

AN EXPLORATORY STUDY ON ABANDONED CONSTRUCTION PROJECTS IN THE WESTERN PROVINCE, SRI LANKA

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ABSTRACT

The construction industry creates a considerable impact on the country's economy. The current economic crisis has severely affected the Sri Lankan construction industry whereby also affecting the entire construction supply chain. Researchers have mentioned that a project abandonment has an overall negative impact on both economy of the country and the construction industry. Thus, this research paper aims to explore the reasons for the abandonment of construction projects during the current economic crisis in Sri Lanka and identify the remedies to avoid in the future. A comprehensive literature review, a questionnaire survey, and semi-structured interviews were conducted to gather data in both qualitative and quantitative procedures. Semi-structured preliminary interviews were conducted to gather preliminary data before developing the final questionnaire. The empirical findings revealed that the material import restrictions imposed by the government, price increments in materials due to restrictions, disruptions in machinery operations due to scarcity of fuel, rising labour costs, and shutdowns in government-funded projects are the main reasons for the projects to be abandoned during the economic crisis. Encouraging foreign investments, controlling inflation and keeping on track of the country's economy, easing tight import restrictions, and proper pricing mechanisms for construction materials are some of the remedies proposed to avoid projects being abandoned during the crisis. The research findings deliver valuable evidence to the practitioners with an in-depth understanding of the remedies to take over during a period of a crisis and thereby minimize the projects being abandoned.

Keywords: Abandoned Construction Projects; Economic Crises; Sri Lanka; Western Province.

1. INTRODUCTION

Through the first quarter of 2018, the economic growth of many countries in the world was improving. However, with the spread of the COVID-19 pandemic, global economic growth was decelerated. Mainly the supply and demand imbalances can be categorized as economic impacts of COVID-19. By the middle of 2021, the world economy was recovering with the relaxation of restrictions imposed for COVID-19. Also, many countries controlled rising inflation and accelerated efforts to stimulate growth at the beginning of 2022. But the Russia-Ukraine crisis escalated while the countries were

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accelerating efforts to achieve economic growth after the COVID pandemic, and in February 2022, Russia invaded Ukraine. The war also led to a political crisis between Russia and the Western nations. In addition to the rising cost of living and other economic factors, this war had a significant impact on the world economy in the number of sectors, including the international supply chain, international stock markets, oil and gas prices, the international banking system, and international inflation (Balbaa et al., 2022). The COVID-19 pandemic and the current global financial crisis have had a major impact on the Sri Lankan economy as well. The Sri Lankan economy suffered a rapid collapse during the last five years due to various reasons. Sri Lanka decided not to strive to increase its overseas commerce after the end of its civil war in 2009, instead concentrating on supplying its domestic market. Perera (2022) has stated that the country has run out of foreign currency reserves owing to numerous reasons and it currently imports USD 3 billion, which is more than its exports. In 2019, the government implemented significant tax cuts, which caused a loss of more than USD 1.4 billion in yearly revenue. In early 2021, due to foreign currency shortages, the government of Sri Lanka (GOSL) attempted to limit them by outlawing the import of chemical fertilizers. As a result, many domestic crops were destroyed and as a result severe food shortage is evident now. The need to import essential food items and medical stocks was another reason for aggravating the foreign currency shortage. Due to daily power cuts and lack of necessities like fuel, food, and medicine, citizens are in a dire state during mid-2022. Also, essential services such as transport were disrupted, and many supply chain bottlenecks were evident due to the fuel crisis. The fuel shortage has led to price hikes of fuel and daily essentials which ended up with island-wide protests against the ruling party. For the first time in history, the GOSL failed to service its external debt in May 2022 and declared bankruptcy (Perera, 2022).

