

Key Knowledge Generation

Publication details, including instructions for author and
Subscription information:

<http://kkgpublications.com/technology/>

SUSTAINABLE RESPONSES TO MINIMISE RECESSIONARY EFFECTS IN THE SRI LANKAN CONSTRUCTION INDUSTRY

TRESHANI PERERA ¹, K. G. A. S WAIDYASEKARA ²

¹ RMIT University, Australia

² University of Moratuwa, Sri Lanka

Published online: 17 October 2015

To cite this article: P. Treshani and K. G. A. S Waidyasekara “ Sustainable responses to minimise recessionary effects in the Sri Lankan construction industry,” *International Journal of Technology and Engineering Studies*, Vol. 1, no. 3, pp. 87-97,2015.
DOI: <https://dx.doi.org/10.20469/ijtes.40004-3>

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

PLEASE SCROLL DOWN FOR ARTICLE

KKG Publications makes every effort to ascertain the precision of all the information (the “Content”) contained in the publications on our platform. However, KKG Publications, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the content. All opinions and views stated in this publication are not endorsed by KKG Publications. These are purely the opinions and views of authors. The accuracy of the content should not be relied upon and primary sources of information should be considered for any verification. KKG Publications shall not be liable for any costs, expenses, proceedings, loss, actions, demands, damages, expenses and other liabilities directly or indirectly caused in connection with given content.

This article may be utilized for research, edifying, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly verboten.

SUSTAINABLE RESPONSES TO MINIMISE RECESSIONARY EFFECTS IN THE SRI LANKAN CONSTRUCTION INDUSTRY

TRESHANI PERERA ^{1*}, K. G. A. S WAIDYASEKARA ²

¹ RMIT University, Australia

² University of Moratuwa, Sri Lanka

Keywords:

Construction Industry
Recession, Sri Lanka
Sustainable Responses

Abstract. 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 generalized due to the time constraint, while the non-probabilistic snowballing 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, further exploring 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 sustainable responses can be used to gain an advantage over the 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 the recession.

Received: 10 August 2015

Accepted: 08 September 2015

Published: 17 October 2015

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 monetary 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.

*Corresponding author: Treshani Perera
E-mail: treshani.perera102@gmail.com

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 a significant 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] recessionary 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 monetary gains along with social and environmental aspects [3], [2].

