

SUSTAINABLE RESPONSIVENESS FOR RECESSIONARY EFFECTS IN THE CONSTRUCTION INDUSTRY: A STUDY ON APPRAISING BENEFITS

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ABSTRACT

The construction industry is a significant source of revenue generation to the economy, contributing more than 9% of the Gross Domestic Production (GDP) in Sri Lanka in the year 2012 according to the Central Bank statistics. Thus, the construction industry is concurred a positive relationship with the cyclical economic fluctuations. Consequently, adverse economic conditions directly affect the industry and resulted in stagnation. In response to the recession, the construction practitioners adopt various strategies. However, the recession responsiveness must be aligned with the concept 'sustainability' which concerns beyond the profit oriented short-termism.

Hence, the aim of this research study is to investigate the benefits (Strengths) of sustainable responsiveness to minimise adverse effects (Threats) in the construction industry during the recession. An expert interview survey was conducted among different construction stakeholders to obtain multi rational perspectives. The survey analysis derived that social benefits associated with sustainability have contributed mainly to gain the benefits over recessional threat. However, many of the statements were neutralised stating that 'Sustainable benefits sometimes minimise recessional threats'. Henceforth, it can be concluded that the sustainable strategies favourably respond the recession to mitigate recessional threats and direct long term strategic establishment. In addition, public awareness is essential to gain the sustainable benefits. Finally, it is recommended to be aware of the recession adhering to the opportunistic way forward through sustainability rather beware of its appalling adverse effects.

Keywords: *Adverse Effects; Construction Industry; Economic Recession; Sustainable Benefits; Sustainable Responsiveness.*

1. INTRODUCTION

The Great Depression in 1929 was an episode of severe recession, which was attracting volumes of studies explaining the recession. Keynesianism, Monetarism, Laissez-faire philosophies and Rational Expectation were some of the theories addressed the causes and effects of recession. The economic recession during the years 2008 and 2009 is considered as the most devastating economic event since the great depression (Papademos, 2009). Growth in advanced economies slowed a contrary weight down by domestic fiscal adjustment, tight credit conditions and sluggish labour market, thus leading to a fragile and unstable economy (Central Bank of Sri Lanka [CBSL], 2012). Further, CBSL (2012) explained that the market confidence in international financial markets was deteriorated by the European sovereign debt crisis led to heightened volatility in capital flows of Asian economies. Thus, it signalled the impact to Sri Lanka which is a developing country in Asian continent.

The consequences of the 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 may end up in even bankruptcy due to financing difficulties. Hence, contractors adopt various recession responsive strategies to realise firms' objectives of survival and development. However, many survival strategies innovated are reactive and focuses on economic perspective. Hence, the recession responsiveness must be aligned with the sustainability for a long term proactive implication.

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Though, the sustainable responsiveness is suggested to cure the appalling effects of the recession in the construction industry, the assessment of the benefit of sustainability is a current lacuna. However, competitive advantages of sustainable responsiveness have not clearly addressed in the existing literature. Hence, the benefit attributed in the concept sustainability must be considered to ascertain the benefit of sustainable responsiveness during the recession. Thus, this paper aims to:

- To identify adverse effects in the Sri Lankan construction industry during the economic recession
- To identify sustainable responsiveness to mitigate the adverse effects of the recession
- To evaluate the benefits of adopting sustainable responsiveness to minimise threats

The paper structure begins in the following sections. Firstly, an overview of economic recession, critical adverse effects faced by Sri Lankan construction industry during the recession and sustainable responsiveness were ascertained through the existing literature findings. The next section presents the research methodology followed by data analysis to achieve the aim of the research. The paper finally presents discussions and conclusions of the research study.

2. ECONOMIC RECESSION AND ITS IMPACT TO CONSTRUCTION INDUSTRY

2.1. OVERVIEW OF ECONOMIC RECESSION

The economic recession which shaken the global economy during 2008 and 2009 is considered as the most devastating economic event since the great depression in the 1930s (Papademos, 2009). According to recently published highlights of recent economic developments by the Central Bank of Sri Lanka (CBSL, 2012), growth in advanced economies slowed a contrary weight down by domestic fiscal adjustment, tight credit conditions and sluggish labour market during the recent past. Thus, According to National Bureau of Economic Research (NBER, 2012), the recession is defined as,

“The economic recession is a period of falling economic activity spreads across the economy, lasting more than a few months, visible in real GDP, real income, employment, industrial production, and wholesale-retail sales”.

The SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis is a strategic planning tool, identifying internal attributes and external factors. Opportunities and threats present in the external environment in the line of achieving strategic objectives considered comprehensively for the reason that the recession is a generic systematic risk (Chen and Brunski, 2007). Thus, dynamic environment can be critically analysed under the threat component.

The threats include the external shocks in many economies as globalisation continues to dissolve boundaries across the world. Further, CBSL (2012) explained that the European sovereign debt crisis led to experience heightened volatility in capital flows of Asian economies. Consequently, there is a risk that the mature economies being highly leveraged for a lengthy period, leading to a fragile and unstable economy (Baldauf and Hubbard, 2011). The key factor which permeates all policy levels during the great depression is the fall in prices and nominal GDP and then resulted in bank failures by forcing many debtors into default (Alcidi and Gros, 2010). However, according to Ren and Lin (1996) earlier recessions were provoked by high inflation as the fundamental factor, so there is a mismatch in views of fall in prices by Alcidi and Gros (2010). Nevertheless, consenting to Killingsworth (2012), severity of the recent recession was the increasing of unemployment mainly in manufacturing, wholesale and retail trade, and construction sectors. CBSL (2012) reasoned for this particular demographic is a common indicator of poor labor-market conditions. As deleveraging continues, the revision of capital market indices caused sharp fluctuates in market asset prices due to repositioned investment portfolios by foreign investors. Consequently, depreciations of currencies, pressures on domestic asset prices, exchange rates and external reserves are further significant causes (ADB, 2009). According to ADB (2009) the global financial market has stressed down the local market in developing countries.

2.2. ADVERSE EFFECTS (THREATS) IN THE CONSTRUCTION INDUSTRY DURING THE RECESSION

The construction industry plays a vital role in the national economy, and gets affected by macroeconomic fluctuations. In Sri Lanka, construction industry contributes 9.39% of GDP in the year 2012 (CBSL, 2012). Thus, the global recession caused by the financial crisis having an impact on the real economy and signs are visible in the construction sector, mainly in the form of postponing investment or abandoning of proposed contracts (European Construction Industry Federation [FIEC], 2009). Furthermore, construction companies face financing difficulties and in some extreme cases, even bankruptcy (Nistorescu and Ploscaru, 2010). Additionally, unemployment rates of construction professionals have increased as a result of economic stagnation (Construction Industry Council [CIC], 2012). According to the Central Bank report (2012), the year 2009 was highlighted by the figures in key economic indicators. According to Perera and Waidyasekara (2013), recessionary impact to the construction industry can be mainly categorised under six headings. They are financing, demand and supply, unemployment, constraint of material and plant, procurement and supply chain and future prospects led by customer confidence as illustrated in Figure 1. Criticalness of particular adverse effects were ranked according to the Relative Importance Index (RII) on each respective bar line.

