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Published online: 17 October 2015


To link to this article: http://kkgpublications.com/wp-content/uploads/2015/12/IJTES-40004-3.pdf

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Abstract. The construction industry is concurred a positive relationship with the cyclical economic fluctuations. Thus, the adverse economic conditions associated with the recession directly affect the construction industry. In response to the recession, the construction practitioners adopt various strategies, but many survival strategies have become reactive, which only consider the short-term economic perspectives. Therefore, the need arises for proactive strategies which focus on the long termism, while the ad-hoc selection of strategies during recession is inappropriate. Therefore, the aim of this research is to map the proactive sustainable responses to the adverse recessionary effects and the scope of the study is limited to the Sri Lankan context. The current research study follows a pragmatic knowledge claim which uses pluralistic approaches to focus on the research problem. In the preceding study, a questionnaire survey was conducted among a sample of 35. The sample size can be generalised due to the time constraint while non-probabilistic snowball sampling technique is used due to the unknown population. In order to accomplish the aim of this research paper, the authors conducted an expert interview survey from approximately one third (12/35) of the respondents in the questionnaire survey. The purpose of conducting a qualitative study among a known sample is to elaborate their perspective in the subject area which further explores the findings generated from the closed structured questionnaire box. The results revealed critical adverse effects and sustainable responses during recessions. A recession responses map illustrated that the sustainable responses can be used to gain an advantage over recession. ‘Risk analysis and Contingency planning’ proactively mitigates most of the adverse effects. The recession responses have been mainly focused on two adverse effects: ‘Liquidity of firms unstable’ and ‘Worsened profitability of construction firms’. Moreover, the attitude of accepting the risk was eliminated with null consideration. The findings of this research are relevant to all the stakeholders in preparing themselves for market volatility during recession.

INTRODUCTION

The financial crisis during the years 2008 and 2009 is considered to be the most devastating economic event since the great depression in 1929 [1]. Growth in advanced economies had visibly declined into fragile and unstable economies due to domestic fiscal adjustment, tight credit conditions and sluggish labour market during economic recession. The market confidence in international financial markets had been deteriorated by the European sovereign debt crisis and led to heightened volatility in capital flows of Asian economies [2]. Thus, it signalled the impact to Sri Lanka which is a developing country in the Asian continent.

The consequences of recession derived visible effects in the construction sector, mainly in the form of postponing or abandoning of contracts. In the worst case scenario, construction companies ended up in bankruptcy due to financing difficulties. Hence, contractors adopt various recession responsive strategies to realize their objectives of survival and development. However, one of the key reasons for the current economic downturn is the unsustainable business practices and the inadequate focus on making a balance between monitory gains along with social and environmental aspects [3], [4]. Hence, recession responses must be aligned with sustainability for long term proactive implication.

However, the proactive recession responses had not aligned to the respective adverse effects of the prolonged recession. Yet, ad-hoc strategies are being implemented to secure the firm’s existence. Therefore, [5] concluded his research with an opening for further research to explore how contractors’ responses should change according to different exposed adverse effects. The industry problem can be
highlighted over the research problem in this area, which enables the researcher to provide a valuable theoretical contribution in this regard.

Thus, this paper aims at mapping the sustainable responses to minimise the respective adverse effects in the construction industry. Recession responses are not solely at the hands of the contractors; rather they must also be extended to other stakeholders. Hence, the aim of the study has its milestone achievements which include:

1. To identify critical adverse effects in the Sri Lankan construction industry during economic recession.
2. To identify sustainable responses to mitigate the adverse effects of the recession.
3. To demonstrate the mapping of sustainable responses with adverse recessionary effects.

The paper begins with a review of literature which includes economic recession, critical recessionary adverse effects and sustainable responses. The sustainable responses are defined as a proactive implication of the strategies to mitigate adverse effects during recession for a long term healthy existence. The next section presents the research methodology followed by data analysis. The paper finally presents the conclusions of the research study and recommendations to clients and to indirect stakeholders.

