

INVESTIGATING THE CHALLENGES OF IMPLEMENTING COVID-19 PREVENTIVE PRACTICES IN THE CONSTRUCTION INDUSTRY IN SRI LANKA

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ABSTRACT

The COVID-19 pandemic has had a significant impact on various industries worldwide, including the construction industry. The construction industry in Sri Lanka has faced numerous challenges due to the COVID-19 pandemic. The COVID-19 preventive measures were followed and resumed the work to mitigate the impacts of COVID-19. However, there were challenges when implementing the COVID-19 safety measures. Thus, the study aimed at investigating the challenges of implementing COVID-19 preventive practices. The research adopted a qualitative approach, including twelve structured expert interviews within four case studies from different graded contractor organisations. According to the findings of expert interviews, the background of the research problem was validated. Besides, the challenges of adopting COVID-19 preventive measures were identified in the literature. Data collection was conducted to validate the literature review findings. The findings of this study reveal that the safety measures followed by the highest-graded organisations are different from the other organisations. Hence, the challenges were changed according to the grade of companies. Ignorance, contradiction and conflicts when someone near does not follow guidelines, additional time, limited resources, contractors having financial difficulties and difficulties in adapting preventive measures are common challenges of implementing COVID-19 preventive practices in the Sri Lankan construction industry. Hence, this provides insights into the effective implementation of COVID-19 preventive measures in construction sites to overcome the challenges posed by the pandemic.

Keywords: Challenges; Construction Industry; COVID-19; Preventive Practices; Sri Lanka.

1. INTRODUCTION

Global pandemics of diseases are not a new phenomenon (Vithana et al., 2020). Several regional and global pandemics of diseases have emerged at different scales throughout history. During the last century, the world experienced Spanish Flu in 1918, Asian Flu in 1957, Hong Kong Flu in 1968, and more recently, SARS in 2002, swine flu in 2009, and

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Ebola in 2014 (Wickramaarachchi et al., 2020). Sri Lanka periodically faces epidemics of infections that cause morbidity and mortality, such as leptospirosis and dengue (Wickramaarachchi et al., 2020). Accordingly, Sri Lanka faced COVID-19. The SARS-CoV-2 virus, which causes the respiratory condition coronavirus disease 2019 (COVID-19), was first identified in December 2019 (Rath, 2022). Strict precautions were to be implemented globally to combat the pandemic (Umar, 2022).

The COVID-19 pandemic changed the ordinary practices of the entire world, and the construction industry is not an exception (Pamidimukkala & Kermanshachi, 2021). As a result of the pandemic, there were travel warnings, border and store closures, regional lockdowns, and social distancing measures that led to uncertainty in economic and social performances (Vithana et al., 2020) Considering the effects of the lockdown, many construction projects had been closed (Faithful Cloud, 2020). Measures such as screening, site access and handling of material and equipment deliveries on-site are some measures that were adopted to manage COVID-19 on the sites (Amoah & Simpeh, 2021). Further, the construction workforce had many safety and health concerns due to the pandemic. However, conducting and updating the risk assessment regularly for work-related exposure to COVID-19, developing action plans to prevent COVID-19, maintaining flexible sick leave policies, installing temporary and possible barriers between work areas and ensuring employees reduce the sharing office stationaries, tools, and equipment are some of the safety practices among construction organisations (Alara, 2021). Even though the COVID-19 pandemic is a nonexistent issue there is a possibility of occurrence of any type of pandemic in future. Hence it is essential to assess the COVID-19 pandemic and review it as a learning platform to identify weaknesses and propose strong suggestions to overcome the pandemic situations. Therefore, this research aims to investigate the challenges of implementing COVID-19 preventive practices in the construction industry in Sri Lanka, as COVID-19 was a new and unexpected pandemic.

