Evaluation of pros and cons in the discourse process and its subsequent impact**

In addressing the stated gap in the flow of feedback as a necessary fact for an effective communication model, the present research has evaluated the success of having such a custom communication process in practice in Sri Lankan context. Although most of the top managers believe use of *English* language as an effective tool for administration, the middle level management demonstrates a tendency in being resisted to practice *English* as a mode of verbal communication with emphasizing poor skills in it. The study has also stressed the consequences of this gap in resulting being a limitation on discourse. The following statements illustrate the difficulties that quantity surveyors face in verbally communicating with seniors.

“Communicating in English sometimes lead misunderstandings among what we intend to say versus what the managers get due to our poor language proficiency and later of course it makes conflicts.” “Sometimes responding back to the boss is not easy because then I will have to argue or explain in English of which I am not much good at”.

Hence, the discourse processes in the profession of quantity surveyors are found to be influenced by the language of English not just as a communication tool, but also as a mode of power relation in the construction organizations in Sri Lanka.

☐ To forecast the learning experiences to enhance the discursive competence of the Quantity Surveying Career in Sri Lanka

The facts discovered by the present study summaries the consequences on use of English as a language. Accordingly, the stressed gap and power

relations are subjected on the whole structure of the construction organizations. Based on the dispersion of the subjected matters not specifically on profession of quantity surveying but also in the whole society, the study stresses the need of a social change in deforming the gap and power relations to overcome. In focusing on the profession of quantity surveying specifically, the quantity surveyors are found playing a mediating role in dealing with various degrees of language proficiencies in both top and bottom phases of organizations. Hence, this research emphasizes in extending the scope of the role of profession of quantity surveying to empower the future career. Consequently, the enhancement of English language proficiency and communication is significant. Apparently, the study suggests in enlightening the discursive materials and practices with integrating technology to a wider range in overcoming the described gaps.

### **Conclusion**

The assessment on nature of the communication within construction organizations indicates the application of discourse process and discursive practices in each level through both flows of information and feedbacks. The findings emphasizes that quantity surveyors in being at the middle level of the organizational hierarchy is fronting a condition where they have to intermediate the top level and bottom level respectively in English and Sinhala mostly

language proficiency. Moreover, the study has found the use of language by the top levels of hierarchy as a tool of controlling administrative functions where it is emerging as a power relation in the structure of the construction organizations. The evaluation of discourse on profession of quantity surveying has revealed a considerable influence on the profession caused by English language as a verbal communication tool in being creating power relations in the hierarchy of the construction organizations in Sri Lanka.

In reference to the described facts in the study, it is concluded that the quantity surveyors are required to enhance the scope of their profession in being a mediator of discourse by improving the proficiencies of English language and in communication to address the defined gaps.

### Limitations And Further Study Directions

The study has followed assessing the impact of English

language as a major, thus the use of other languages can be evaluated in further. The research has also focused on the perspective of quantity surveying profession specifically among the other professions in the middle level of the hierarchy. Hence, a study can be directed in focusing on the other construction professions.

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## Identification of the Challenges Imposed by COVID-19 Pandemic on Sri Lankan Construction Projects

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**Abstract:** Coronavirus (COVID-19) is a global

pandemic which spreading all over the world which ruining lives of hundreds of people & effect negatively on business matters over the world. This can trigger different kinds of challenges to all the industries while affecting world economy. Thus this paper aims to identify the challenges imposed by COVID-19 pandemic on Sri Lankan construction projects. This research was assessed through detailed questionnaire survey and interviews. The number of distributed questionnaires were 50 and the response rate was 82% which added a positive mark on the research study. Frequency index method & content analysis were used to analyse the collected data. The findings highlighted the main challenges among construction industry due to coronavirus as delay of completion, issues with supply chain management & change the public perception on site. It is recommended to spend the period of working from home fruitfully & to start the site works stage wise with the involvement of less number of labours at the beginning stage. While this research focused on the challenges, further study can be done to investigate about the renaissance & the industry predictions of the construction sector for post COVID-19 world.

**Keywords:** Coronavirus (COVID-19), Pandemic, Sri Lanka

### Introduction

Unforeseeable events always occurs risk to any kind of business (Okema, 2000). Currently the

whole world is standstill due to an unpredicted harmful effect which is the spreading of a deadly coronavirus also called as COVID-19 which is a severe health crisis (Chopra and Nagar, 2020). This is an unpredicted situation which impact on every families & business matters around the world.