The construction industry creates a huge impact on the country's economy. In both developed and developing countries, the construction industry contributes a vital share to the process of development (Agung, 2011). Due to the current economic crisis in Sri Lanka, the construction industry has been severely affected. Despite the economic crisis in Sri Lanka commenced three years ago; living conditions of the island nation have significantly worsened today than before. Inflation, which is the barometer of the general price level increase in the overall economy has escalated unprecedentedly throughout the crisis period. The Colombo Consumer Price Index (CCPI), which measures headline inflation, increased from 29.8 % in April 2022, 60.8% in July 2022, and 66.0 % in October 2022 to reach 50.6% in February 2023 (Department of Census and Statistics, 2022). Further, the prices of construction materials were also increased drastically. According to the National Construction Association (NCA) of Sri Lanka around 75% of construction projects have been put on hold as a result of rising building material prices and fuel costs (Nilar, 2022). Shortage of energy has a negative impact on the construction industry while the construction supply chain was entirely disturbed due to untimely changes in policy directions such as import restrictions on construction materials. According to Razeek (2022), the construction industry employs, nearly 1 million of the workforce, including 600,000 of direct positions in the industry. Due to the economic crisis, the local construction industry dealt with thousands of job losses and a severely falling number of new construction projects (Razeek, 2022).

The stakeholder is one who involves directly or indirectly in the project. Out of the stakeholders, The Client and the Contractor facing many issues in their projects due to

the economic crisis. Due to COVID-19 pandemic and the present economic crisis, many contractors found it difficult when proceeding the construction because of import restrictions, high inflation, foreign exchange crisis, foreign debt, construction labour cost, and transportation issues. The investors are not willing to invest in the projects given this situation which becomes a huge issue for the contractors and clients (Namarathna, & Gunarathna, 2022). Moreover, the authors have mentioned that almost all the industry stakeholders were impacted due to the crisis at varying capacities in Sri Lanka. Therefore, many contractors failed to proceed with the ongoing construction projects and were compelled to abandon their projects.

Project abandonment could occur at any stage of its life cycle. Projects could be abandoned at the tender stage, at the design stage, at the construction stage, and midway through the project. Not only the building construction projects but also the infrastructure related (including roads, bridges, factories, dams, power, and communication) projects can be abandoned (Doraisamy et al., 2015). According to Yap et al. (2010), common causes such as financial challenges faced by the owner and contractor, unexpectedly poor economic conditions, improper project financing, delays in interim payments, insufficient project feasibility studies, unreliable contractors or subcontractors, project control issues, improper project planning and scheduling, and administration issues will bring a project to the abandoned stage. Time and cost are very important parameters in the construction industry. Duma (2017) mentioned that projects being abandoned would present significant difficulties for the clients, the contractors, and the country's economy since the project has been initiated, involved a number of stakeholders and they consumed a considerable amount of time to elevate the project to the construction stage.

The construction industry is now experiencing a wide range of issues as a result of the present economic climate, many of which can only be resolved by state-level action. Increasing material costs, payment delays, terminating government projects, difficulties importing commodities, and increased interest rates are the main problems the sector is now experiencing (Soyza, 2022). Current projects cannot be completed because of the high rise in the cost of construction materials due to the rising dollar rate and inflation rates. Some suppliers are also taking advantage of this circumstance by raising their margins. The majority of State-Owned Enterprises (SOEs) are not adhering to the 20% price increase that the cabinet also permitted. Table 1 illustrates the building materials price increases during last three years (Wijeratne, 2022).

Table 1: Price changes of five basic building materials (in Rs.)

Material	Dec 2020	Dec 2021	April 2022	% Increase
Cement (50kg bag)	850.00	1275.00	2,175.00	155.9
Tor Steel (M Ton)	165,000.00	25,000.00	595,000.00	260.6
Structural Steel (M Ton)	170,000.00	330,000.00	750,000.00	341.2
0.47mm Zn Al roof sheet (m)	1,522.00	2,802.05	4,500.00	195.7
Asbestos roof sheet (m)	846.55	1,127.50	1,711.65	102.2

By reviewing the above literature findings, it assists to identify the gap within the research, where there are no any research articles which address to propose remedies to avoid projects being abandoned during the period of the economic crisis. Therefore, the

aim of this study is to explore the reasons for the abandonment of construction projects in Sri Lanka during the current economic crisis and identify the remedies to avoid this in the future. Therefore, the objectives of the study are split to identify the impact of the current economic crisis on the construction industry in Sri Lanka, to identify the problems faced by the contractors and clients due to the current economic crisis in Sri Lanka, to explore the reasons for the abandonment of those construction projects and to propose remedies to minimize abandonment of construction projects in future.