**LITERATURE REVIEW**

**Economic Recession and Its Impact to Construction Industry**

Overview of Economic Recession

The Great Depression in 1929 was an episode of severe recession, which attracted volumes of studies explaining the recession [6]. Recession is defined as a significant decline in economic activity, spreading across the economy, visible in real Gross Domestic Production (GDP), real income, employment, industrial production and wholesale-retail sales [7]. Similarly, the contraction in the economic cycle is also identified as recession, which brings about a significant decline in Key Economic Indicators (KEI) [8]. However, depression is the most severe version of recession marked at the lowest turning point of the business cycle.

The recent economic downturn in the year 2009 appeared as asignificant deterioration in global macroeconomic conditions as well as sizable downward revisions to growth forecasts [1]. According to [9], the global crisis emerged as seemingly an isolated turbulence in the subprime segment of the US housing market, which then mutated into a full blown recession by the end of 2007. This was known as the housing bubble burst. As a result of the overhanging supply of housing, financial institutions opened up offering an extended number of mortgages at attractive rates [10]. As per [11], the fundamental cause of the crisis was the combination of a credit boom and a housing bubble.

The capital regulations on banks reduced the amount of security to hold against assets. It then resulted in the risk of mortgage default in the banking sector and rendered them insolvent when the housing bubble burst. Hence, causes imposed by the construction industry could be emphasised in the recent recession.

**Adverse Recessionary Effects in the Construction Industry**

The construction industry plays a vital role in the national economy, and is affected by macroeconomic fluctuations. In Sri Lanka, the construction industry contributed 9.39% of GDP in the year 2012 [2]. Thus, the global recession caused by the financial crisis had an impact on the real economy and signs were visible in the construction sector, mainly in the form of postponement of investments and/or abandonment of proposed contracts [12].

As per the quantitative studies conducted by [13] recessional impact to the construction industry can be mainly categorized under six headings. They are financing, demand and supply, unemployment, constraint of material and plant, procurement and supply chain and future prospect led by customer confidence as illustrated in Figure 1. The critical assessment of particular adverse effects was ranked according to the Relative Importance Index (RII) on each respective bar line, where ‘Late Payment by clients’ was marked as the most critical issue followed by ‘Financial difficulties due to tight credit conditions’. The study revealed adverse effects under the headings ‘Financing’ and ‘Demand and Supply’ to be the most critical.

**Sustainable Responses to Mitigate Adverse Recessionary Effects**

Contractors adopt various strategies in response to a recession to realise their objectives of continued existence and development. Crisis responses have been identified under three categories, namely Contracting-related actions, Cost-control related actions and Financial-related actions [5]. Further, [14] have proposed a taxonomy, which utilises a well-known theoretical typology of Michael Porter's generic strategies (i.e. cost leadership, differentiation and focus) in responding to the economic recession. Cost leadership strategies and differentiation strategies under Porter’s generic theory are aligned with cost control responses and contracting related responses under the by [5] classification respectively. One of the key reasons for the current economic downturn is the unsustainable business practices and the inadequate focus on making a balance between monitory gains along with social and environmental aspects [3], [2].
In the studies conducted by [15] sustainable response was defined as: “a long term, proactive strategic solution to mitigate adverse effects in the construction industry during the prolonged recession. The responses support the sustainable benefits which extend the responsibility of environmental integrity and social equity over economic development when selecting survival strategies for the long term healthy existence.”

Figure 2 illustrates the responsive strategies identified by [13] in their quantitative studies along with abbreviated codes (Eg. CON1). The sustainable responses from among these responsive strategies have been highlighted.
METHODOLOGY
Data Collection
The current research study follows a pragmatic knowledge claim in which Patton [16] conveys the importance of focussing attention on the research problem and then uses pluralistic approaches. Therefore, sequential procedures associated with the mixed method approach were practiced. Thus, the study begins with a quantitative method followed by a qualitative method involving a detailed exploration with a few individuals.

In a previous study by [13] a questionnaire survey was conducted among consultants, contractors, financiers, academicians and clients in the construction industry. A sample size of more than 30 is considered to be an arbitrary thumb rule and due to the time constraint sample size is defined as 35 in the quantitative studies. As the population is unknown, randomisation is impossible. Therefore, non-probabilistic snowball sampling technique is used in the quantitative studies. Each respondent’s self-assessment of critical adverse effects and appropriate sustainable responses were ranked accordingly. In order to accomplish the aim of this research, the authors conducted an expert interview survey for further investigation, from approximately one third of the previously selected respondents. The purpose of conducting a qualitative study among a known sample is to elaborate their perspective in the subject area which further explores from the findings generated from the closed structured questionnaire box. The structured in-depth interviews were used to provide uniformity which assures the comparability of data among experts.