The daily events of all over the world stopped, airports closed, movements restricted, new regulations has been passed and even some countries are locked-down by imposing curfews for months and a massive quarantine happens across the world. Sri Lanka also effected with this situation and restricted people to stay home & maintain social distance to minimize the exposure & to stop spreading of the virus & advised to work from home.

The enacted new laws and regulations by government will be directly impact on the construction industry because it is more contract with & contrast to the environment & engaged with lot of stakeholders at a once in projects. The main objective of the research study is to identify the challenges imposed by COVID-19 pandemic on the Sri Lankan construction projects, which could be occurred and make suggestions to take the industry to a better place with new phase through a limited forecast on the scenario in Sri Lanka.

By finding the first case from the Wuhan city in China on December 2019, by now (May,2019) the coronavirus almost affect to the whole world

covered nearly 172 nations (Chopra and Nagar, 2020) and the World Health Organization (WHO) marked this situation as a global pandemic and took emergency protocols to manage the situation.

Construction projects need typically everyone at a construction site to be involved with work either to perform a several task, or to supervise & check the work done according to the specifications (Okema, 2000). With the new norm of social distancing the WHO advised people to keep at least 1m distance from each. This will be a difficult task to adopt at once, but for the safety of everyone we have to follow up with the government rules. The government persuade people to work from home, forced to shut down the construction sites and advised only travel if it's essential. Construction projects need at site work & this will be a new challenge for the parties in construction industry because they weren't prepared for this kind of situations (Laing, 2020). Practical reality is to shut down the sites because materials can't be delivered to sites, far away staff members couldn't come for the work places and also issues with maintaining social distance among labours.

Any activities give hands to spread the COVID-19, it should be stop because always safety is the first aspect to consider. Now the investment should be surviving than winning due to the unpredictable bad outcomes which could be happen near future. Hamid (2020) stated that both private & public sectors are messed up due to this public health crisis.

The COVID-19 pandemic is a heavy blow to the construction industry. The situation is up to now under controlled but not fully evacuated. How big this going to be?, how long will this last?, and what are the impacts?, are yet to be discovered until an antidote is found (Chopra and Nagar, 2020).

Construction industry is one of the engine of national economy in Sri Lankan context which has contributed approximately 6.8% to the GDP

(Annual Report 2018, Central Bank of Sri Lanka). The heavy blow of this issue will be effect on the construction and it will lead to bad impacts on the global economy (Chopra and Nagar, 2020), and ultimately coronavirus will not only fatal to human lives but also destroy the countries' economy. It is highlighted the importance of preparation to a next wave of the coronavirus. This paper will be beneficial to the parties in construction industry to understand the upcoming key challenges & make suggestions for the betterment of the industry.

### **Literature Review**

An epidemic is an event in which a disease is actively spreading. Generally, it's an outbreak that has grown out of control but is often within one country or location. A pandemic is on a far greater geographic scale that affects a much large number of people (Maital & Barzani, 2020). The Coronavirus (Covid-19) was marked as a global pandemic by the WHO has not only infect on the human life but also effected the global economy which having a potential of destroy the livelihoods, industries, businesses and the entire economy in a larger scale (Laing, 2020). The particular disease evolved like a pandemic with the extensive spread within the number of nations all over the world (Hamid and Huam, 2020).

The first COVID-19 case in Sri Lanka occurred 10th of March 2020 and thereafter the other infected people slowly exposed but no immediate rises. By 25th of March, the total number of cases crossed the 100 & government started to get strong protocols to mediate & control the situation. As a developing country at the beginning stage the testing facilities were limited. With the improvement of the number of tests over the country the escalation of 300 cases discovered within 4-5 days. According to Ministry of Health, Sri Lanka confirmed 847 cases & 09 deaths have been reported till 10th of May 2020.

The construction industry plays an important role in the formation of the country's economy. The blow of COVID-19 pandemic will definitely hit the industries & damage the economic state (Chopra and Nagar, 2020). The experience of this kind of a situation is new to the globe and it will be the biggest challenge the world have to face the most. Nagar (2020) stated that, the quantum of the impact will depend on the time period of the lockdown & the time takes the economy to get back in the line. Narrowly it describes the time & cost which are comes under the main pillars of the construction industry & this emphasize the key issue towards construction sector in long term & could change the shape of the industry (Laing, 2020).