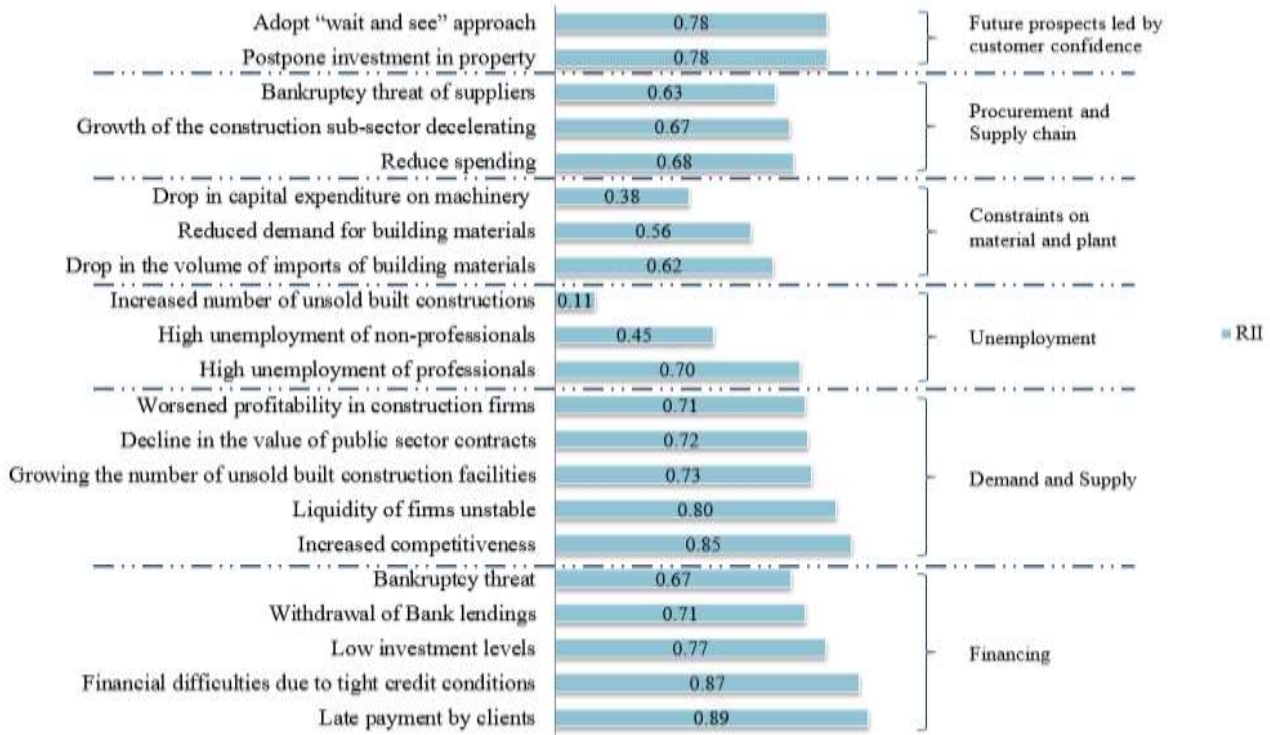


Fig. 1. Critical adverse recessionary effects: quantitative findings, Source: [15]

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.

Contracting - related responses		Cost control - related responses	
CON 1	Minimising the cost of rework by quality output	COS 1	Implementing stricter site management to reduce wastage
CON 2	Forming partnership and developing reputation with clients	COS 2	Effective human resource management (HRM)
CON 3	Forward contracting with suppliers and subcontractors	COS 3	Inventory management
CON 4	Maximise the number of biddings within the firm's competencies	COS 4	Freezing staff recruitment
CON 5	Negotiating for the lowest possible price for supplies	COS 5	Exploring the use of alternative construction materials
CON 6	Emphasising on cost, risk and resource management	COS 6	Implementing stricter procurement procedures
CON 7	Specialising in a core expertise area	COS 7	Implementing stricter financial management on cash flow
CON 8	Venturing into overseas markets	COS 8	Adopting energy efficient practices
CON 9	Undertaking short-term and fast track projects	COS 9	Maintaining a group of core staff
CON 10	Subcontracting work from other contractors	COS 10	Restructuring the workforce into more productive teams
CON 11	Developing systems for follow up audits	COS 11	Managing variations
CON 12	Renegotiating the terms of contracts		
CON 13	Rescheduling of projects		
CON 14	Forming public private partnerships (PPP)		
Opportunity - related responses		Financing - related responses	
OPP 1	Reformatting the firm's strategic objectives	FIN 1	Negotiating alternative loan services
OPP 2	Developing aggressive marketing responses	FIN 2	Establishing Security agreements with project owners & financial institutes
OPP 3	Practicing innovative procurement methods	FIN 3	Investing into R&D to further explore business opportunities
		FIN 4	Lease financing construction equipment
		FIN 5	Investing surplus funds in financial investments
		FIN 6	Adopting the "wait-and-see" mode
		FIN 7	Investing in machinery that has a high liquidity value
		FIN 8	Creating uncommitted financial resources
		FIN 9	Arranging innovative financial agreements with contractors
		FIN 10	Exploring project finance ventures

NB Strategies identified as Sustainable Responses
Strategies listed above the dotted line have been ranked as per the quantitative survey, while below the line are suggestions by the respondents

Fig. 2. Regression responses: Quantitative findings, Source [13]

METHOD AND MATERIALS

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	} Key Players
• Construction consultants	CONS-1, CONS-2	
• Construction contractors	CONT-1	
• Government Regulatory body	GOV-1	} Keep Satisfied
• Financiers (Banks)	FIN-1, FIN-2	
• Academicians (Construction)	AC-CON-1, AC-CON-2, AC-CON-3	} Keep Informed
• Academicians (Economists)	AC-ECO-1	

Fig. 3. Profile of interviewees

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

Adverse effect	Justification
Late Payment by Clients	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 Project Suspension	<ul style="list-style-type: none"> • 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 • The knock-on effect generates many claims • Contractors' tendency to scale down work and postpone investments
Unemployment Labour redundancy	<ul style="list-style-type: none"> • 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
Foreign currency fluctuation	<ul style="list-style-type: none"> • The transmission cycle of external recession has diffused recession from major economies to developing nations, mainly in the form of foreign funded projects
Inflation	<ul style="list-style-type: none"> • 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).