A sample of 12 interviewees has been identified by [17] as the point in which the data saturation occurs. They claim that over and above a sample of 12, the reliability of data starts to decrease. Similarly, [18] found in their study that theme saturation was achieved after 12 interviews. Hence, the expert interview survey in this study was carried out among 12 experts in different professional disciplines with the intention to cover multi-rational assessment. All the respondents have retained more than 10 years of experience in their role of work. Each interviewee was assigned a reference number (e.g. CLI-1) as shown in Figure 3, which was used to illustrate their respective views in the data analysis.

- Client organisations
  - CLI-1, CLI-2
- Construction consultants
  - CONS-1, CONS-2
- Construction contractors
  - CONT-1
- Government Regulatory body
  - GOV-1
- Financiers (Banks)
  - FIN-1, FIN-2
- Academicians (Construction)
  - AC-CON-1, AC-CON-2, AC-CON-3
- Academicians (Economists)
  - AC-ECO-1

Key Players
Keep Satisfied
Keep Informed

In the Mendelow’s matrix for stakeholder mapping, four stakeholder groups are categorised, namely: Key players, keep satisfied, keep informed and minimal effort. However, in this expert survey only the first three categories have been included as shown in Figure 3. The category minimal effort has been excluded from the expert survey because the power and interest of this group to influence the decision making is very minimal.

The expert survey sample has been strengthened by consultants and academicians (construction and economics) mainly because their versatile knowledge and experience in the field is invaluable. Both CONS-1 and CONS-2 have gained vast experience as construction contractors before they established themselves as construction consultants in the industry. Therefore, one construction contractor in the sample would be sufficient. Further, in order to ascertain a multi-stakeholder perspective, one representative in a Government Regulatory body (i.e. CBSL) is included in the sample. CBSL is the adviser to the Government in sectorial wise policy making. Therefore, it was more appropriate to obtain information from CBSL rather than any other Government delegated authorities such as the Ministry of Construction and Engineering Services.
Data Analysis

Data display will be illustrated using the code-based content analysis in this study. Content analysis is a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding [19]. Code-based content analysis captures significant findings from the interview transcripts. Major themes and sub-themes were formulated in accordance with the objectives and the coding structure was developed accordingly. The QSR. NVivo 2010 computer software was used to simplify the work relating to content analysis. While, the validity of this research finding is gained through different sources (literature findings, questionnaire survey findings and expert interview survey findings) and different stakeholder groups to cover the multi-perceptiveness in the data collection.

DATA ANALYSIS AND RESEARCH FINDINGS

The Economic Recession in Sri Lankan Construction Sector

The effects of economic recession in Sri Lanka have been experienced by 83% of the experts who have given a straightforward answer “Yes”. The majority of the experts identified the ‘year 2009’ as a critical economic downturn in the country as per the time series data produced by the department of census and statistics. This is aligned with the literature findings of the GDP growth rate fluctuation illustration, where the GDP growth rate shows a drastic decline in the year 2009. It is the common view by all the interviewees that despite the external recessionary effect, three decades of civil war caused a severe recession in Sri Lanka which resulted in a lesser development. However, the situation is now reciprocated.

Seventeen percent of the experts revealed that the recession was not experienced by Sri Lanka. As per AC-CON-3, “We did not feel recession much due to civil war and nearby effects such as post war rehabilitation. Therefore, the Sri Lankan economy has nothing to do to cure from the recession, because the effect is less and our involvement before the recession has been nil.” Similarly, CLI-1 argued that there was no recession, but only a slowdown in demand and commented on the country’s performance. He noted that, “We had a growth of 8%. Even India, China could not sustain the growth. Singapore had a negative growth. I say our situation is good, though Central Banks statistics indicated a drop.”