2. LITERATURE REVIEW

2.1 IMPACT OF COVID-19 ON THE CONSTRUCTION INDUSTRY

COVID-19 caused severe respiratory illness, including pneumonia and led to hospitalisation, long-term health complications and death. According to WHO (2024), there had been 775,293,630 confirmed cases of COVID-19, including 7,044,637 deaths, reported to WHO (2024) until April 07 2024. The total cases and deaths that occurred all over the world until April 07, 2024, are shown in Figure 1. Based on this number, COVID-19 has caused numerous fatalities continuously. As a result, numerous countries implemented precautionary measures to minimise the implications of COVID-19 (Gamil & Alhagar, 2020; Khankeh et al., 2021; Sierra, 2022). According to Alsharif et al. (2021) and Bou Hatoum et al. (2021), the COVID-19 epidemic has ignited a global health crisis that has severely disrupted and impacted nations and all sectors of the economy, including restaurants, retail, and airlines. The COVID-19 pandemic has several effects that have been reported in the construction industry, including delays (time and cost overruns), payment delays, material shortage and delivery delays, labour shortages, price variations at the market, inadequate site management and supervision, inadequate communication between parties, supply chain disruptions, decreased productivity and workflow, and effects on revenue and cash flow (Parameswaran & Ranadewa, 2021).

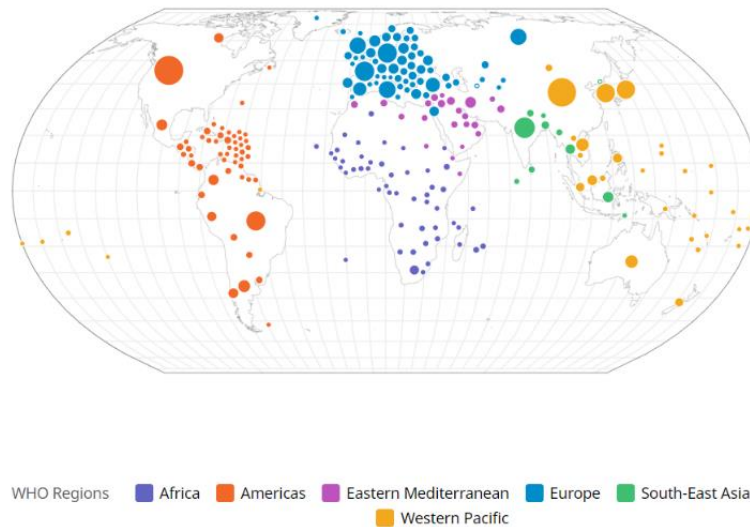


Figure 1: COVID-19 cases reported to WHO until April 2024 (source: WHO, 2024)

According to King and Lamontagne (2021), the construction industry is regarded as one of the key economic pillars of the societies in which it operates all over the world. It is vital to identify the COVID-19 impacts that have a significant influence on the construction sector to recognise a solution to the pandemic. The construction industry could not be shut down indefinitely during COVID-19 due to its significant contribution to the country's economy (Amoah & Simpeh, 2021). Hence, preventive measures were adopted to curb the spread of positive cases and minimise the impacts of COVID-19 on the construction industry and workforce (Stiles et al., 2020). The goal of these measures is to ensure the safety of construction workers. However, there were mixed feelings among industry professionals about their feasibility and effectiveness (Nnaji et al., 2022). Therefore, to improve COVID-19 risk mitigation in the construction industry, it was necessary to understand how field workers perceive the effectiveness of safety measures and solutions during a pandemic, as these perceptions directly impact their behaviour and performance (Jiang et al., 2017).

