

# Developing a Resilient Crisis Management Plan (CMP) for the Malaysian Construction Sector

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## ABSTRACT

Received: 21 October 2021  
Reviewed: 14 December 2021  
Accepted: 30 December 2021

*Construction is a diverse and complex sector. It consists of projects with intricate activities and interfaces between stakeholders who undergo a series of development phases using numerous resources, integration of technologies, materials, and approaches. Theoretically, construction projects can be well planned. However, it is being exposed to unanticipated events or crises that could disrupt original plans, affecting organizations' operation and progress of construction projects. Problems may even have the propensity to destroy the organization significantly. Considering the current paradigm of crisis, the Covid-19 outbreak that emerged in late 2019 has continuously left a lasting impact on the construction industry. As of August 2020, Covid-19 has spread to over 200 countries, and the number has increased beyond 100,000 cases in Malaysia. Regardless of Covid-19 has placed great stress on all aspects worldwide, it led to the closure of most construction businesses, causing contraction towards industry growth to the greatest to extend of -7.9%, the lowest since 1999. In this context, the effort to ensure the preparedness of the construction organizations against crisis has become an issue. Hence, this paper aims to structure a framework that consists of principles and processes which can recover and develop a resilient construction industry. The method used for this study is Systematic Literature Review of related journals gathered through WOS, ScienceDirect, and Google Scholar, reports, and relevant references from Government Authorised agencies circa 1998 to 2020. 4262 articles were identified, and 111 papers were subsequently selected for further analysis. Based on the findings, there are five major phases of CM, including prepare, prevent, respond, evaluate, and redesign. The proposed CM includes 4 elements and 2 outputs. The preliminary findings form the foundation for an extended investigation to offer a specific crisis management plan to guide the Malaysian construction industry, specifically in Klang Valley, to be resilient during plight.*

**Keywords:** Crisis, External Crisis, Crisis Management Plan, Construction Sector

## INTRODUCTION

The construction sector is an essential and productive sector of the Malaysian economy (CIDB, 2017). As a developing nation, Malaysia has realized the pivotal role of the construction sector in economic growth and improving the quality of life and living standards of Malaysian people. Over the last two decades, it has contributed between 3 to 5 percent of the aggregate economy GDP (Khan et al., 2014). Furthermore, according to DOSM (2018), the value of gross output Construction in 2017 registered an annual growth rate of 7.2 percent to RM204.4 billion compared to 2015, RM177.9 billion. Today, organizations operate

in a more volatile risk environment than ever before due to the Covid-19 pandemic, a global societal crisis unique to our lifetime (WHO, 2020; Victor, 2020).

The global spread of the crisis of the Covid-19 virus has overwhelmed the construction industry and caused widespread social, economic, environmental disruption. Cumulatively, nearly 27 million Covid-19 cases and 900,000 deaths worldwide have been reported to WHO as of 30 August 2020 (WHO, 2020). These impacts pose a serious threat to the development prospects (Filho & Brandli, 2020). Given the current state of the social and economic sphere, it is indicated that the world is underprepared in encountering this global crisis (World Bank, 2020; United Nations, 2020; Newman, 2020; Pinheiro & Luis, 2020; Shammi, 2020). The Malaysian economy GDP registered a 17 percent contraction in the second quarter of 2020 as the country faced the culmination of the Covid-19 pandemic, the worst performance in the last two decades (Bank Negara Malaysia, 2020). Before this pandemic, the Malaysian construction industry was expected to recover by 2020, but the situation worsened. The industry was set to contract by 8.8% in 2020 (Bank Negara Malaysia, 2020), which remarks the lowest growth since Q2 1999 (-7.9%) (DOSM, 2020).