Further, GOV-1 expressed that “The construction industry is one of the main contributors to the employment of Sri Lanka. As per the statistics, if the construction industry has got affected by recession, the unemployment rate would have definitely gone up with what it penetrated.” However, despite the gloomy prospects for employment in the world, unemployment and labour migration in Sri Lanka remained at an exceptionally low level, which has been revealed by the Central Bank statistics [20], [21]. Similarly, quantitative studies conducted by [13],[14] as illustrated in Figure 1, have not identified unemployment as a critical issue. However, GOV-1’s statement should not depend on a single indicator due to the fact that the unemployment rate is only one indicator of the economy. On the other hand, the computation of indicators by CBSL is criticised. CONS-1 and CLI-2 stated that the statistics published by the CBSL must be carefully interpreted. Moreover, AC-CON-3 criticised the CBSL publication stating that, “data which used to compute those indicators is obtained from a small segment of the contracting firms and consultancy firms and researches are not from the construction industry and the reliability of data generated from these sources is questionable. Not conclusive evidence.” AC-CON-3 suggested an alternative way to enhance the presentation of performance measurement and improve reliability in the construction industry is to shift the role from the hands of the CBSL to the Institute for Construction Training and Development (ICTAD). Currently, ICTAD has been renamed as Construction Industry development authority (CIDA), which is an organization set up by the Government of Sri Lanka to develop and promote the domestic Construction Industry, Contractors, Professionals, Work Force, etc. [22].

However, some of the experts elaborated that recession is not a barrier for the construction development. AC-ECO-1 stated that “Even though there is a recession and an economic downturn in the country, a number of construction activities are booming with foreign investments”. AC-CON-3 revealed, “We were fortunate enough to survive to meet this recession because of the foreign funds flowing into this economy.” AC-ECO-1 stated that a recession is not a barrier but rather a move forward mainly in high end project construction.

Adverse Recessionary Effects in the Sri Lankan Construction Industry

According to the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, dynamic fluctuations in the external environment due to economic recession can be analysed under the external factors: opportunities and threats. Hence, adverse recessionary effects in the construction industry can be identified as threats. Critical adverse effects have been recognised through the expert interview survey along with the justifications as elaborated in Table 1. In addition to the quantitative findings as illustrated in Figure 1, foreign currency fluctuation and inflation have also been recognised by the experts as critical in the construction sector.
### TABLE 1
CRITICAL ADVERSE RECESSIONARY EFFECTS: QUALITATIVE FINDINGS

<table>
<thead>
<tr>
<th>Adverse effect</th>
<th>Justification</th>
</tr>
</thead>
</table>
| Late Payment by Clients                 | • Where the central government is the client, contractors do not receive funds on time. Thereby they have to settle their loans with poor cash flows  
• Private clients face poor cash flows due to non-recovery of their investment returns  
• The ‘one month turnover’ of the contractor is blocked due to the interim payment dispatching process |
| Tight credit conditions                 | • The granting of new loans decreasing and drying up eventually  
• Credit ceilings imposed by the CBSL limiting the lending cycle  
• The additional requirement of solid and tangible securities for lending |
| Lower investment                        | • Investors/developers position themselves dormant due to the insecurity and an unstable economy  
• Almost no capital raised for construction projects other than those funded by the IMF and organisations linked with the government |
| Contractor’s profitability is worsened  | • The rapid fluctuation of the contractor’s profit component due to the difficulty in predicting the actual project cost  
• Contractors’ poor performance in planning leads to unsustainable survival even during a construction boom |
| Unoccupied Construction facilities      | • Improper analysis on potential demand prior to construction leading to surplus supply, e.g. apartments remain unsold for a long period and developers lose their committed investments  
• Not recognising the pausing point of the buyer to procure, resulting in surplus supply. E.g. in the Middle East, a very high demand for condominium units motivated builders to keep on building condominiums and subsequently the price in the pre-sale stage rose. However, the same set of buyers was buying over and over until their buying cycle stopped. The builders still kept on building |
| Cash flow problems                      | • Construction companies facing difficulty in managing their costs resulting in a large variance between the budget and the actual cash flows  
• Construction companies compelled to work with their own reserves  
• Improper management of cash flow by the contractors (regardless of the economic situation) resulting in making the banks more profitable |
| Unbalanced income distribution among firms | • Though contractors are graded, construction work is not always properly distributed, resulting in some contractors getting more work than they can genuinely handle  
• Projects suspended half way with all the temporary works remaining idle in the construction sites due to the credit crunch and lack of funds |
| Project Suspension                       | • The knock-on effect generates many claims  
• Contractors’ tendency to scale down work and postpone investments |
| Unemployment                             | • Salaries and wages of the limited employees rising along with many work opportunities  
• Laying-off staff during recession is a social threat and caused by the difficulty in re-employing  
• Redundancy compensation packages going up and being unfavourable to the contractors |
| Labour redundancy                        | • The transmission cycle of external recession has diffused recession from major economies to developing nations, mainly in the form of foreign funded projects |
| Foreign currency fluctuation             | • Inflation during recession being transparent by way of increased salaries and wages, energy costs (including fuel prices) and subsequently resulting in increased construction cost |