2. METHODOLOGY

The study has adopted the mixed method research approach, the essence of which, Harvard Catalyst (2023) combines both deductive and inductive thinking and facilitates a more comprehensive understanding of the interviews’ opinions and to rate the remedies for the future to avoid projects being abandoned. Semi-structured preliminary interviews were conducted as a basis to develop the questionnaire survey with the industry practitioners who are in and familiar with the abandoned projects. The study follows the purposive sampling technique. The developed questionnaire included both the Likert scale and open-ended questions to collect both qualitative and quantitative data. The questionnaire survey was conducted through physical meetings among the construction industry practitioners who are currently working on abandoned construction projects or who are familiar with construction projects that have been abandoned in the recent past due to current economic crisis. Hence the study covered both the small scale and large-scale construction projects which are in abandoned state at present. A total of 30 construction industry experts including Engineers, Quantity Surveyors, Project Managers, Architects, and Construction Company Owners participated in the survey. Qualitative data gathered were analysed through the thematic analysis method while the quantitative data were analysed through the descriptive statistical analysis and use graphs/charts to demonstrate quantitative summary statistics and used the weighted mean. Thematic analysis is a popular method for evaluating qualitative data on unexplained phenomena (Creswell & Poth, 2018; Maguire & Delahunt, 2017). It is a technique for defining and analysing data based on themes and relative frequency. It is also a platform for organizing and analysing data in order to come up with clear conclusions and outcomes (Vaismoradi et al., 2013). Accordingly, thematic content analysis was performed under six main themes.

Table 2 presents the profile of the respondents of the questionnaire survey on the abandoned construction projects that were considered with the intention of collecting more accurate data for the research study.

Table 2: Profile of the respondents

Designations	Response rate (%)
Quantity Surveyors	54%
Engineers	27%
Project Managers	13%
Architects	1%
Company Owners	1%

3. DATA ANALYSIS AND DISCUSSION

3.1 EFFECTS OF THE CURRENT ECONOMIC CRISIS ON CONSTRUCTION PROJECTS/ORGANIZATIONS

The study findings show that the survey respondents strongly agreed that the current economic crisis has highly affected the Sri Lankan construction industry. As shown in Figure 1 76.7% of survey respondents strongly agreed with the statement. Further, 20% of the survey respondents moderately agreed with the statement.

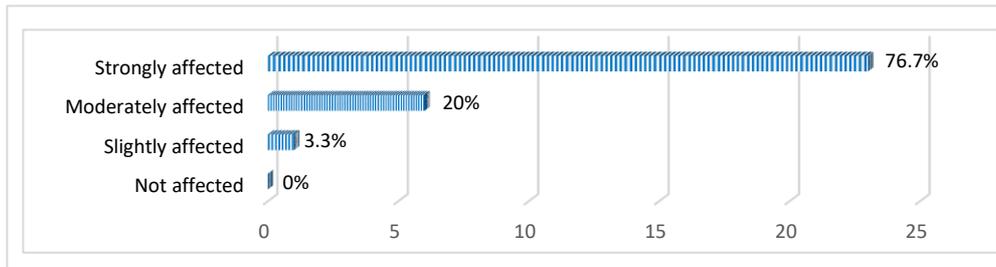


Figure 1: Effect of the current economic crisis on the construction projects

3.2 COMPARISON BETWEEN THE NUMBER OF PROJECTS HANDLED BY THE ORGANIZATIONS BEFORE THE CRISIS AND DURING THE CRISIS

As illustrated in Figure 2, before the economic crisis in Sri Lanka, there were 2 number of contracting organizations handled more than 30 projects annually. Similarly, 7 number of contracting organizations handled 20–30 projects annually while, 11 contracting organizations handled 10–20 projects, and 10 organizations handled 0–10 projects annually. Because of the current economic crisis, all these organizations currently handle 0–10 projects annually. None of the contracting organizations handle more than 10 projects during the economic crisis. This proves the magnitude of the impact of the current economic crisis towards the construction industry in Sri Lanka, where there are very limited number of construction projects progress today.