The delay of projects will be a common phenomenal due to this COVID-19 pandemic with the strict behaviour of government. The curfew imposed all over the country & advised people to stay home & make social distance. The less movement of workers engaged in construction activities, and non- availability of inputs during lockdown will also result in delay of projects (Chopra and Nagar, 2020). Work from home concept was adopted to those who are productive at working off-site and the company heads had the power to get the most essential staff members to the organizations, but with the quarantine process, discourage them to travel and lead day to day work processes a mess.

The labours have to be compensated with additional wages for the unexpected situation. Some companies have to ensure their staff safety, giving adequate food, water and sanitary supplies which will indeed add to the extra cost of the project as there is complete ban on the construction activities (Chopra and Nagar, 2020). He further emphasized the issue with the supply chain. Hamid (2020) confirmed the statement, as the lockdown has obstructed the import & export facilities of materials will negatively affect in long-term on construction industry. The steel products, technical construction equipments,

electronic equipments will get affected by this condition and the companies will have to pay a higher price to acquire these products in future & delay the time.

This is a global pandemic which is not only effect to Sri Lanka. Both developed & developing countries are seeking to cope with the pandemic & face all the barriers with the limited resource capitals available (Chohan, 2020). The clients of every projects do have to understand about the situation and have to face for the consequences because neither party is responsible for the issues arising along with this COVID-19 pandemic. Davis (2020) stated that in construction everything finally comes to time & money. By considering that fact it's marked the dangerous of how unpredictable the virus will be on the construction industry. The paper will narrow down some of the key challenges & make recommendations how to overcome those based on the professional views.

### **Research Methodology**

The main objective of the research is to identify the key challenges cause to the construction industry due to the coronavirus pandemic. To evaluate the challenges a large range of community which attached to the construction industry in Sri Lanka was targeted. The research was completely evaluated through questionnaire survey and online interviews with the concerned authorities. This was a combination of both qualitative (interviews) and quantitative (a predominant way via questionnaire survey) analysis to confirm & make concrete recommendations based on the views of different parties by several methods.

### **Data Collection Methods**

A web based detailed questionnaire (Google forms) was circulated among professional groups in construction industry, Sri Lanka sent through e-mails to the construction firms. Questionnaires were distributed among professionals in order to

obtain suitable responses to the questions & different viewpoints were ranked accordingly to the “Likert Scale” (Likert, 1932). A total number of questionnaires distributed was 50 (selected by stratified random sampling) & the response rate was 82% including from 05 Project Managers (PM), 15 Quantity Surveyors (QS), 10 Engineers (Eng), 10 Clients (C) and 10 Contractors (CR).

Semi-structured interviews provide the freedom to discuss about numerous areas widely (Naoum, 1998, p.58). A purposive sample was selected for the semi-structured interviews since the objective is to select the partakers who have better knowledge & industry experience in the area of research study. Online interviews were done due to the current situation based on COVID-19 pandemic by maintaining the main norm of stay home & making of social distance because of the curfew & movement barriers around the country. The professionals which covered through the interviews were Quantity Surveyors, Clients, Engineers, Contractors & Project Managers.

**Data Analysis Methods**

Data analysis was done with the use of Frequency Index (FI) analysis (data gathered through questionnaire survey) which express the frequency of the factors which challenge the Sri Lankan construction industry (Le-Hoai, et al., 2008), and the content analysis was done to analyse the data which gathered through the interviews.

$$Frequency\ Index\ (FI) = \frac{\sum_{i=1}^5 ai \times fi}{H \times N} \quad (Eq: 1)$$

Where:

*i* = Score of the factor ranging from “Least Effect =1” to “Mostly Effect =5”

*ai* = Weight of the response for the *i*th response

*fi* = The frequency of the *i*th response from all respondents

*H* = Highest ranking available, which is 5 in this survey

*N* = Total number of respondents who have answered the question

Presentation was in the forms of graphs and tables. A coding system was used to identify the factors separately for the easiness of understanding.

**Data Analysis**

Construction activity is a complex work item which needs the hand of different parties who specialized in different areas of profession. So it is essential to cover the target population and discuss experience based on their trades.

**A. Background Findings**

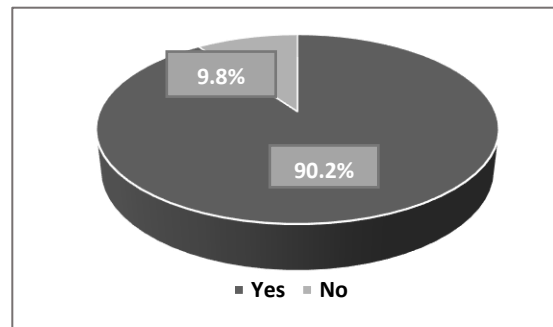


Figure 1. Respondent based on profession

The general information of respondents including their profession and experience in the industry were assessed because based on the perspective of different people the answers to the questions may vary due to their thinking capacity and knowledge. The degree of responses are discussed below.