### The Current Practice of Recession Responses in Sri Lanka

An economic recession drives firms to undertake unusual steps to survive within an environmental context. The experts have identified the current practice of recession responses as detailed Table 2. These listed responses are the fresh contributions (marked with an * in the text) by the expert survey in addition to the literature findings. Other than the listed strategies, experts have replicated the strategies already identified in the quantitative studies such as ‘Wait and See’ mode (FIN 6), HRM (COS 2/ COS 4/ COS 10) and Forward Contracts (CON 3).
It is concluded by all the experts that most of the current strategies are reactive, while some are not reactive but simply accepting the risk. It is also agreed that the sufficiency of current responses to cure from the recession is not acceptable to fulfil the anticipated outcomes. FIN-2 stated that contractors concentrate more on profit maximization rather than the best value for money and start panicking when disaster occurs. This is more apparent in the government sector construction. GOV-1 specified that “I suspect that many construction firms have not adapted to such strategies at all, but rather dabbling with issues that have resulted from the boom (i.e. Shortage of human resource to meet the demand)”. However, there are some proactive strategies in the current practice such as, phase completion, pre-sell, forward contracting and HRM which must be emphasised during a recession.

The experts proposed the most proactive strategies which should have been practiced to mitigate recessionary adverse effects during a recession. Many of the listed strategies are aligned with the strategies illustrated in Figure 2. Recession responsive strategies along with the stakeholder’s interests are tabulated in Table 3 followed with the researchers’ justification. 83% of the respondents proposed Risk analysis & Contingency planning as the most applicable recession response strategy.

<table>
<thead>
<tr>
<th>Code</th>
<th>Proposed strategy</th>
<th>CONS-1</th>
<th>CONS-2</th>
<th>CONS-1</th>
<th>AC-CON-1</th>
<th>AC-CON-2</th>
<th>AC-CON-3</th>
<th>AC-ECO-1</th>
<th>FIN-1</th>
<th>FIN-2</th>
<th>CLI-1</th>
<th>CLI-2</th>
<th>GOV-1</th>
<th>% OF RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>***</td>
<td>The advisory role</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CON 20*</td>
<td>Hedging for price fluctuation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>33%</td>
</tr>
<tr>
<td>CON 21*</td>
<td>Diversification</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>33%</td>
</tr>
<tr>
<td>FIN 3</td>
<td>Research &amp; Development (R&amp;D)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>75%</td>
</tr>
<tr>
<td>CON 22*</td>
<td>Training &amp; Development (T&amp;D)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>75%</td>
</tr>
<tr>
<td>CON 15</td>
<td>Bidding strategies / Cost modelling</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>50%</td>
</tr>
<tr>
<td>FIN 2</td>
<td>Employer’s guarantees</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>50%</td>
</tr>
<tr>
<td>CON 3/18</td>
<td>Forward contracting and Pre-sell</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>33%</td>
</tr>
<tr>
<td>COS 5</td>
<td>Local resource utilisation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>42%</td>
</tr>
<tr>
<td>COS 12*</td>
<td>Risk analysis &amp; Contingency planning</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>83%</td>
</tr>
<tr>
<td>COS 13*</td>
<td>Performance appraisal and Monitoring</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>50%</td>
</tr>
</tbody>
</table>
The advisory role strategy has not been coded because they fall into all the four categories (CON, CONS, FIN and OPP). The importance of this has been emphasised by AC-CON-3, by stating that it allows the contractors to be well informed on how to plan out their strategies in recession. CONS-1 recommended that recession awareness programmes must be conducted in a forum for all the developers. The central bank, chamber of commerce, construction chambers must initiate advising the developers to survive during the recession.