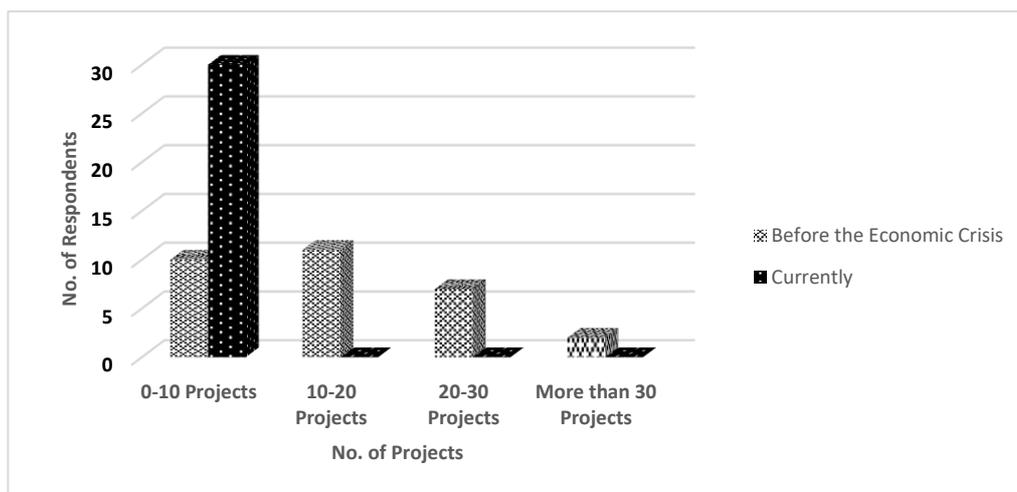


Figure 2: Status of the no. of projects carried out by the organizations annually before and after the the crisis

3.3 ISSUES FACED BY THE CONSTRUCTION ORGANIZATIONS DURING THE ECONOMIC CRISIS

Each survey respondent has mentioned that their organizations are handling projects with issues during the economic crisis. Figure 3 illustrates the number of such projects with issues handled by the construction organizations at present.

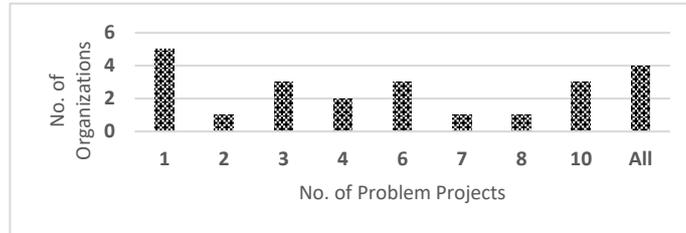


Figure 3: Number of projects with issues handled by organizations

During elaborative discussions, one of the QS has stated that “organizations are facing difficulties in paying staff salaries, labour wages since the organizations are not making profits from the projects”. Many professionals have stated that “the rising cost of raw materials and shortage in fuel were the main issues they are facing during the period of economic crisis”. Table 3 shows the exact issues that the respondents have faced due to the current economic crisis.

Table 3: Issues faced by the organizations - in terms of handling construction projects

Issues	Response rate (%)
Slowdown of construction projects	93.3%
Lack of work / projects not progressing (projects in different stages)	53.3%
Disruptions to the functioning of construction sites	46.7%
Complete shutdown in government funded projects	40.0%
Only execute foreign funded projects	10%
Other	10%

The highest response rate of 93.3% has indicated that the slowdown of construction projects was the exact issue faced by many contractor and client organizations. Most of the contractors and clients were not able to speed up the execution of the project activities.