2.2 CHALLENGES OF IMPLEMENTING COVID-19 PREVENTIVE MEASURES AT CONSTRUCTION SITES

Different challenges facing implementing COVID-19 safety measures in the construction industry have been extracted from the literature review. One of the major challenges is the lack of awareness among workers about the seriousness of the virus and the importance of following safety guidelines (Amoah & Simpeh, 2021). Another challenge is the difficulty of maintaining social distancing at construction sites, which are often crowded and require close interaction between workers (Goh et al., 2022). The non-availability of Personal Protective Equipment (PPE) was a challenge, as the demand for PPE has increased significantly during the pandemic (Khankeh et al., 2021). This has led to shortages and increased costs, making it difficult for contractors to provide adequate PPE to all workers (Burnett et al., 2022). It is important to prioritise the use of PPE based on the level of risk and to ensure that PPE is properly maintained and replaced when necessary (Burnett et al., 2022). Table 1 summarises the previous studies that have elaborated on the challenges of implementing safety measures at construction sites due to the COVID-19 pandemic.

Table 1: Challenges of implementing safety measures at construction sites due to the COVID-19 pandemic

Challenge	References
Compliance and enforcement challenges	(Almohassen et al., 2023; Padidar et al., 2021; Kukoyi et al., 2022; Amoah & Simpeh, 2021)
Training and Awareness issues	(Almohassen et al., 2023; Boti Sidamo et al., 2021; Kukoyi et al., 2022)
Difficulty in accessing personal protective equipment	(Almohassen et al., 2023; Amoah & Simpeh, 2021)
Communication and coordination challenges	(Boti Sidamo et al., 2021; Khankeh et al., 2021;
Physical and logistical challenges	(Sierra, 2022)
Financial difficulties	(Ly et al., 2022; Sierra, 2022; Boti Sidamo et al., 2021; Khankeh et al., 2021)
Limited resources	(Sierra, 2022; Boti Sidamo et al., 2021; Khankeh et al., 2021;
Decrease in productivity	(Kukoyi et al., 2022)
Mental and physical health problems	(Khankeh et al., 2021)
Poor supportive supervision	(Boti Sidamo et al., 2021; Khankeh et al., 2021)
Shortages in PPE	(Khankeh et al., 2021; Kukoyi et al., 2022)
Lack of standardization	(Pamidimukkala et al., 2021)
Adaptation of preventive measures	(Singh et al., 2021)
Rapid changing guidelines	(Singh et al., 2021; Kukoyi et al., 2022)
Negligence	(Boti Sidamo et al., 2021; Padidar et al., 2021; Kukoyi et al., 2022)
Resistance to change	(Boti Sidamo et al., 2021)
Unpredictable nature of construction work	(Almohassen et al., 2023)

According to the outcome of Table 1 compliance and enforcement challenges, financial difficulties, negligence, limited resources, and training and awareness issues were identified as mostly reviewed challenges. The results and discussion section validates and further discusses these challenges with the primary data collection.

3. METHODOLOGY

Multiple case studies have been selected to investigate the phenomena of COVID-19 preventive practices in the construction industry in greater detail. This enhances the validity and reliability of the research. Moreover, because the authors focus on studying the phenomena itself, not the case, multi-case studies can be discussed, presented and analysed as one set based on Yin (2014). To get a fuller picture of the studied phenomenon, four cases, which were contracting organisations of Construction Industry Development Authority (CIDA) grades C9, C8, CS1 and CS2, are selected and explored. Those were selected since those are the highest-graded and lowest-graded companies. Three interviews were conducted for each case study with professionals who have experience more than five years in construction site supervision and site safety. This research explores the subjective matter. Therefore, the qualitative approach is more appropriate for this study. Expert semi-structured interviews, working in the highest and lowest-graded contracting organisations in Sri Lanka, were targeted during the primary data collection process. Based on Saunders et al. (2019), face-to-face interviews allow researchers to interact with the interviewees to get a full understanding of a specific issue. Therefore, twelve face-to-face structured interviews are carried out to extract relevant

information from the experts to collect data. Table 2 shows the overview of the interviews based on their type of organisation and relevant case study.