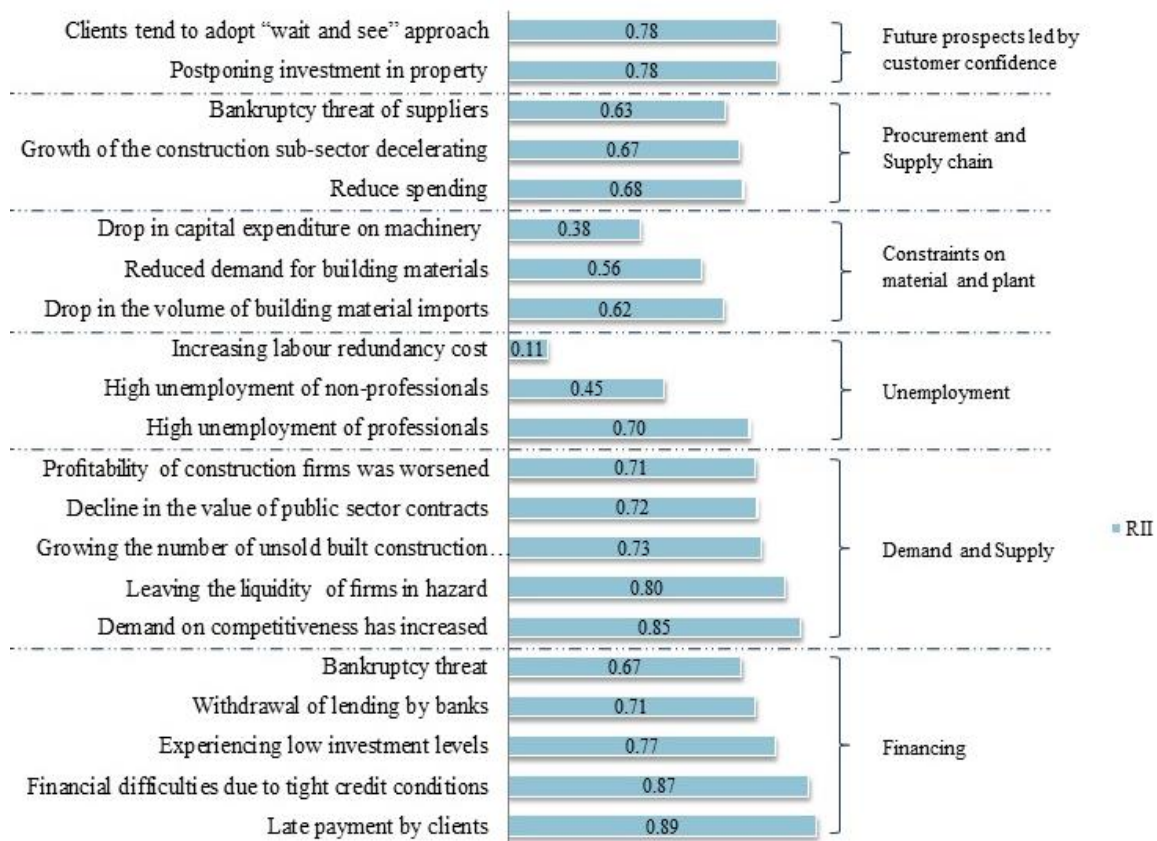


Figure 1: Adverse Effects on the Sri Lankan Construction Industry during the Economic Recession
Source: Perera and Waidyasekara (2013)

2.3. RECESSION RESPONSIVENESS IN THE CONSTRUCTION SECTOR

Recession responsiveness in the construction sector consisted of strategies that realise firms' objectives of continued existence and development in response to the recession (Lim *et al.*, 2010). Moreover, Kaklauskas *et al.* (2011) produced a crisis management model optimising all the macro variables to mitigate the effects of recession. Similarly, Kunc and Bhandari (2011) explored the strategy development process through the relationship between changes in performance measures and strategic success factors. Thus, recession responses have identified under three categories as Contracting-related, Cost-control related and Financial-related strategies (Lim *et al.*, 2010) as explained in Table 1.

Table 1: Recession Responsive Strategies

Contracting related	- Contractors adopt every possible way of procuring work to maintain their turnover (Lim <i>et al.</i> , 2010; Hillebrandt, Cannon and Lansley, 1995).
Cost control related	- A more active role in managing projects, company's cash flow and procurement procedures during the prolonged recession is highlighted under the cost control related actions (Lim <i>et al.</i> , 2010).
Financial-related	Managing the borrowing cost, capacity and the investment decision making are considered in financial related actions (Lim <i>et al.</i> , 2010; Hillebrandt <i>et al.</i> , 1995).

Tansey, Meng and Cleland (2013) have proposed a taxonomy, which utilises the well-known theoretical typology of Porter's (1985) generic strategies for responding to the economic recession. Porter (1985) has argued that a firm's strengths ultimately fall into one of two headings: Cost leadership and differentiation. By applying these competitive advantages in either a broad or narrow scope, three generic strategies are accomplished: cost leadership, differentiation, and focus (Porter, 1985). They are called generic strategies because they are not firm or industry dependent. Further, Tansey *et al.* (2013) determined that the differentiation strategies out of the three strategies were found to be the frequently used across the studies. The top four differentiation strategies adopted in the study of Tansey, *et al.* (2013) are as follows.

- Investing in R&D/new technologies
- Increase/improve marketing and advertising
- Improving relationships with stakeholders
- Improve/increase services/products offered

Similarly, Lim *et al.* (2010) described two classifications of Porter's generic theory (i.e. 'Differentiation' and 'Differentiation focus' strategies) are aligned with the aforementioned 'Contracting related strategies. Likewise, Porter's (1985) 'Cost Leadership' strategy is aligned with the 'Cost control related strategies which is to improve the firm's performance by cost cutting (Lim *et al.*, 2010).