Further, Table 4 presents the common issues faced by the contracting organizations and the construction projects during the economic crisis.

Table 4: Common issues faced by the contractor organizations/projects during the economic crisis

Issues	Response rate (%)
Increasing material prices due to the import restrictions	90.0%
Disruptions in machinery operations due to scarcity of fuel	83.3%
Slow down the project progress	80.0%
Barring the machinery idling cost due to the shortage of fuel	73.3%
Material import restrictions imposed by the government	53.3%

Issues	Response rate (%)
Disruptions to project activity workflow due to transport difficulties faced by the site staff	46.7%
Maintenance cost for unused machineries, plant and equipment	43.3%
Complete shutdown in government funded projects	30.0%
Other	10.0%

As per table 4, increasing material prices due to import restrictions has shown the highest response rate of 90%. Many construction projects that import materials face this issue as contractors couldn't open letters of credit for the respective projects. At the same time, 10% of the response rate shows various other issues faced by the respondents. One of the quantity surveyors has stated that *“increasing the financial cost of the project created difficulties for the employer in funding the project and also the contractor face difficulty in managing the project cash flow”*. Also, an engineer in one of the abandoned projects has stated that *“both the employer and the contractor organizations could not get any bank loans due to the economic crisis”*.

3.4 REASONS FOR CONSTRUCTION PROJECTS BEING ABANDONED DURING THE ECONOMIC CRISIS

Figure 4 shows the reasons for the overall construction industry perspectives on the construction projects being abandonment during the economic crisis.

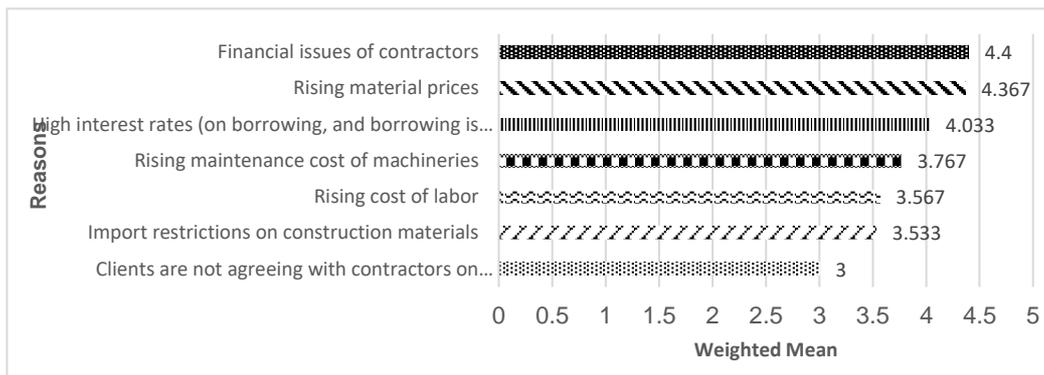


Figure 4: Reasons for construction projects being abandonment during the economic crisis

$$\text{Weighted mean} = \frac{\sum_{i=0}^n \omega_i \cdot X_i}{\sum_{i=0}^n \omega_i} \quad (01)$$

where, ω = frequency of responses and X = rating of each reason.

The reasons were ranked and shown graphically based on the weighted mean. and all the reasons have weighted mean value between 3.00 and 5.00. Table 5 illustrates the ranked reasons as per the weighted mean.

Table 5: Ranking of reasons

Reasons	Weighted Mean	Rank
Contractors' financial issues	4.400	1
Rising material prices	4.367	2
High interest rates	4.033	3

Reasons	Weighted Mean	Rank
Rising maintenance cost of machineries	3.767	4
Rising cost of labour	3.567	5
Import restrictions on construction materials	3.533	6
Clients not agreeing on alternative proposals with the contractors	3.000	7

According to the study findings illustrated in Table 5, financial issues faced by the contracting organizations were ranked the top place as a reason for construction project abandonment. Rising material prices, high-interest rates, rising maintenance costs for machinery due to idling, increasing the labour cost, import restrictions imposed by the government on construction materials, and clients not moving to alternative proposals during the economic crisis were identified as the reasons for the construction project's abandonment.