Table 2: Overview of the Interviewees

Case Identification	Grade of the company	Interview code	Designation	Years of experience
A	C9	AR1	Technical Officer	7 years
		AR2	Engineer	7 years
		AR3	Engineering Assistant	5 years
B	C8	BR1	Technical Officer	5 years
		BR2	Engineering Assistant	6 years
		BR3	Engineering Assistant	10 years
C	CS1	CR1	Quantity Surveyor	10 years
		CR2	Site Engineer	8 years
		CR3	Engineering Assistant	6 years
D	CS2	DR1	Safety Officer	6 years
		DR2	Project Manager	10 years
		DR3	Construction Manager	10 years

4. RESULTS AND DISCUSSION

There were challenges in implementing COVID-19 preventive measures faced by the management team at construction sites. Most of the challenges mentioned by interviewees were similar between the organisations. The similarities between responses and challenges identified in the literature review were provided in the following sections.

4.1 PERSONAL PROTECTIVE EQUIPMENT (PPE)

It is widely known that social distancing and PPE-related issues were major challenges found hindering COVID-19 safety measures (Kukoyi et al., 2022). Interviewees agreed with this view and stated that maintaining social distancing, washing hands often, being clean and wearing gloves and masks are most of the difficulties faced by labourers in every stage of construction work. CR3 mentioned that *“wearing masks continuously was difficult for labourers while working with sweat and hot weather”*. Further, CR3 mentioned that *“some labourers felt uncomfortable working while wearing gloves”*. Hence, labourers tried to avoid COVID-19 preventive measures often. Kukoyi et al. (2022) agree with this view stating that individual performance can be negatively affected as the use of PPE was considered uncomfortable and not practicable. AR1 mentioned that *“washing hands often was difficult to labourers; however, using hand sanitisers was easier than washing hands often”*. Further, AR1 mentioned that some of the highest-graded organisations provided separate hand sanitisers for all the labourers. DR1 mentioned that *“most of the labourers forgot to bring gloves, and hand sanitisers even if it provided for free”*. Further, DR1 stated that *“being clean while construction works was a burden for labourers and that it is impractical”*. Kukoyi et al. (2022) agreed with the aforementioned views and added there is inadequate use of PPE. Further, some construction practitioners used COVID-19 personal protective equipment incorrectly.

4.2 SOCIAL DISTANCING MEASURES AND PRODUCTIVITY LOSSES

According to Niroshana et al. (2022), the low levels of health and safety in the Sri Lankan construction sites have affected their productivity even before the COVID-19 pandemic. However, during it, the situation becomes worse. CR2 stated that “*Social distancing measures led to a decrease in productivity*”. Kukoyi et al. (2022) and Nnaji et al. (2022) agreed with this view stating that because the construction industry is labour-intensive, applying the practice of social distancing can negatively affect productivity on site besides its cost implications on contractors, contractors’ employees and clients. Amoah and Simpeh (2021) explained that workers might not always follow these preventive measures due to perceived productivity losses. Further, DR3 mentioned that “*it required changes to the work schedule, additional cleaning procedures, and changes to the workflow to maintain distance between workers*”. Construction, by its nature, is an extremely labour-intensive industry and most of the work requires carrying out the work closely (Hossain et al., 2020; Kukoyi et al., 2022; Sui Pheng et al., 2019). Further, remote work arrangements and the need for virtual meetings and communication affected productivity as it may take additional time for workers to adjust to new technology and communication methods. Maintaining social distance was another difficulty faced during every stage of construction work. If labourers are concerned about maintaining social distancing, labourers could not work properly. Similar to the primary findings, Goh et al. (2022), Parameswaran and Ranadewa (2021) and Shibani et al. (2020) also agreed that maintaining social distancing was difficult to implement. The primary difficulty faced by labourers was fear of virus infection. Some labourers fought with other labourers for not wearing masks and not maintaining social distancing. In agreement Kukoyi et al. (2022) assured that the prescribed social distancing is considered one of the most challenging measures to abide by on construction sites.