Consequently, Covid-19 and Movement Control Order (MCO) crises continue to leave a lasting impact on the construction industry, which faced RM18.5 billion losses during the initial phase of MCO. These include operation suspended, loss of workforce and labor wages at a rate of 30 percent, which was worth RM3.3 billion, the decline in the use of construction materials by 42 percent worth RM4.6 billion, claims and payment prolongation, as well as cash flow in the whole supply chain was affected (CIDB, 2020). Even though considerable numbers were reviewed issues of Covid-19 as it is very current, fewer are associated with the construction industry. Very little was discussed on national circumstances where Pinheiro & Luis (2020) concurred there has been a growth in the number of publications about Covid-19 (more than 6000 references) via WOS, assessed in June 2020. However, fewer than 1% of these refer to the construction. On ScienceDirect, it is possible to find more than 8000 references; nevertheless, again, fewer than 1% of these are related to construction in any way. The result indicates that necessary rapid response and mitigation measures were taken to propel construction; however, there are still significant gaps for the industry to operate as usual. This unprecedented and uncertain situation critically demands a swift and resilient Crisis Management Plan. Therefore, this research is unique and very current, as it will support filling the gap concerning a pandemic or any future crisis.

## LITERATURE REVIEW

Bernama (2020), in its recent report, shows that 70% of organizations do have a Crisis Management Plan (CMP). 62% had implemented their plans, while 21% admitted their organizations did not have any contingency plan. Of those with a CMP, only 17% demonstrated its effectiveness, while 70% acknowledged that their projects have areas for improvement. The remaining 13% felt that their current plans were inadequate. According to Bakar (2011), it is a fact that since the 1960s, the Malaysian construction organizations have not changed much in terms of strategies in facing a crisis. It must radically upgrade management, capability, and technological capacities to withstand concerns, challenges, and threats. Unfortunately, based on practices seen in the two-period recessions, these variables are not seen as a priority by the Malaysian construction sector; the hence year 2020 repeated the same trend showing severe impacts on the construction sector and its organizations due to the Covid-19 crisis.

Indeed, the Covid-19 pandemic has been recognized as a significant exogenous shock that has altered the competitive landscape for most organizations (Wenzel et al., 2020). Yet, most organizations lack a systematic understanding of how the pandemic can create conditions leading to a business failure (Walsh, 2020). Notwithstanding many efforts and rapid mitigation measures in addressing the challenges of the Covid-19 crisis that have been implemented, there is still lacking for the world and national economy, social, and construction industry itself to subsist. Many organizations are under pressure and trying hard to

survive and the workforce (CIDB, 2020). To date, initiatives to improve global collaboration in the face of approaching crises have received far too little attention. While we concentrate on the immediate response to the Covid-19 situation, we must remember the breadth and depth of the ramifications that are already being felt around the world. Learn the lessons of this pandemic now, and ensure that our reaction, wherever feasible, leaves a positive legacy and makes the world a safer place in the future. (WHO, 2020). Even though organizations reacted, most were far from being prepared (Zhang-Zhang & Varma, 2020).

Malaysia is still expecting more forthcoming strategies and plans to be implemented (Salim, 2020). Developing a crisis management plan framework is vital for the Malaysian construction industry as initiatives for preparing, responding, and recovering against any threats, dangers, and crises Malaysia shall face in the future (UNDP, 2017).

## **METHODOLOGY**

The purpose of this paper is to explore literature reviews and summarise the knowledge acquired to find standard features of mentioned crisis management approaches and models about managing disrupted areas of the organization in the Malaysian construction sector. Part of the goal is first to identify disrupted areas in the construction industry and then look at relevant papers on crisis management phases and procedures that offer approaches to developing a crisis management resilience framework. Crisis resilience will serve as the foundation for future study and theory in this sector. A Systematic Literature Review (SLR), as illustrated in Figure 1, was conducted using the Literature Search Method adopted from (Papanti et al., 2013), which consists of four phases of analysis: 1. Identification, 2. Screening, 3. Eligibility, and 4. Included. The SLR will allow an interpretation of existing research from a new point of view and a combination with previous research (Mark & Lewis, 2012). Hence, during this trying time, the effective way to conduct the research is by using the internet and databases.