TABLE 2
RECESSION RESPONSES: QUALITATIVE FINDINGS

Recession response	Justification
Pricing strategies (CON 15)*	The most common strategy among contractors is to bid at the lowest possible price to procure the job. Also pricing at break-even point rather than pricing below the basic cost is another strategy adopted. As opposed to these views, adding a mark-up for their potential risk is another strategy in the current practice.
Scale down (CON 16)*	Some activities can be scaled down until such time that the worst situation has passed. This is indirectly aligned with the questionnaire survey findings, ‘Undertaking short-term and fast track projects’ (CON 9) is a scaled down strategy during recession.
Phase completion (CON 17)*	Some of the advantages of phase completion were identified. Completing a phase and getting an accurate idea about the targets and profit margins would help them to adjust for the next phase. On the contrary, if the project was commenced as one package, they would have faced worst effects without early warning. Thus, this forward planning mitigates the severe adverse exposure to recession.
Pre-sell (CON 18)*	In mega condominium construction projects, selling all their units through pre-sell will generate early cash flows that could be used to manage and mitigate recessionary effects. However, Pre-selling is not precisely identified in the preceding research findings.
Price adjustment (CON 19)*	The price fluctuation formula method is the only strategy for price adjustment in the current practice. However, Hudson formula is clear and straight forward, but it does not yield the right answer fitting into the particular extraordinary situation. The researchers recommend innovative solutions for price adjustment to overcome barriers in existing formulae.

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 3
PROPOSED SUSTAINABLE RESPONSES DURING RECESSION

Code	Expert interviewee Proposed strategy	Expert interviewee											% OF RESPONSES	
		CONS-1	CONS-2	CONT-1	AC-CON-1	AC-CON-2	AC-CON-3	AC-ECO-1	FIN-1	FIN-2	CLI-1	CLI-2		GOV-1
***	The advisory role	√			√				√				√	33%
CON 20*	Hedging for price fluctuation						√	√	√					33%
CON 21*	Diversification		√	√	√	√	√		√		√	√	√	75%
FIN 3	Research & Development (R&D)	√	√	√		√					√		√	50%
CON 22*	Training & Development (T&D)		√			√		√			√		√	42%
CON 15	Bidding strategies / Cost modelling	√		√	√		√							33%
FIN 2	Employer’s guarantees			√			√	√	√	√			√	50%
CON 3/18	Forward contracting and Pre-sell	√			√		√	√						33%
COS 5	Local resource utilisation	√	√	√		√							√	42%
COS 12*	Risk analysis & Contingency planning	√	√	√	√	√	√	√			√	√	√	83%
COS 13*	Performance appraisal and Monitoring	√		√				√			√	√	√	50%

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 recession 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 4
THE MATRIX OF MAPPING RECESSION RESPONSES TO ADVERSE RECESSIONARY EFFECTS

Adverse Recessionary Effects	Recession Responses			
	CON	COS	FIN	OPP
Late payment by clients		12	2	1
Financial difficulties due to tight credit conditions	18	12	1*,2,5,8*,9,10	
Increased competitiveness	1,2,3,4,6,7,14,15	8,12,13	3	2*,3
Liquidity of firms unstable	3,4,5*,6,8,9*,10*,11,14,15,16,17,18,20,21	1,3,4*,6,7,8,9,11,12	1*,2,5,7*,8*9,10	1,3
Adopt "wait and see" approach				
Postpone investment in property		12	9,10	3
Low investment levels	7,8,14	12	9,10	2*,3
Growing the number of unsold built construction facilities	17,18	12		2*
Decline in the value of public sector contracts	14,18	12		3
Worsened profitability in construction firms	1,3,4,5*,6,8,9*,10*,15,16,17,18,20,21	1,3,4*,6,8,9,11,12,13	1*,2,5	1,2*,3
Withdrawal of Bank lendings		12	1*,2,10	2*
High unemployment of professionals	4,7,22	2,9,10,12		
Reduce spending - Inflation	3,4,5*,9*,14,19,20	3,12		
Bankruptcy threat	2,7,10*,14,15,16,17, 18,21	7,11,12		1,3
Growth of the construction sub-sector decelerating		12		2*
Bankruptcy threat of suppliers	5*	12		
Drop in the volume of imports of building materials	3,8,20	12		
Reduced demand for building materials	4,5*	5,12		
High unemployment of non-professionals	4,9*,22	2,10,12		
Drop in capital expenditure on machinery	9	12	4*,7*	
Increasing labour redundancy cost	4	2,12		
Foreign currency fluctuation	3,8,20	12		
Project suspension	12,13*,16,17	12,13		3

* 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 (OPP1). 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, reformatting 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.