4.3 DIFFICULTIES IN ADOPTING THE NEW NORMAL

Workers and labourers had difficulty adjusting to new safety protocols such as social distancing, mask-wearing, and increased sanitisation measures. This challenge has been identified through the primary data collection as an addition to the literature findings. Additionally, CR3 mentioned that “*some workers may be resistant to change or lack awareness of the importance of these measures*”. Boti Sidamo et al. (2021) agree with this view stating that resistance to change is one of the different barriers facing the effective implementation of public health measures. It might be due to a lack of experience and difficulties in adopting the measures. These difficulties in adopting the “new normal” pose a challenge in effectively implementing and maintaining COVID-19 safety measures at construction sites. In agreement, Kukoyi et al. (2022) stated that some workers do not comply with the COVID-19 safety regulations and ignore the dangers of the virus. Amoah and Simpeh (2021) noted that some companies failed to comply with preventive measures due to productivity losses perceived by workers.

4.4 CONTINUOUS CHANGES IN PROJECT SCHEDULING AND PLANNING

The continuous changes in project scheduling and planning due to COVID-19 present a significant challenge for implementing safety practices in the construction industry. The pandemic caused disruptions to the supply chain and availability of materials, as well as labour shortages and reduced demand, resulting in changes to project timelines and scheduling. CR3 mentioned that “*This uncertainty and fluctuation in project timelines*

made it challenging to plan and implement safety measures effectively". It also created a need for constant re-evaluation and adaptation of safety protocols to accommodate changes in project schedules and timelines. This led to increased costs and delays in completing projects. Singh et al. (2021) agreed with this view and stated that rapidly changing guidelines are one of the different challenges in implementing COVID-19 pandemic measures.

4.5 MENTAL AND PHYSICAL HEALTH DIFFICULTIES

It is widely known that the COVID-19 pandemic is one of countless stressors. These tensions were excessive with no adequate government support, particularly in low-income economies. These stressors can cause mental health problems. During the pandemic period, the most common disorders that can be seen are depressive and anxiety disorders (Khankeh et al., 2021). DR1 mentioned that *"During masonry work, one labour got tired of using a mask continuously. Hence, he fainted due to breathing problems"*. Other interviewees agreed and mentioned many labourers felt dizzy due to using masks continuously while working. Hence, most of the labourers removed masks to avoid getting tired. Breathing was difficult for labourers while wearing masks. Kukoyi et al. (2022) reported that fatigue can be caused by wearing a face mask as it contributes to the increase of sweat which can cause goggles to fog.

4.6 CONSTRUCTION ACCIDENTS

BR3 stated that *"some accidents occurred when labourers tried to maintain distance between labourers"*. Hence, it was a burden for labourers. Moreover, DR3 and DR2 mentioned that *"Fear about infection was the primary difficulty faced by labourers in construction site"*. Since there were fights between labourers about not following preventive measures. Labourers with normal flu and fever were treated badly due to this fear.

DR2 mentioned that *"after all, COVID-19 preventive measures were strictly followed and supervised but general safety measures were not prioritized"* Further, DR2 claimed that *"most of the labourers failed to wear safety jackets and safety helmets while wearing masks"*. Supervisors were also frightened about virus infection and maintained social distance than expected. Hence, supervisors failed to guide labourers in taking care of safety. Additionally, DR3 mentioned that *"most of the labourers worried about family and children"*. Therefore, those labourers could not concentrate on their work. Those labourers worked with multiple thoughts and failed to concentrate on their work. Hence, accidents have occurred in sites including slips and cutting body parts unconsciously. Further, DR3 mentioned that *"labourers need to be more careful while using electrical equipment and sharp-end tools"*.

DR1 mentioned that *"During masonry work, one labour got tired of using a mask continuously. Hence, he fainted due to breathing problems."* AR2, BR3, BR1, AR1, and DR1 agreed and mentioned many labourers felt dizzy due to using masks continuously while working. Hence, most of the labourers removed masks to avoid getting tired.