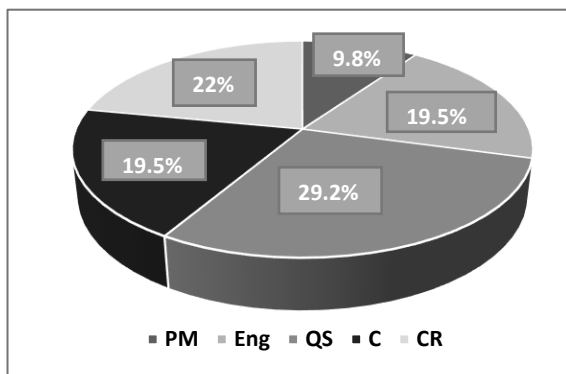


Figure 2. Respond on construction projects stopped due to

Then targeted to find out whether the construction sites which these professionals was working stopped due to this situation. More than 90% of respondents were stated that there sites were shut down because still the curfew has imposed all over the country which highlighted it as a serious problem to the construction industry and the need of identifying the upcoming challenges along with the pandemic & get the necessary solutions.

#### COVID - 19

The COVID-19 is an unforeseen situation. Then target to find out whether the parties have experienced similar kind of situations previously, because good decision making on this type of challenges were purely based on the proper experiences. The majority of the respondents with 75.6% weren't face this kind of similar scenarios at their time period of working which will be a challenge when decision making. Then questioned whether they think that still construction sites can be reopened by following the health guidelines enacted by the government. The majority of them said "No", with the

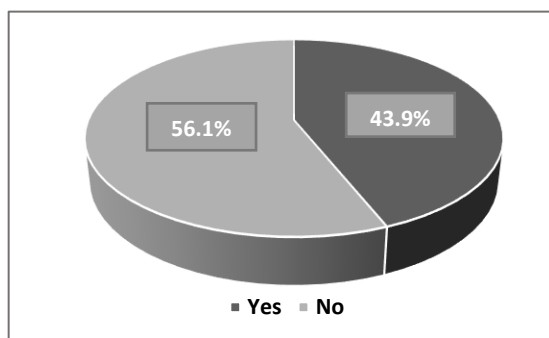


Figure 3. Respond on construction projects can be re-opened by following health guidelines

percentage of 56.1% because not having proper experience will lead opening sites to a challenge and the panic due to the deadly virus.

Though the majority was afraid according to the Fig. 3, 43.9% were said that opening sites with necessary precautions are essential because we can't stay lockdown for the rest of the whole year. Practical reality is face to the challenge by adopting proper solutions.

#### B. Rank the Key Challenges

According to the research there are major 15 challenges which categorized by considering the impact of COVID-19 pandemic on Sri Lankan construction industry. The challenges are identified from the literature survey and mark 15 factors out of them to rank according to the frequency of its impact. The frequency index was computed based on the degree of agreement of the respondents. The scores gained by the respondents in the questionnaire were summed up for each factor. The factors identified based on a coding system for the easy of identification and rank as tabulated below.

Table 1. Ranked challenges causes due to COVID-19 on the construction industry according to the frequency index analysis

Code	Challenge	FI	rank
CH04	Delay of completion of the project	0.932	1
CH01	Damage the Supply Chain with shortage & delay materials	0.815	2
CH05	Change the public perception on site & less confident and laziness among labours	0.707	3
CH14	Global uncertainty, market condition & economic challenge	0.693	4
CH10	Temporary suspension & termination of contracts	0.683	5
CH15	Legal issues & lack of expertise professionals	0.668	6
CH03	Reduce the productivity & production lines standstill	0.659	7

CH02	Workforce problems with shortage of labours	0.654	8
CH11	Feasibility of adopting to new situation & continue site work	0.644	9
CH12	Issues with own organization & co-operate with other stakeholders	0.620	10
CH07	Poor decision making due to not having enough previous experience on similar scenario	0.610	11
CH06	Future funding difficulties	0.551	12
CH13	Demand for the types of projects & fewer clients	0.546	13
CH08	Adoption to mobile works	0.522	14
CH09	Local government shutdowns affect on-site & off-site material stores	0.522	14

According to Table 1, the top rank of the challenge was the delay of project completion (CH04). It's logical to anticipate because of the absenteeism. Many projects are time sensitive because contractors have various projects lined up through the year. Davis (2020) said that if pandemics become a recurring phenomenon, we can anticipate significant population shifts away from dense urban areas which lead shortage of staff along with reducing the working hours (CH02) and get time to recruit new people. An interviewee said that, *"Although COVID-19 is unforeseeable, contractors still be contractually responsible for delays & cost overruns"*. The longer completion will be the hardest hit on the industry which aren't go away anytime soon.