Therefore, a google search engine was used to gather authorized documents from the Government bodies via a few keywords such as “Initiative to curb Covid-19 in Malaysia” and “Impact of Covid-19 in the Malaysian construction industry”. This is to gather information related to the current crisis, the Covid-19. While for the management strategies against crisis, the so-called “All Databases,” the Web of Science (WOS), Scopus, and Google Scholar were performed using suitable keywords. Initially, the attempt of few keywords such as (“Crisis Management AND Covid-19”), (“Covid-19 AND Construction”) and (“Risk Management AND Construction”). The predefined search strategies yield a preliminary pool of 4267 possible papers (1,447 in WOS, 1,328 in Scopus, and 1,520 in Google Scholar). After screening for inclusion by determining the extent to which a specific research area reveals any interpretable trends or patterns, shed light on any gaps in previous research, and generate new frameworks and theories, 4156 published papers due to duplicates and irrelevant for Malaysian construction context have been removed. Subsequently, the process was discussed and resolved conflicting marks, and a provision list of 111 published studies went forward. Therefore 33 articles and authorized reports meet the main criteria such as providing a critical written account of the current state of research on a selected topic, aggregating empirical findings related to a narrow research question, placing each source in the context of its contribution to the understanding of the specific issue, area of research, or theory under review and points the way forward for further investigation. Finally, a conceptual framework was proposed. The framework highlights the relationship between the research objectives and a crisis management plan in construction organizations.

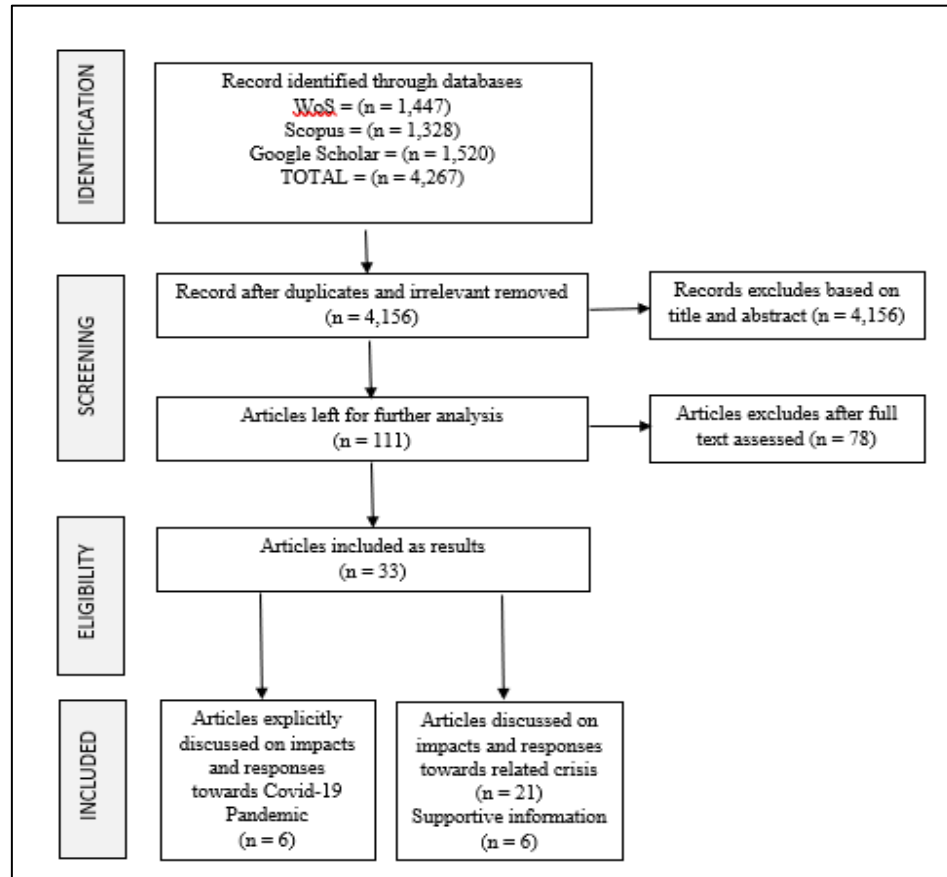


Figure 1: Literature search method (Adapted from Papanti *et al.*, 2013)