2.4. BRIDGING RESPONSIVENESS: RECESSION TO SUSTAINABILITY

One of the key reasons for the current economic downturn is due to unsustainable business practices and inadequate focus on making a balance between monetary gains with social and environmental aspects (Kulatunga and Amaratunga, 2010; Chartered Institute of Building [CIOB], 2009). Further, increase of socially responsible investment is a key issue of incorporating greater demand side initiatives with supply side mechanisms which tends to boost up the economic activities (Pitt *et al.*, 2009).

Thus, the concept 'sustainability' could be defined as it meets the needs of the present without compromising the ability of future generations to meet their needs (Brundtland Commission, 1987). According to Kibert (2008), sustainability is a single indicator prescribing sets of multi-disciplinary indicators, which include three mutually reinforcing pillars as the ecological, social and economic issues. Policies and practice that support sustainable development have become more widespread concerns over the extent of man's activities on the natural environment. Hence, sustainable initiatives emerged as a solution to cure the adverse impact.

3. SUSTAINABLE RESPONSIVENESS

3.1. INTERPRETATION OF SUSTAINABLE RESPONSIVENESS

The authors offer definitions for ‘sustainable responsiveness’ as it is not yet established in the literature.

“Sustainable responsiveness is a long term, proactive strategic solution to mitigate adverse effects in the construction industry during the prolonged recession. The responsiveness supports with 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.”

3.2. APPROPRIATE SUSTAINABLE RESPONSIVENESS

Contracting related strategies have contributed to the sustainable development during the recession. ‘Minimising the cost of rework by quality output’ to gain the value for money for the client was ranked at the top most contracting related strategies under the Sri Lankan construction context (Perera and Waidyasekara, 2013). At the same time reputation with clients plays important roles in dictating their ability to obtain sufficient jobs to tide over the recession (Green, Larsen and Kao, 2008). Furthermore, the need for diversification, scope for new opportunities, paradigm shift, appropriate pace creation and effective corporate governance may be considered as quick remedial measures to overcome from the economic recession (Jayaramana, Ibrahim and Guat, 2011).

Moreover, under the cost control related strategies, ‘Implementing stricter site managed to reduce wastage’ have attained the top most appropriate cost control related under the findings of Perera and Waidyasekara (2013) in the Sri Lankan context as well as under the classification of Lim *et al.* (2010) in the Singaporean construction context. Further, Cherif and Maira (2011) concerned internal and external collaborations and partnering with key suppliers in order to address the economic recession. Furthermore, restructuring of the workforce into teams, enabling share skills, resources and involving everyone in the economic struggle to survive and grow becomes a cost saving in a recession (Choppin, 1991). In other words, effective human resource management (HRM) differentiates from counterparts by maintaining a lean group of core staff. However, virgin HRM is not an attractive option in a recession.

Under the financing related strategies, ‘Negotiating for alternative loan services’, ‘Security agreements with project owners and financial institutes’, ‘Investing into R&D to further explore business opportunities’ and ‘Investing surplus funds in financial investment’ have been appropriate sustainable responsiveness (Perera and Waidyasekara, 2013). Furthermore, ‘Reformulating firm’s strategic objectives’ and ‘Practicing innovative procurement methods, like BOT model’ are long term strategies during the recession. This change management is viewing the recession as an opportunity.

As per the opportunistic way of recession, the environment plays a major role in shaping firms’ business strategies which screens the recession as a hostile environmental condition (Lane and Lubatkin, 1998). Thus, Kunc and Bhandari (2011) explored that firms may reformulate their strategic objectives to gain the merit in recession. This change management is viewing the recession as an opportunity which lead business either to sustain competitive advantage or to gain a completely new arrival (Rigby, 2001). Similarly, Lim *et al.* (2010) stated strategies towards sustainability. For an instance, Research and Development (R&D) is used to explore business opportunities during the worst time

3.3. COMPETITIVE ADVANTAGES OF ADOPTING SUSTAINABILITY

Many scholars have identified the benefits attributable in the concept ‘sustainability’ which is tabulated in Table 1 under the three mutually reinforcing pillars. Thus, the benefits of adopting sustainability in the internal environment can be reflected as ‘strengths’ according to the SWOT interpretation. According to Porter (1985), Competitive advantage grows out of value a firm is able to create for its buyers over the cost of creating it. Hence, Bansal (2001) stated the sustainable development prompts the opportunity to build stakeholder commitment and competitive advantage.