AC-ECO-1 proposed the hedging mechanism for price fluctuation. He believed that the external recessional threat could be mitigated by currency hedging by netting and matching forward currency contracts to avoid the exposure to forex fluctuation especially the depreciation of Sri Lankan rupee (LKR). This statement is supported by FIN-1 who stated that the bankers should motivate the contractors in currency hedging.

Diversification is a commonly agreed opportunistic strategy. CONT-1 stated that some contractors have diversified into other industries because it is very difficult to survive only in the construction industry. A typical example of a construction related diversification would be the construction company in Sri Lanka which purchased a batching plant and sells ready-mix concrete in addition to the regular construction activities. Thus, even if a recession affects the entire economy, it is still possible to survive if the company is well diversified. CLI-1 stated that diversification must be arranged for diversifying into potential buyers’ portfolio, rather than limiting to the high end market oriented facilities which target tourists throughout the year. For instance, a diversification among foreign markets, local high network markets and mixed developments. Similarly, the questionnaire survey findings revealed that diversifying into other construction-related businesses and non-construction related businesses are appropriate strategies. On the contrary, AC-CON-3 argued that the concentration on the core competency would bring about long term sustainability rather than diversification.

CONS-1 and CONT-1 suggested that R&D is a proactive response which could be implemented through value engineering and empowering contractors to come up with better proposals. CONS-2 suggested T&D to train the workforce to gain in-depth knowledge. GOV-1 recommended the continuous professional development to maintain the high standard of service.

AC-CON-3 denoted that bidding strategies are core important prior to implementing any other strategy. It has been identified that the current estimating procedures are still at its preliminary level. Thus, AC-CON-1 elaborated that upgraded strategies like cost modelling, cost planning and cost data analysis need to be practiced for gaining an advantage during a recession.

A guarantee from the client is a solution for late payment by the client. However, it is not practiced in Sri Lanka; therefore AC-CON-3 suggested a finance bridging programme such the screw account system which is practiced in Dubai. The Screw accounting philosophy is used to strengthen the contractor’s cash flows by a guarantee given by the employer for the timely payments to the contractor. FIN-1 suggested that commercial banks have to intervene and set up a sinking fund administered by the bank to maintain timely payment. This is an appropriate strategy identified in the questionnaire survey.

AC-CON-3 is of the view that current practices in the industry such as forward contracting with suppliers, pre-sale arrangement with potential buyers, negotiation with financiers and suppliers provide an ease of moving forward during a recession. Furthermore, in another perspective AC-CON-2 suggested to use locally available alternative resources wherever possible instead of imported resources. Exploring the use of alternative construction materials is a cost control related strategy which was marked as quite significant in the questionnaire survey findings.

Risk analysis and contingency planning is a feed-forward recession survival mechanism. CONS-1 stated that feasibility studies must be given a special concentration together with a market research to forecast potential demand. The dynamic fluctuation in customer’s confidence is assessed based on the demand. AC-CON-3 stated the need of a concurrent and continuous planning process. AC-CON-1 identified the risk analysis and contingency planning strategy to find out the effects of recession on projects and organizations at large. The accounting division will have a major role in the risk management cycle.

Performance appraisal and monitoring is another proactive strategy. AC-CON-3 stated the importance of conducting a post project review to do a variance analysis. AC-CON-2 advised a parallel periodical review of Key Performance Indicators (KPI) of construction companies to identify changes in the performance. CLI-2 advised carrying out a trend analysis for the purpose of rolled-up budget preparation.

The Mapping of Sustainable Responses with Adverse Effects of Recession

It is commonly agreed by the experts that cherry picking of the strategies is not useful at the time of the worst scenarios. Thus, proposed responsive strategies have to be matched with the adverse effects. According to the survey findings, the summarised view of all the cumulative opinions is presented in Table 4. It illustrates a matrix in which the header row represents different recession responses categorised under four headings: contracting related responses, cost control related responses, financing related responses and opportunity related responses, while the header column represents the adverse effects in the construction industry during recession. This matrix was developed based on the analysed data derived from quantitative and qualitative studies. Subsequently, the experts were asked to
map recession responses to its respective adverse effects for the purpose of minimising the negative effects. Sustainable responses derived from the analysis have been highlighted in the matrix in order to focus on the proactive long term strategic solutions in the industry during the economic recession.