According to AR2's answer, while carpentry work going on, one labour coughed. Another labour who worked near that labour got frightened and moved a bit back unconsciously to maintain distance from that labour. At the time labour was standing on scaffolding. Hence, that labour slipped from the scaffolding.

DR2 mentioned an accident similar to this, while soffit plastering works were going on labour slipped from scaffolding. However, that labour did not fall. That labour managed to catch scaffolding while slipping. Hence labour could escape from a big accident.

Further, DR2 mentioned another accident that happened during excavation similar to the above accidents. However, this time engineering assistant while supervising. The supervisor fell into the excavated pit. At the time there were some tools used for excavation. Since the supervisor got an injury. That injury bled and the supervisor was taken to the hospital.

4.7 FREQUENT CLEANING

“Cleaning hands often was mentioned as a difficulty” according to BR2. Washing hands while working reduces effective working hours and interest. However, using sanitiser was an easy way to clean hands. However, labourers do not have the financial facilities to use sanitisers on their own. DR2 mentioned that *“some highest-graded organisations provided private sanitisers to each labourer”*. Most of the labourers forgot to bring and use sanitiser during work even though sanitisers were provided for free. Additionally, being clean was another difficulty, since construction works are involved with dust, debris and waste.

4.8 LIMITED RESOURCES

When the COVID-19 outbreak is destroying the world, resource availability will have particular importance in construction organisations (Kukoyi et al., 2022). According to primary data, there was limited availability of PPE and sanitisation resources. This is because the demand for PPE has increased significantly during the pandemic (Khankeh et al., 2021). This has led to shortages and increased costs, making it difficult for contractors to provide adequate PPE to all workers (Burnett et al., 2022). AR3 mentioned that *“face masks, gloves, and hand sanitisers are required for workers to maintain their safety while carrying out their duties”*. Further, DR3 stated that *“insufficient staffing to enforce and monitor safety measures which led to non-compliance among workers”*. The Sri Lankan construction industry did not have the resources to carry out frequent testing and screening of workers to detect COVID-19 infections. Hence, there were challenges in implementing safety measures due to limited resources. Not only that, based on Khankeh et al. (2021), even though the use of PPE will prevent the spread of infection at the community level, sometimes disruption in the supply chain of such equipment has led to the spread of the disease. Improper management of resources and equipment such as lack of access to resources and resource scarcity are the most effective shortcomings in preventive measures of COVID-19. Kukoyi et al. (2022) agree with the aforementioned view stating that the Adequacy and durability of PPE were found as a challenge to implementing COVID-19 safety measures.

4.9 FINANCIAL DIFFICULTIES

It is widely acknowledged by AR2, BR1, and CR3 stating applying different health and safety measures can cause significant financial difficulties to contractors (Nnaji et al., 2022; Sierra, 2022) in different territories such as England, Wales Scotland and Northern Ireland due to COVID (Sierra, 2022). According to DR2, CR3 and AR1 contractors, based on might be discouraged from imbibing risk assessment measures due to financial implications on construction costs (Kukoyi et al. 2022). In fact, without sufficient

financial resources, it is difficult to comply with preventive measures (Khankeh et al., 2021; Ly et al., 2022).

4.10 VISITOR SAFETY MEASURES

DR1 mentioned that “*While workers at construction sites took possible COVID-19 safety measures to protect themselves and their colleagues, visitors who came to the sites did not always follow these same safety protocols*”. This posed a challenge for site managers and workers, as they had to ensure that everyone on the site followed the necessary safety procedures to prevent the spread of the virus.