Table 2: Strengths of Sustainability

<i>Economic benefits</i>	Life cycle cost reduction	Sustainability leads to reduce the life cycle cost of the building (Richardson and Lynes, 2007). Thus, green buildings have reduced the life cycle cost by energy management, water management, and waste management (Bombugala and Atputharajah (2010)
	Increased performance	“Green” has become a shorthand term in the construction sector to denote high performance (LEED-EB Reference Guide, 2009). Further, operational efficiency in the sustainable built environment enhances the overall performance (British Standards Institution, 2003).
	Revenue generation	British Standards Institution (2003) described revenue generation through sustainable development. Furthermore, sustainability meant more profitability and competitiveness (DTER, 2000).
	True cost accounting	The construction sector is not only to deliver built facilities, further to look beyond exploring opportunities for long term sustainability align with social objectives rather than mere construction cost and short term profit (Purasinghe and Maguino, 2010).
<i>Environmental benefits</i>	Minimise demand on non-renewable resources	The aim of green construction is primarily to minimise demands on non-renewable resources and maximise resource utilisation. Thus, enhancing and protecting the natural environment (DETR, 2000).
	Minimise negative environmental impact	Sustainability eradicates adverse environmental impacts through high performance and energy saving ((LEED-EB Reference Guide, 2009). For instance, Ulagalla resort realised “Go Green” concept by 50% energy savings (Dissabandara and Peiris, 2010).
	Reduced legal compliance issues	Benefits of environmentalism to the construction industry which reduced environmental risk and improved relations with regulators. Consistently, the sustainability is a goal beyond the compliance (Sayce <i>et al.</i> , 2007).
	Favourable responses from pressure groups	However, despite the need for energy-efficient solutions, development interests and environmental activist groups have been adversarial in pursuing their respective agendas in favour of green construction (Carswell and Smith, 2009).
<i>Social benefits</i>	Enhanced reputation	Sustainable built environment promotes a higher corporate image and Corporate Social Responsibility towards the society resulted in sustaining the shareholder value (British Standards Institution, 2003).
	Consumer confidence	Sustainable construction provides greater satisfaction, well-being and value to customers and users (DETR, 2000). Thus, leads to Customer attraction and retention (Richardson and Lynes, 2007) by respecting and treating its stakeholders more fairly (DETR, 2000).
	Attracting and retaining staff	Lower energy costs and are perceived to be a healthier environment which supports staff retention by reducing absenteeism (Keeping and Shiers, 1996). In superlative, adopting sustainable development principles enhanced the human intellectual capital, productivity and well-being (British Standards Institution, 2003)
	Collaboration	Green constructions require collaborative effort, deep integration with every building aspect and require multi stakeholder involvement (Hwang and Tan, 2012; Shah, 2007).

Though, sustainable responsiveness is suggested to minimise the adverse effects of the recession in the construction industry, the assessment of the benefit of sustainable responsiveness is being the current gap. Thus, it needs to find out the relationship in between the strengths of sustainability and the adverse effects during the recession in order to illustrate whether or not the responsiveness are sustainably advantageous.

4. METHODOLOGY

An extensive literature review was carried out to investigate adverse effects in the construction industry during the recession, sustainable responsiveness and competitive advantages of sustainability. The study is then carried out through a survey approach to evaluate the extent of sustainability advantages (Strengths) to minimise adverse effects (Threats) in the construction sector during the recession. The expert survey was carried out among four different construction disciplines to gain multi-dimensional perspectives. They are construction consultants, construction contractors, economists and clients.

SWOT analysis could be used to analyse strengths, weaknesses, opportunities and threats of any given matter (Kaplan Financial Limited, 2010). The SWOT analysis matrix shown in Table 3 gives the idea of strategic direction consisted of four possible scenarios to gain the advantage of positive facts over negative facts such as, SO, ST, WO and WT (Kaplan Financial Limited, 2010).