Further, it is the common view of the interviewees that the matrix only provides direct links, while more indirect links can be explored through further surveying. Moreover, in a greater emphasis, the attitude of accepting the risk must be eliminated entirely with null consideration. Though adopting a wait and see mode was recognised as an adverse effect, this research study focuses on recommending the opportunity of using different recession responses to minimise its impacts. Hence, risk acceptance by adopting the ‘Wait and See mode’ is ignored at first glance.

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>THE MATRIX OF MAPPING RECESSION RESPONSES TO ADVERSE RECESSIONARY EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adverse Recessionary Effects</strong></td>
<td><strong>Recession Responses</strong></td>
</tr>
<tr>
<td>Late payment by clients</td>
<td>CON</td>
</tr>
<tr>
<td>Financial difficulties due to tight credit conditions</td>
<td>18</td>
</tr>
<tr>
<td>Increased competitiveness</td>
<td>1,2,3,4,6,7,14,15</td>
</tr>
<tr>
<td>Liquidity of firms unstable</td>
<td>3,4,5,6,8,9,10,11</td>
</tr>
<tr>
<td><strong>Adopt “wait and see” approach</strong></td>
<td></td>
</tr>
<tr>
<td>Postpone investment in property</td>
<td>12</td>
</tr>
<tr>
<td>Low investment levels</td>
<td>7,8,14</td>
</tr>
<tr>
<td>Growing the number of unsold built construction facilities</td>
<td>17,18</td>
</tr>
<tr>
<td>Decline in the value of public sector contracts</td>
<td>14,18</td>
</tr>
<tr>
<td>Worsened profitability in construction firms</td>
<td>1,3,4,5,6,8,9,10,15,16,17,18,20,21</td>
</tr>
<tr>
<td>Withdrawal of Bank lendings</td>
<td>12</td>
</tr>
<tr>
<td>High unemployment of professionals</td>
<td>4,7,22</td>
</tr>
<tr>
<td>Reduce spending - Inflation</td>
<td>3,4,5,9,14,19,20</td>
</tr>
<tr>
<td>Bankruptcy threat</td>
<td>2,7,10,14,15,16,17,18,21</td>
</tr>
<tr>
<td>Growth of the construction sub-sector decelerating</td>
<td>12</td>
</tr>
<tr>
<td>Bankruptcy threat of suppliers</td>
<td>5</td>
</tr>
<tr>
<td>Drop in the volume of imports of building materials</td>
<td>3,8,20</td>
</tr>
<tr>
<td>Reduced demand for building materials</td>
<td>4,5</td>
</tr>
<tr>
<td>High unemployement of non-professionals</td>
<td>4,9,22</td>
</tr>
<tr>
<td>Drop in capital expenditure on machinery</td>
<td>9</td>
</tr>
<tr>
<td>Increasing labour redundancy cost</td>
<td>4</td>
</tr>
<tr>
<td>Foreign currency fluctuation</td>
<td>3,8,20</td>
</tr>
<tr>
<td>Project suspension</td>
<td>12,13,16,17</td>
</tr>
</tbody>
</table>

* The strategies which cannot be recognised as sustainable responses

An overview of Table 4 shows ‘Risk analysis and Contingency planning’ (COS 12), as one of the cost control strategies, marked quite frequently as a recession response to mitigate most of the listed adverse effects. Recession responses have been mainly focussed on minimising two adverse effects.
They are ‘Liquidity of firms unstable’ and ‘Worsened profitability in construction firms’.