## RESULTS AND DISCUSSIONS

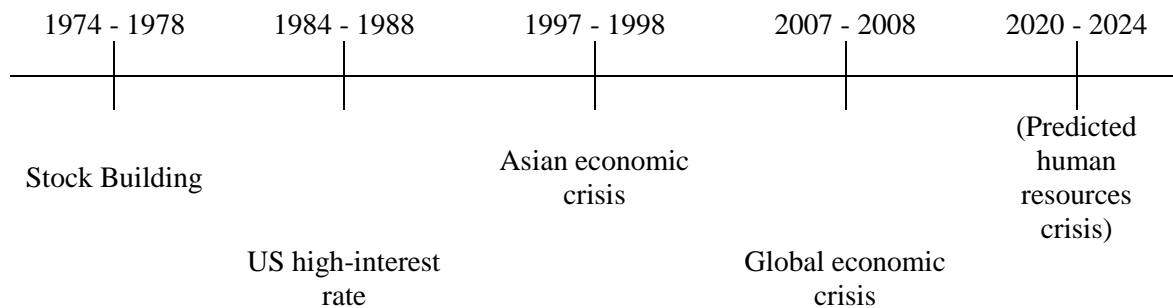
The literature review critically discusses the disruption influenced by Covid-19 that brought severe disorder to human well-being, society, and the economy of Malaysia and globally. Table 1 shows the key authors that provide and debate disruptions influenced by the Covid-19 crisis towards the construction industry, including labor, finance and economy, organization, material, equipment, supply chain, contract, time, technical, communication, and other industries. Generally, crises are often linked to social, economic, and political conditions no matter they happen to individuals, organizations, or the government; the link is always related (Ozcan, 2015; t<sup>o</sup> Hart, 1993). A crisis is an unplanned change, a sudden or evolving unanticipated event that will occur in the life of most organizations that may harm the organization and its stakeholders (Boin & Hart, 2003; Babu & Sudhakar, 2016; Biörck, Blanco, & Jan, 2020). Many organizations have been under pressure to respond to the crisis, even those with established business continuity capabilities (Victor, 2020). The nature of Covid-19 has been the subject of various recent studies, including CIDB. The impact of the Covid-19 on workers, organizations, and projects has been the construction industry's focus since its onset. This issue's unique feature examines the overarching effects of Covid-19 on the construction industry and lessons learned for the industry to thrive in the current uncertain economic climate (CIDB, 2020). As such, organizations need to be prepared for current and future crises, sudden unexpected events which are at times uncontrollable.

**Table 1: Disrupted Vulnerable Areas in Construction Industry During Plight**

No	Disrupted Vulnerable Areas in Construction Industry During Covid-19 Pandemic	Authors
1.	<b>Labour</b> Brought severe disturbance to the well-being of individuals. The unemployment rate increase in Malaysia by 1.5 points from 3.5%. Force millions of people into extreme poverty	(Gamil, 2020; DOSM,2020; Filho&Brandli, 2020; United Nations, 2020)
2.	<b>Finance &amp; Economy</b> Malaysian economy registered a 17 percent contraction in the second quarter of the year 2020, the worst performance in the last two decades. The construction sector contracted to the greatest extent (-7.9 percent) the lowest growth since 1999 (-7.9%)	(BNM,2020; DOSM, 2020; World Bank Group, 2020; Ramli, 2020)
3	<b>Organization &amp; Labour</b> Loss of workforce and labour wages at a rate of 30 percent, worth RM3.3 billion. Employment in engineering has been severely affected. Almost 90% of the Architectural Consultancy Practice (ACP) will not be able to pay their employees. Restricted business continuity by 7.3% from the construction sector of 1.2 million active businesses from March-April 2020	(Harun, 2020; ILO, 2020; IEM, 2020; PAM, 2020; DOSM, 2020; MSBR, 2020, Ramli, 2020)
4	<b>Material &amp; Equipment and Supply Chain</b> Decline in the use of construction materials by 42 percent worth RM4.6 billion. Imports from China contracted by 2.8 percent mainly in supply and demand on construction material for steel bars, electric and electronic items, as well as machinery and parts.	(Harun, 2020; DOSM, 2020; United Nations, 2020)
5	<b>Contract &amp; Time</b> Projects were suspended and held back. Cancellation and postponement of new awarded work. Problematic supply chain results in delays, a project fails to have more control on the project itself, reduce profits, constitute to time and cost at large and contractual conflict.	(CIDB, 2020; Mohamad, 2020; MIDA, 2020)
6	<b>Technical</b> Interruption of Planning and scheduling. Impact on the existing accomplished activities at sites. Demand more on intellectual property	(Gamil,2020)
7	<b>Communication</b> Enforcement of working from home that might not be suited to everyone's personality or ability and difficult to monitor staff performance also give negative impact on mental health	(Salim&Huspi, 2020; CIDB, 2020)
8	<b>Other Industries</b> Impact other industries required construction to sustain its business. 201 projects or 5.3% projects under manufacturing industry. Brought the real estate industry to a halt, major impact on the housing and retail segment. Significant impacts on tourism, aviation, oil and gas, and hospitality sectors	(MIDA, 2020; DOSM, 2020, World Bank, 2020)