Table 3: SWOT Analysis Matrix

	Strengths (S) +	Weaknesses (W) -
Opportunities (O)+	Use strengths to make use of opportunities (SO)	Take advantage of opportunities by overcoming weaknesses (WO)
Threats (T) -	Use strengths to overcome or minimise threats (ST)	Minimise the effect of weaknesses and minimise or overcome threats (WT)

Source: Kaplan Financial Limited (2010)

The basis of the data collection is in accordance with one quadrant, which is ST (Strengths - Threats) in the SWOT (Strengths, Weaknesses Opportunities and Threats) analysis as illustrated in the Table 3. The benefits inherent in sustainability under three pillars have been considered as ‘Strengths’ while the adverse effects in the external environment during the recession as illustrated in Figure 1 are considered as ‘Threats’ for the data collection process. The approach was more towards collecting qualitative ordinal data. Respondent’s self-assessment to determine the extent of sustainability strengths to minimise threats in the construction industry were measured according to the Likert scale given below.

Likert Scale: To What Extent Sustainability Strength Minimise Threats in Recession

1	2	3	4	5
Never	Rarely	Sometimes	Mostly	Always

Subsequently, Likert-type data analysis was based on the central tendency measurement, which is the median and the mode of the data set. The median is the middle value or the mean of the middle two values when the data set is arranged in ascending or descending order, which gives the central tendency. The mode is the value that appears the most, which gives the central tendency. It is possible to have more than one mode, and it is possible to have no mode (Weisberg, 1992).

5. DATA ANALYSIS AND RESEARCH FINDINGS

5.1. EXPLANATION OF THE MATRIX OF SUSTAINABILITY STRENGTHS – RECESSIONAL THREATS

Table 4 tabulates the broader illustration of the aforementioned SWOT analysis matrix. The matrix was developed based on the literature findings. The list of competitive advantages of adopting sustainability is shown in the rows of the matrix, categorising under economic, environmental and social benefits. Adverse effects in the construction industry during the recession are tabulated in the columns of the matrix, grouping under six main headings such as financing, demand and supply, unemployment, constraints on material and plant, procurement and supply chain and future prospects led by customer confidence. Each intersection of a column and a row is marked with the relationship, stating that, to what extent the particular sustainability strength minimise the particular adverse effect. The mode value of the responses is computed and illustrated in Table 4. Such value represents the respective digit and the meaning in the Likert scale. Thus, the relationship of two contrasting areas is built successfully.

Table 4: The Matrix Of Sustainability Strengths – Recessional Threats

STRENGTHS Competitive advantage of adopting sustainable construction concept		THREATS Adverse effects in the construction industry during the recession																										
		Financing	Financial difficulties due to tight credit conditions	Bankruptcy threat	Late payment by clients	Withdrawal of lending by banks	Experiencing low investment levels	Demand and supply	Increasing the number of unsold apartments/blocks	Decline in the value of public sector contracts	Demand on competitiveness has increased	Profitability of construction firms was worsened	Leaving the liquidity of firms in hazard	Unemployment	High unemployment of non-professionals	High unemployment of professionals	Increasing labour cost	Constraints on material and plant	Reduced demand for building materials	Drop in the volume of building material imports	Drop in capital expenditure on machinery	Procurement and supply chain	Reduce spending	Bankruptcy threat of suppliers	Growth of the construction sub-sector decelerating	Future prospects led by customer confidence	Postponing investment in property	Clients tend to adopt "wait and see" approach
Economic benefits																												
Life cycle cost reduction	Mode	3	3	1	2	2		3	2	3	3	3		2	4	2		2	2	3			1	3	2		3	3
Increased performance	Mode	3	4	2	3	3		2	2	3	4	3		2	3	3		3	3	4			3	3	3		2	2
Revenue generation	Mode	4	4	2	3	3		3	3	3	3	3		3	3	3		3	3	3			4	4	4		3	3
True cost accounting	Mode	3	3	3	2	2		2	2	2	3	3		2	2	2		2	2	3			3	2	2		1	1
Environmental benefits																												
Minimize demand on nonrenewable resources	Mode	3	3	3	3	3		3	3	3	3	2		2	2	2		3	3	3			3	2	3		2	2
Minimize negative environmental impact	Mode	3	3	3	3	3		3	3	3	3	2		2	2	2		2	2	2			3	2	2		3	3
Reduced legal compliance issues	Mode	3	3	3	3	3		3	3	3	3	4		4	4	3		3	3	3			2	3	2		3	3
Favourable responses from pressure groups	Mode	3	3	3	3	3		3	3	3	3	3		3	3	3		3	3	3			3	3	3		3	3
Social benefits																												
Enhanced reputation	Mode	3	4	3	4	3		3	3	3	3	3		3	3	3		3	3	3			3	3	2		3	4
Consumer confidence	Mode	2	4	2	3	3		4	4	3	3	2		2	3	3		3	3	3			4	3	3		3	4
Attracting and retaining staff	Mode	2	3	2	2	2		2	2	3	3	3		4	4	3		3	3	3			2	3	3		3	3
Collaboration	Mode	3	3	2	2	2		2	2	2	3	3		3	2	2		2	2	2			2	3	2		3	2