CONCLUSION AND RECOMMENDATIONS

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 consultants). However, different stakeholders' involvement in recession responses is essential to withstand the economic

downturn as a collaborative effort. Which can be identified as a limitation in this study. Moreover, some may argue about the sample size of the quantitative studies and the number of interviewees in the qualitative survey. This is justified by the time constraint of this study.

Declaration of Conflicting Interests

No conflicts of interest are present.

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

- [1] L. Papademos, *ECB Financial Stability Review June 2009: Opening remarks*. Available at: Bank for International Settlements: <http://www.bis.org/review/r090618b.pdf>, June 2009.
- [2] *Recent economic development: Highlights of 2012 and prospects for 2013*. Colombo 01: Central Bank of Sri Lanka, November, 2012.
- [3] U. Kulatunga and R. D. G. Amaratunga, "The code for sustainable homes in the UK: affordability and future," 2010.
- [4] The Chartered Institute of Building. "The impact of the global financial crisis on the construction industry," Available at: <http://www.ciob.org.uk/document/ciob-policy-brief-impact-global-financial-crisis-construction-industry>. (2009, January).
- [5] B. Teck Heng Lim, B. Lan Oo and F. Ling, "The survival strategies of Singapore contractors in prolonged recession," *Engineering, Construction and Architectural Management*, vol. 17, no. 4, pp. 387-403, 2010.
- [6] N. Azlan Ghazali, "The Asia pacific regional economic crisis: A diagnosis," *Humanomics*, vol. 17, no. 1, pp. 156-179, 2001.
- [7] J. H. Tyler, "The National Bureau of Economic Research," 2002.
- [8] L. S. Davidson and G. H. Moore, "Business cycles, inflation, and forecasting, 1981.
- [9] S. Verick and I. Islam, "The great recession of 2008-2009: causes, consequences and policy responses," 2010.
- [10] M. Sakbani, "The global recession: Analysis, evaluation, and implications of the policy response and some reform proposals," *Studies in Economics and Finance*, vol. 27, no. 2, pp. 91-109, 2010.
- [11] V. V. Acharya and M. Richardso, "Causes of the financial crisis," *Critical Review*, vol. 21, no. 2-3, pp. 195-210, 2009.
- [12] European Construction Industry Federation. "Situation of the construction industry in the financial and economic crises," Brussels: ITRE Committee of the European Parliament, Available at: http://www.tmb.org.tr/arastirma_yayinlar/2009-02-24%20-%20FIEC%20input%20to%20EP-ITRE%20-%20final.pdf, Feb 24, 2009).
- [13] K. T. P. K., Perera and K. G. A. S. Waidyasekara, "How construction sector responds to the economic recession identification of adverse effects and sustainable responsiveness," 2014.
- [14] P. Tansey, X. Meng and D. Cleland, "A critical review of response strategies adopted by construction companies during an economic recession," In *Proc. 29th Annual ARCOM Conf.*, pp. 2-4, Sep. 2013.
- [15] K. T. P. K. Perera and K. G. A. S. Waidyasekara, "Sustainable responsiveness for recessionary effects in the construction industry: a study on appraising benefits," In: *The 3rd World Construction Symposium - Sustainability and Development in Built Environment: The way forward*. Colombo: Ceylon Institute of Builders, pp. 554-566, 2014.
- [16] J. Creswell, *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications: 2009.
- [17] B. Marshall, P. Cardon, A. Poddar and R. Fontenot, "Does sample size matter in qualitative research?: A review of qualitative interviews in IS research," *J. of Computer Information Systems*, vol. 54, no. 1, pp. 11-22, 2013.
- [18] G. Guest, A. Bunce and L. Johnson, "How many interviews are enough? An experiment with data saturation and variability," *Field methods*, vol. 18, no. 1, pp. 59-82, 2006.
- [19] U. Flick, *An Introduction to Qualitative Research*. Sage. 2009.
- [20] K. G. D. D. Dheerasinghe, Annual report of the monetary board to the hon. minister of finance, Central Bank Sri Lanka, 2010.
- [21] L.K. Ruhunage, "Impact of the global financial crisis on international labor migration and the economy of Sri Lanka," In *ILO/SMC Conf. on Assessing the Impact of the Global Economic Crisis on International Migration in Asia*, Manila, Philippines, May 6, 2010.
- [22] "CIDA, Construction Industry Development Authority," Available at: http://www.ictad.lk/index_en.html, 2014.
- [23] N. N. Taleb, *The black swan: The impact of the highly improbable*. Random House, 2007.

— This article does not have any appendix. —