The next mostly impacted challenge which rank on 2nd was damaging the supply chain of materials (CH01). The COVID-19 would affect the critical path of the project & obviously paralysed the construction activities. Chohan (2020) also confirmed this as a serious challenge as this will be negatively impact on the material delivery & will have a shortage of material around the world. An interviewee said that, *"Supply chain will affect long after the coronavirus neutralized"*. According

to the Table 02, the material which on & off site much (CH09) not be mostly effected as it is the least challenge which ranked among others.

The next most challenge will be start up works at site as usual due to the public perception & less confident among labours (CH05). This can be occur due to the lack of Personal Protective Equipments (PPE) at sites and health & safety problems at working places. The mental conditions with new situation make people more angry & anxious and get the work done out of them indeed will be a challenge. Feasibility of adopting to the new situation at site (CH11) will also be a challenge with new health guidelines.

The next challenge is the economic state of the country (CH14) which also confirmed by Chopra and Nagar (2020) as risk of regression will be elevated without arguments. This will effect on construction projects with future funding (CH06) which also ranked as the 12th challenge. Temporary suspension & termination of contracts (CH10) is the 5th most rank which likely to occur due to reduction of the number of workers. An interviewee said that, *"This will negatively impact on construction cost & time of completion because recruiting subcontractors add additional cost & time. On the other hand, the lack of specialist contractors for separate works will damage the quality of the product"*.

The next challenge ranked as, Legal issues & lack of expertise professionals (CH15) to consult on these kind of situations. An interviewee stated some of the fields which legal disputes could occur as claims for Extention of Time (EOT) & additional cost, suspention and termination of contracts. When external circumstance create pressure on one, it will effect on all (Lewis, 1988). An interviewee highlighted not having enough experience will lead for poor decision making (CH07). Construction work always go along with contractual provisions. To get a better advice on the situation & to reduce arising of disputes, we have to consult professionals with experience,

which all most lack in the Sri Lankan construction industry.

Issues with own organization & co-operate with other stakeholders (CH12) ranked as the 10th challenge different from the findings of Chopra and Nagar (2020). They highlighted dealing with contractors regarding payment process as the biggest challenge. An interviewee said that, *“Construction always have issues with longest waiting lists for payments. With the economic unstability, this will become a mess and the COVID-19 disaster will be a recipe for this mess”*. As tabulated above, demand for the types of projects & fewer clients (CH13) which ranked as a less challenge based on analysed data is contrast with the findings of Hamid and Huam (2020). Their study revealed that clients will be more focused on the healthcare construction, healthcare related modifications on buildings, warehouses, educational & public buildings. Construction of apartments, social housing, hotels, entertainment centres & infrastructures which having the higher demand now, will be the least with time and it will be a great challenge to the industry.

The factors were rank based on the responds of different parties in the construction industry according to their knowledge on COVID-19 relates with construction. Based on results it was revealed that the coronavirus pandemic will be a deadly challenge on construction sector & need to get actions to limit the arising of issues.

### Conclusion

The COVID-19 global pandemic may well become the most crucial economic and social failure event in decades. It is continue to impact the construction sector in challenging ways (Laing, 2020). The facing of the challenges cause due to the COVID-19 pandemic will change the construction industry to a modern face with new strategies (Chopra and Nagar, 2020). Social distance will be the new norm by doing less group activities with more clearly defined objectives. This situation will keep labour under controlled

environment & reduce the amount of time in the field by adopting to mobile works with new technology & advanced interfaces. This will reduce the more of office work & increase the capability of working from home. But this also made labours & staff lazy, lethargic & stressed in long-term.

The virus put a spotlight on the importance on labours health & safety and the construction sites will be more clean & safe. With the coronavirus outbreak, the industry could focused on making buildings healthier by improving indoor air quality as well. An interviewee said that, *“Now the all stakeholders will much consider on the contract document provisions on risk management strategies will turn construction in to a new trend”*. The Supply chain management will be recalibrate & enhanced the adoption of off-site construction methods. If we manage the situation properly we can get the maximum opportunity out of this COVID-19 threat confirming the statement that, *“Every dark cloud has a silver line”*.