5.2. OVERVIEW OF THE RESULTS GENERATED BY THE MATRIX

In the mere overview of the Table 4, the respondents have become neutral in the highest number of statements which is ‘Sometimes Minimise’. Further, there could not be seen any relationship of sustainability ‘always minimise’ adverse effect. Moreover, the respondents marked ‘Mostly Minimise’ in a lesser number of statements. Furthermore, there are a few sustainability advantages never minimises threats in the construction industry, leaving no relationship.

For instance the following statements appear to be two contrasting perspectives,

- ‘Life cycle cost reduction’ never minimises ‘Late payment by clients’.
- ‘Life cycle cost reduction’ never minimises ‘Reduced spending’.
- ‘True cost accounting’ never minimises ‘Postponing investment in property’
- ‘True cost accounting’ never minimises ‘Clients tend to adopt a wait and see mode’

5.3. ECONOMIC BENEFITS

Life cycle cost reduction, increased performance and revenue generation as competitive advantages of sustainability have contributed mostly in minimising the adverse effects as follows,

- ‘Life cycle cost reduction’ mostly minimise ‘High unemployment of professionals’
- ‘Increased performance’ mostly minimise ‘Bankruptcy threat’
- ‘Increased performance’ mostly minimise ‘Profitability of construction firms was worsened’
- ‘Increased performance’ mostly minimise ‘Drop in capital expenditure on machinery’
- ‘Revenue generation’ mostly minimise ‘Financial difficulties due to tight credit conditions’
- ‘Revenue generation’ mostly minimise ‘Bankruptcy threat’
- ‘Revenue generation’ mostly minimise ‘Reduce spending’
- ‘Revenue generation’ mostly minimise ‘Bankruptcy threat of suppliers’
- ‘Revenue generation’ mostly minimise ‘Growth of the construction sub-sector decelerating’

Revenue generation has the highest positive relationship in minimising adverse effects under the Economic benefits. However, true cost accounting as a sustainable benefit has given a lack of concern in minimising the adverse effects, dispersed in between the Likert rating of 1 and 3 (Never - Sometimes).

5.4. ENVIRONMENTAL BENEFITS

Reduced legal compliance issues as a competitive advantage of sustainability have contributed mostly in minimising the adverse effects as follows,

- ‘Reduced legal compliance issues’ mostly minimise ‘Leaving the liquidity of firms in hazard’
- ‘Reduced legal compliance issues’ mostly minimise ‘High unemployment of non-professionals’
- ‘Reduced legal compliance issues’ mostly minimise ‘High unemployment of professionals’

Many respondents come up with the same justification stating that, reduced compliance issues motivates the staff safeguarding their employment and further merited in terms of firms’ liquidity and profitability. Favourable responses from pressure groups as an environmental benefit resulted in sometimes minimising all the listed adverse effects. On the other hand, minimise demand on non-renewable resources and minimise negative environmental impact do not directly give positive relationship, which ranged in between 2 and 3 (Rarely - Sometimes).

5.5. SOCIAL BENEFITS

It must be emphasised that the social benefits contributed considerably for the threat minimisation. Enhanced reputation, Consumer confidence and Attracting and retaining staff as sustainability benefits have contributed in minimising the adverse effects as follows,

- ‘Enhanced reputation’ mostly minimise ‘Bankruptcy threat’
- ‘Enhanced reputation’ mostly minimise ‘Withdrawal of lending by banks’

- ‘Enhanced reputation’ mostly minimise ‘Clients tend to adopt “wait and see” approach’
- ‘Consumer confidence’ mostly minimise ‘Bankruptcy threat’
- ‘Consumer confidence’ mostly minimise ‘Increasing the number of unsold apartments/blocks’
- ‘Consumer confidence’ mostly minimise ‘Decline in the value of public sector contracts’
- ‘Consumer confidence’ mostly minimise ‘Reduce spending’
- ‘Consumer confidence’ mostly minimise ‘Clients tend to adopt “wait and see” approach’
- ‘Attracting and retaining staff’ mostly minimise ‘High unemployment of non-professionals’
- ‘Attracting and retaining staff’ mostly minimise ‘High unemployment of professionals’

Yet, social benefit ‘collaboration’ has not considerably resulted in a strong positive relationship for threat minimisation in which the mode values vary in between 2 and 3 (‘Rarely’-‘Sometimes’).