3.5 REMEDIES OR MEASURES TO AVOID PROJECTS BEING ABANDONED

In terms of remedies or measures to avoid projects being abandoned, seven major measures were identified after conducting the semi-structured preliminary interviews. All the professionals were asked to rate measures that they have practiced towards avoiding projects being abandoned, on a Likert scale from 1 to 5 (1 being not practicing and 5 being mostly practicing), based on the magnitude of practicing measures. Collected data from the Likert scale was analysed and ranked by the weighted mean method.

According to Table 6, most of the contractor organizations minimized their overhead costs in the projects during the economic crisis as a remedy to avoid their projects being abandoned. Introducing alternative budgets and value engineering proposals, limiting the operating hours, not providing extra overtime and allowances, reducing the workforce up to 50% and reducing salary scales were ranked among other remedies respectively.

Table 6: Ranking of remedies/measures

Remedies / Measures	Weighted Mean	Rank
Minimizing the overhead cost of the organization	4.367	1
Introducing alternative budget and value engineering proposals	3.267	2
Limiting the operating hours	3.133	3
Reducing the extra allowances for workers	3.100	4
Reducing the workforce at least up to 50%	2.800	5
Stock up some of raw materials before the crisis	2.700	6
Reducing the salary scales	2.433	7

Additionally, the survey respondents proposed below remedies to avoid construction projects being abandoned in future.

- Encourage foreign investments,
- Country's economy should be in the proper track,
- Inflation should be controlled,
- Encourage exports and ease tight import restrictions, and

- Introduce proper price regulation mechanisms for all types of construction materials.

Apart from the above-proposed remedies, if the economic crisis continues for another 2-3 years, the respondents have suggested below plans that they will be taking over to avoid their construction projects being abandoned.

According to figure 5, 23 out of 30 (76.7%) respondents have mentioned controlling the overhead strictly in the organization as a key mechanism to face the crisis. While 22 out of 30 (73.3%) has mentioned going ahead with providing value-added services to clients such as providing value engineering proposals to the on-going projects. 20 out of 30 (66.7%) has stated that engaging on small-scale projects can keep low-profit margins for their survival if the economic crisis continues for another 2-3 years. Further, there were 5 out of 30 (16%) respondents has mentioned that they might reduce the salary scale of the employees. According to the given percentages, the reduction of workforce and the reduced salaries of employees seem to be the least preferred options. Because, projects cannot be implemented successfully if the workforce and their salaries were reduced. There were three other suggestions mentioned by them as to diversify the field, monitor the cash flow and negotiate with employers to maintain a positive cash flow, and propose to sell apartments for foreign currency to survive if the economic crisis continues for another 2-3 years.

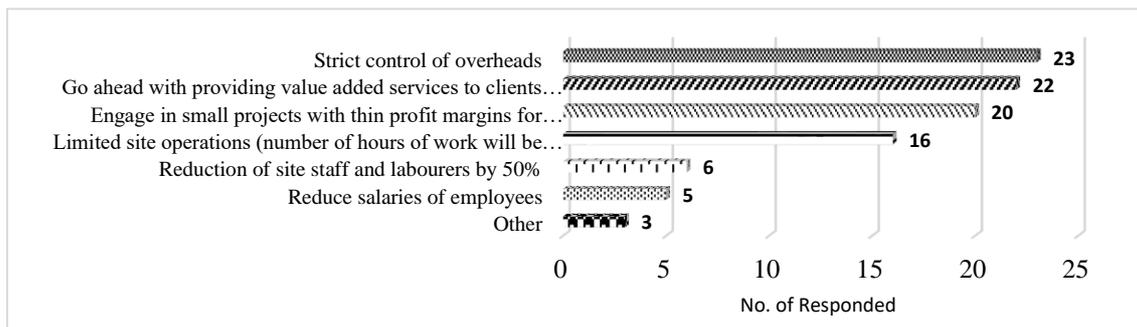


Figure 5: Future remedies if the economic crisis continues for another 2-3 years

3.6 ROLES OF THE INDUSTRY REGULATORS AND PROFESSIONAL BODIES TO LESSEN THE IMPACT TO THE CONSTRUCTION INDUSTRY DUE TO THE ECONOMIC CRISIS