### Recommendations

Construction work always go along with contracts and the contractual matters have to be discussed based on the event. The COVID-19 pandemic is an unforeseen event to the industry which more stakeholders doesn't have a better experience & would make conflicts on contractual provisions (Laing, 2020). In a construction project to limit the risk that a future event prevent which performing the contract by either parties include under a clause *“Force Majeure”* (Lewis, 1988). Cary Wright, Construction Lawyer (2003) said that the *force majeure* clause operates as a method of risk allocation. He mentioned that a *force majeure* event must have been unforeseeable & its occurrence must be beyond the control of the concerned parties.

The majority of the interview parties consider this event under *force majeure* because no one is ready for this kind of situation. An interviewee

said that, *“Though the force majeure clause have no specific terms on viruses, it can be considered as an act of God. This is not an epidemic, it’s a global pandemic. The ability of non-performance of the contract can be excused because neither party is responsible”*. Another interviewee said that this will depend on the contract clauses of the projects & need to be prove with solid evidences that sole cause of damage to the construction project work is COVID-19.

Based on the data analysis the followings were recommended based on two categories to win the challenges of COVID-19 pandemic.

#### A. Recommendations for the Period of “Work From Home”

Still the situation is continuing & people forced to work from home. Though this is not practical to the construction industry there were some works suggested which can be fruitful in the period of work from home by the professionals.

List out the pre-tasks by understanding the priorities and re-schedule the project planning

Online meeting can be conducted & discuss about the impacts of the situation on the construction process of projects in long-term

Reference of drawing & finding loopholes

Review the contract document to understand the contractual rights and obligations that arise in an unforeseen events

Managing accounts and change orders

Preparation of tender BOQ (Bill of Quantities) compilation

Arrange the IPA (Interim Application Payments) which had piled up due to busy schedules

Consult a professional insurance counsellor on the legal base (to get legal advice) & about contractual matters based on the situation

Make positive attitude behalf of the company & give all the co-operation

Co-ordinate with the subcontractors & discuss about the updated schedules to avoid arising of disputes in future

#### B. Recommendations for the Sites to be Re-Opened

The COVID-19 pandemic will take time to heal. It might take 2-3 years based on the character of the virus. Until then the country can’t be kept locked down. We have to face this challenge by understanding the situation well and follow up the safety precautions as advised by the government. The followings were suggested to follow up when the constructions sites were opened.

Construction sites must be opened stage wise (one phase at a time) according to the trade of the labors (single trade of work at a time) & shift the workers to maintain the social distance

Prepared for the increase of the absenteeism of the labors by training them with many trades as possible by the supervisors

Encourage the industry stakeholders to integrate the work with modern software relates to construction

Supply chain must be re-calibrate & manage with alternative materials & back-up methods

Make situational awareness programs among the site staff & encouraged them to follow up with the safety precautions to avoid the spreading of coronavirus

Increase the effort for the site safety & provide all the staff members & labors with proper Personal Protective Equipment (PPE) kits (including of respiratory masks, safety goggles, hand sanitizers, full body suits, gloves, boots etc) and disinfection of the site

Randomly check the site staff with PCR tests, involved with Ministry of Health, to avoid the risk of been infected to the other members of the project & to assure the particular construction site is free of coronavirus

Improve the mental & physical health of the labors

Proper planning & reschedule the project with addressing the future risk must be done with the guidance of the Project Manager (Avoid the next wave of virus)

Make weekly updates about COVID-19 situation at sites & take necessary actions

Financial support should be given by the government to the construction industry

### Future Research Directions

The researchers must do their research regarding the COVID-19 with every possible outcome & effects on the construction sector which will help for the betterment of the industry on behalf of the country's' economy (Hamid and Huam, 2020). While this research focusing on the key challenges on the Sri Lankan construction industry due to COVID-19, further study can be done to investigate about the renaissance & the industry predictions of the construction sector for post COVID-19 world.

Another study can be done to identify how the construction industry can be integrated with modern technology developments and their applications. A similar study can be improved to identify the contractual provisions about construction disputes & application on them in the industry against these kind of unforeseen risk events.

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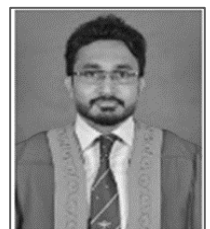
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