In the detailed analysis of Table 4, late payments by clients (the most critical adverse effect in the quantitative studies shown in Figure 1) can be minimised by adopting Risk analysis and Contingency planning (COS 12). Establishing security agreements with project owners & financial institutes (FIN 2) and Reformatting the firm’s strategic objectives (OPP 1). As per COS 12, risk inherent in client’s financial capabilities also has to be assessed prior to undertaking a project as in the case of assessing of the contractor’s financial background. Moreover, a buffer contingency allocation is suggested by experts for a smoother operation of construction activities during the period of lagging payment by the client. In the same platform, FIN 2 stated that a guarantee from the client is a solution in order to assure timely payment. However, it is not practiced in Sri Lanka; therefore AC-CON-3 and FIN-1 suggested establishing a screw accounting system and setting up a sinking fund as solutions which are explained in subsection 4.2. Further, reformating of strategic objectives (OPP 1) is a subjective strategy that varies based on the top management’s strategic direction. According to the experts, profit orientation and risk attitude (risk favourable or risk adverse) of the top management directs the decision making of the contractor whether to proceed with the particular client or not.

Experts have mapped the remaining adverse effects to recession responses with similar justifications. Moreover, special attention has to be given to the sustainable responses which have been highlighted in the matrix for the long term proactive existence.

[23] coined that “my counterfactual, introspective, and hard thinking ancestor would have been eaten by a lion, while his non-thinking but faster reacting cousin would have run for cover. Consider that thinking is time-consuming and generally a great waste of energy” (pg. xxii). So the researcher has stopped for a while to think how to minimise adverse recessionary effects by learning a lesson from the past cycle to be proactive in the forthcoming recession. Adhering to the right strategy would minimise the effect without the cherry picking of strategies.

CONCLUSIONS

The deterioration of macro-economic activities during a recession leads to direct consequences in the construction activities. Questionnaire survey findings as detailed in the literature review revealed that the weakened financial conditions due to late payment by clients and tight credit conditions are critical during a recession. Apart from the questionnaire survey findings, expert interviewees have also disclosed that adverse effects, namely: foreign currency fluctuation, inflation, labour redundancy, project suspension and unbalanced income distribution among firms act as a barrier in the construction industry to move forward during a prolonged recession.

Through the previous studies conducted by [13], [14] many of the contractors manifested their views of recession basically under the short term economic perspectives which can be considered as a reactive approach. Therefore, the need of an optimal extraordinary solution arises to mitigate the adverse effects. Hence, the sustainable responses were introduced in the construction sector to focus on long term proactive strategic establishments. Current responsive strategies in the construction sector have been grouped under contracting related actions, cost control related actions, financing related actions and opportunity related actions. Existing literature listed the strategies which are sustainably appropriate according to the questionnaire survey findings. Minimizing the cost of re-work by quality output, implementing stricter site management to reduce wastage, establishing security agreements with project owners and financial institutes and reformulating the firm’s strategic objectives were marked as the most appropriate sustainable responses under each respective heading. In addition, advisory role, hedging for price fluctuation, diversification, R&D, T&D, bidding strategies/cost modelling, employer’s guarantees, forward contracting and pre-sell, negotiation with stakeholders, local resource utilization, risk analysis & contingency planning and performance appraisal & monitoring were the proposed proactive strategies highlighted by different experts in the construction industry. However, none of the strategies would yield any benefits if implemented only at the occurrence of a recession. Hence, a continued process of proactive strategies has to be implemented. Only proactive strategies will result in minimising the adverse effects of the recession. Eventually, it is fostered that the sustainable responses proactively address to minimise adverse effects during a recession.

Consequently, the paper has presented a mapping of adverse effects with its respective recession responses to avoid the ad-hoc selection of strategies. The direct links have been made between different strategies and adverse effects, conferring with the experts. Moreover, in a greater emphasis, the attitude of accepting the risk (i.e. Adopt a ‘Wait and See’ approach) must be eliminated entirely. ‘Risk analysis and contingency planning’ together is one of the cost control related strategies recognised by the experts as an effective recession response to mitigate most of the listed adverse effects. The framework can be further developed by exploring innovative strategies and ascertaining indirect relationships through further surveying. The framework provides a preliminary outline of an on-going strategic exploration.

[5] concluded his research with an opening for further research to explore how contractors’ responses should change according to different exposed adverse effects. This has been addressed through this study by specifically relating it to the Sri Lankan construction context.

This research study mainly focused on proactive recession responses by construction practitioners (contractors and
Acknowledgement

This study was initially undertaken at the University of Moratuwa, Sri Lanka. Therefore, the support and assistance from the University towards this research study is kindly acknowledged.

REFERENCES


— This article does not have any appendix. —