5.6. DATA VALIDATION

The data analysis was based on the mode values of the responses. The results were then validated by the median values on the same platform of the central tendency. Therefore, according to Table 5, a very few cells have a deviation in between median and mode values. Since the variation is in between adjacent Likert ratings, it is negligible due to minor deviation. Thus, the results generated from the central tendency analysis confirmed its relationship between sustainability benefits and adverse effects.

Table 5: The Matrix of Sustainability Strengths – Recessional Threat

STRENGTHS Competitive advantage of adopting sustainable construction concept		THREATS Adverse effects in the construction industry during the recession														
		Financing	Financial difficulties due to tight credit conditions	Demand and supply	Increasing the number of unsold apartments/blocks	Leaving the liquidity of firms in hazard	Unemployment	High unemployment of non-professionals	High unemployment of professionals	Constraints on material and plant	Drop in capital expenditure on machinery	Procurement and supply chain	Reduce spending	Future prospects led by customer confidence	Postponing investment in property	Clients tend to adopt “wait and see” approach
Economic benefits																
Life cycle cost reduction	Median	2		2	3		2	3		3		2		3	3	
	Mode	3		3	3		2	4		3		1		3	3	
True cost accounting	Median	3		2	3		2	2		2		3		2	2	
	Mode	3		2	3		2	2		3		3		1	1	
Environmental benefits																
Reduced legal compliance issues	Median	3		3	3		3	3		3		2		3	3	
	Mode	3		3	4		4	4		3		2		3	3	
Social benefits																
Consumer confidence	Median	2		4	3		2	3		3		4		3	4	
	Mode	2		4	2		2	3		3		4		3	4	

Though some sustainability benefits do not directly result to the threat minimisation, gathered data expressed different derived relationships. Hence, the sustainability in the construction industry positively responds to the recession above the average (3) consideration which directs the forward movement even at an economy’s stagnation. However, the respondents have agreed the need of public awareness to experience the sustainable benefits to minimise adverse effects of the recession.

6. CONCLUSIONS

The deterioration of macro-economic activities during the recession leads to a direct consequence in the construction activities. The literature review revealed that the weakened financial conditions due to late payment by clients and tight credit conditions have marked critical during the recession faced by Sri Lankan construction industry. 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 in the construction sector. Hence, the sustainable responsiveness are introduced in the construction sector to focus on long term proactive strategic establishment.

Once the sustainable responses were figured out from different sources, the extent of sustainable benefits to minimise adverse threats during the recession was evaluated. In other words, a relationship was built between two contrasting perspectives. The respondents have become neutral in the highest number of statements which is 'Sustainable benefits sometimes minimise threats'. Consequently, the sum of Likert rating in the ascending order clinches the maximum at the Likert rating 3 (Sometimes minimise). Furthermore, it must be emphasised that the social benefits contributed for the threat minimisation mostly instead of the social benefit 'collaboration' has not considerably resulted in a strong positive relationship. In consideration to the economic benefits, mainly 'increased performance' and 'revenue generation' reasoned to mostly minimise recessionary threats. While, reduced legal compliance issues as a competitive advantage of sustainability have contributed most in minimising the adverse effects.

Hence, the sustainability in the construction industry favourably responds the recession above average to mitigate threats and direct the forward movement even at an economy's stagnation by strategic establishment. However, the public awareness is essential to experience the sustainable benefits. However, the scope of this paper is limited to identify sustainability advantage to minimise threats in the recession. Hence, this paper gives the findings of an ongoing research process, which is then intended to categorise recession responsiveness by different construction stakeholders through an expert interview survey. Further, a framework will be developed to match the specific adverse effects with the suitable sustainable responsiveness to mitigate appalling effects of the recession.

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