4.11 LOW LEVEL OF COVID-19 AWARENESS

It is widely believed that low levels of COVID-19 awareness might cause misconceptions and a lack of adequate information about the virus among some construction practitioners. Therefore, awareness and education were found to be major challenges hindering COVID-19 safety measures (Amoah & Simpeh, 2021; Kukoyi et al., 2022). Primary data agreed with this view: DR2 mentioned that “*Construction workers did not have the necessary knowledge or training to follow safety protocols properly, which led to non-compliance and increased risk of infection*”. This occurred due to a lack of education and training resources, language barriers, or a lack of awareness of the importance of following safety protocols. In agreement, Pamidimukkala et al. (2021) reported that construction workers are often not trained in public health and may not be familiar with the latest information about COVID-19. Accordingly, workers’ adherence to COVID-19 standard precautions can be improved by education. Further, retraining of construction workers on safety and health is vital.

Kukoyi et al. (2022); and Almohassen et al. (2023) agreed with this view stating that adequate safety awareness levels can be ensured by training of the employees to maintain safety performance and safety of the workers in construction projects. Therefore, it is crucial to provide regular training and awareness programs to ensure that workers understand the risks and the steps they can take to stay safe (Pamidimukkala et al., 2021).

4.12 COMMUNICATION AND COORDINATION

Based on Khankeh et al. (2021), one of the shortcomings facing preventive measures for COVID-19 is a weakness in risk communication. The authors found that the lack of a plan for risk communication negatively affected the management of the disease in terms of the high number of deaths and hospitalised people. Primary data also highlighted the lack of communication between management and workers. This might lead to a lack of information about the safety measures to be followed. Parameswaran and Ranadewa (2021) assert the inadequacy of communication between parties in the construction industry due to the COVID-19 pandemic.

4.13 POOR SUPPORTIVE SUPERVISION

Both primary data and secondary data agreed that poor supportive supervision is one of the different barriers facing the effective implementation of public health measures (Boti Sidamo et al., 2021; Khankeh et al., 2021). Boti Sidamo et al. (2021) mentioned that poor supportive supervision might affect the ultimate goal of implementing public health measures. In the construction industry, based on Parameswaran and Ranadewa (2021) inadequate site management and supervision are caused by the COVID-19 pandemic.

4.14 NEGLIGENCE

It is widely agreed that negligent, reluctant and careless in implementing public health interventions are found in community members in different countries and Sri Lanka one of them as mentioned by primary data. Boti Sidamo et al. (2021) stated that, at the late stage of the COVID-19 pandemic, most community members become like that. In agreement, Kukoyi et al. (2022) stated that some workers have acquired the habit of removing their face masks, whilst some refuse to wear them.

Figure 2 demonstrates that the challenges identified through the literature and primary data for implementing the COVID-19 pandemic are significant according to the size of the organisations. According to the research findings, large organisations mostly confront issues related to management and supervision while small organisations are challenged with primary-level construction activities. Hence, based on the size of the organisation different approaches are required to overcome the challenges of implementing the COVID-19 pandemic in the construction sector.



Figure 2: Categorisation of challenges for implementing COVID-19 preventive measures according to the size of the organisations

Figure 3 summarises the challenges of implementing COVID-19 preventive practices in the Sri Lankan context. The preventive practices were identified through literature review and the challenges were identified via primary data collection and secondary data-related discussion. The mind map illustrated in Figure 3 emphasises that ignorance, contradiction and conflicts when someone near does not follow guidelines, additional time, limited

The summary of this research provides important insights into the challenges faced by the construction industry in implementing COVID-19 safety measures. By identifying these challenges, solutions can be developed to overcome these obstacles and enhance the implementation of safety measures at construction sites in the future. Further, exploring such challenges can help effectively manage the construction site in similar situations and reduce the burden on site managers inside and abroad. Therefore, other countries in similar situations could be helped.

The scope of the research is mainly focused on COVID-19 preventive measures and the challenges in adopting them at construction sites. The research has a limitation as it was conducted during a specific period and does not reflect the current situation or changes that have occurred since then. Nevertheless, the outcome of the research applies to any future similar pandemics, and it is adaptable to the Sri Lankan and global construction sectors.

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