Majority of professionals who participated in the questionnaire survey has mentioned that the industry regulators should make necessary adjustments to avoid the downfall of the construction industry. They must make new regulations with the government to safeguard the industry. One of the quantity surveyors has stated that “*review human resource requirement and assist with knowledge sharing programs, undertake researches regards to the economic crisis matters and suggest some reliable solutions, remedies, and encourage to send skilled labour workforce to abroad projects*”. Another quantity surveyor has stated that “*need to assist contractors financially, corporate them with the government lending organizations and the treasury, and also execute mechanisms for attracting foreign investments*”. One of the engineers has stated “*try to provide practical construction strategies to continuation of construction projects without abandoning*”.

Industry regulators should formulate workable strategies to save the industry during this economic crisis. One of the project managers has stated “*encourage foreign investments by giving them offers and encourage exports of professional services in Sri Lanka*”. The government should negotiate with the relevant authorities and attract foreign investors by giving them various benefits. By encouraging them to bring foreign exchange, the country's economy can be stabilized to some extent. Another project manager has stated that “*making a common formula for the price fluctuation*”. Due to the economic crisis, each of the material prices were changed on daily basis. Therefore, there should be a common formula for the price fluctuation need to provide by the main role like Construction Industry Development Authorities (CIDA) to lessen the adverse impact on the construction industry.

Professional bodies in the industry such as Sri Lanka Institute of Architects (SLIA), Institute of Engineers Sri Lanka (IESL), Institute of Quantity Surveyors Sri Lanka (IQSSL) could also take actions to lessen the adverse impact on the construction industry due to the economic crisis. Most of the participants have mentioned that the professional bodies should make awareness programs about the economic crisis for the professionals in the construction industry. Those awareness programs can be conducted through online platforms. Also, they could mediate with the government and take better decisions to protect the industry.

4. CONCLUSIONS

The defined aim and the objectives have been accomplished towards the exploratory study on abandoned construction projects in the western province Sri Lanka. The study revealed that there is a high degree of impact on the construction industry due to the economic crisis. The impact has directly affected to the country's economy. Most of the construction projects in Sri Lanka were slowdown and temporally shutdown due to the economic crisis. Both the client and the contractor faced many different issues due to the economic crisis which by lowering the number of projects handling within the organization by reducing the work force and their salary, wages, increasing the material prices, less progress in the projects, transportation difficulties, shortage of fuel, import restrictions, increasing the maintenance cost of machineries, and high interest rates. As a result of these analysed issues, it clearly brought out that many construction projects have been abandoned in Sri Lanka during the economic crisis. Therefore, to avoid construction projects being abandoned, the government needs to make proper plan to control the unnecessary increments in material prices and at the same time encourage foreign investments. There should be price regulation mechanism for all the construction materials to avoid rising prices rapidly. The government should ease tight import restrictions. The CIDA as the regulatory body and the professional bodies such as SLIA, IESL and IQSSL need to bring up rules and regulations with the involvement of the government to avoid the construction projects being abandoned while securing the construction industry.

The exploratory study was only limited to abandoned construction projects in the Western province of Sri Lanka due to time constraints and further limited to gathering data from the practitioners in abandoned construction projects during the period of economic crisis in Sri Lanka.

In addition, it was recommended that this exploratory study on abandoned construction projects could be extended to other provinces to bring out in-depth understanding of remedies to cater all range of contracting organisations in the future during a period of economic crisis.

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