According to Bakar & Awang (2011), since 1967, the Malaysian construction sector has suffered several economic crises, as depicted in Figure 2 below. The study recap, during the year 1974-1978, the economic downfall was due to the stock of building premises. In 1984-1988, the United States high- interest rate policy was triggered, followed by the Asian economic crisis between 1997-1998.

While the recession in the middle of 2007 until 2008 was because of the global financial crisis where the rise in oil and diesel prices have dramatically influenced the increase of raw materials. Surprisingly, the study has predicted another downfall in the construction sector from 2020 to 2024 because of the human resource crisis based on past trends, which indicate that economic crisis occurs every ten years in Malaysia. To concur with the study, the World Bank reports highlighting the Covid-19 pandemic has spread with alarming speed, infecting millions of people and bringing almost all economic activities to a near-standstill as countries imposed tight restrictions on movement to halt the spread of the virus. As the health and human toll grows, the economic damage is already evident and represents the most significant economic shock the world has experienced in decades (World Bank, 2020).



**Figure 2: Economic Crisis Timeline (Bakar & Awang, 2011)**

A crisis is a sudden and unexpected event that threatens to disrupt human and an organization’s operations. It poses both a financial and reputational threat that they cannot cope with, using standard routine procedures (Srinivasan & Nandhini, 2015). A crisis is an unplanned transition, a sudden or unanticipated occurrence that can arise in the lives of most organizations that may affect the organization, its stakeholders, or the public in general (Boin & Hart, 2003; Babu & Sudhakar, 2016; Biörck, Blanco, & Jan 2020). Glaesser (2006) and WHO (2020) have classified pandemic as a crisis. After the global economic crisis in 2008, discussions in the literature review revealed no generic management theory that oversimplifies concerns in construction has been proposed (Anthopoulos & Kostavara, 2013). Therefore, living in a turbulent era has introduced crisis management as a critical strategy for organizations’ survival, especially for vulnerable and susceptible to a wide variety of crises, such as the construction industry (Mohamed, 2020; Boin A.,2010). Bundy (2017) has formulated a comprehensive definition of crisis management as the process by which an organization deals with a disruptive and unexpected event that threatens to harm the organization, its stakeholders, or the public. Besides, crisis management is about developing an organization’s capability to react flexibly and thus be able to make the prompt and necessary decisions when a crisis happens. If an organization prepares for the “worst-case scenario,” then it can handle other situations as well (Mikušová & Horváthová, 2019). On another note, it should be noted that the aim of crisis management is not to prevent crises absolutely, but to minimize negative results, to have quick and high-quality responses, and to promote the highest degree of preparedness for all forms of concerns (Mikušová & Horváthová, 2019).

From the literature, it has been noted that the crisis management field passed through several evolutions over the past few decades before it reached this wide-ranging view (Murad, 2019). They all specify a full-scale mechanism to include preparations and advice to handle every crisis level. After data consolidation, all the selected six different models' comparisons have been delineated below (refer to Table 2).

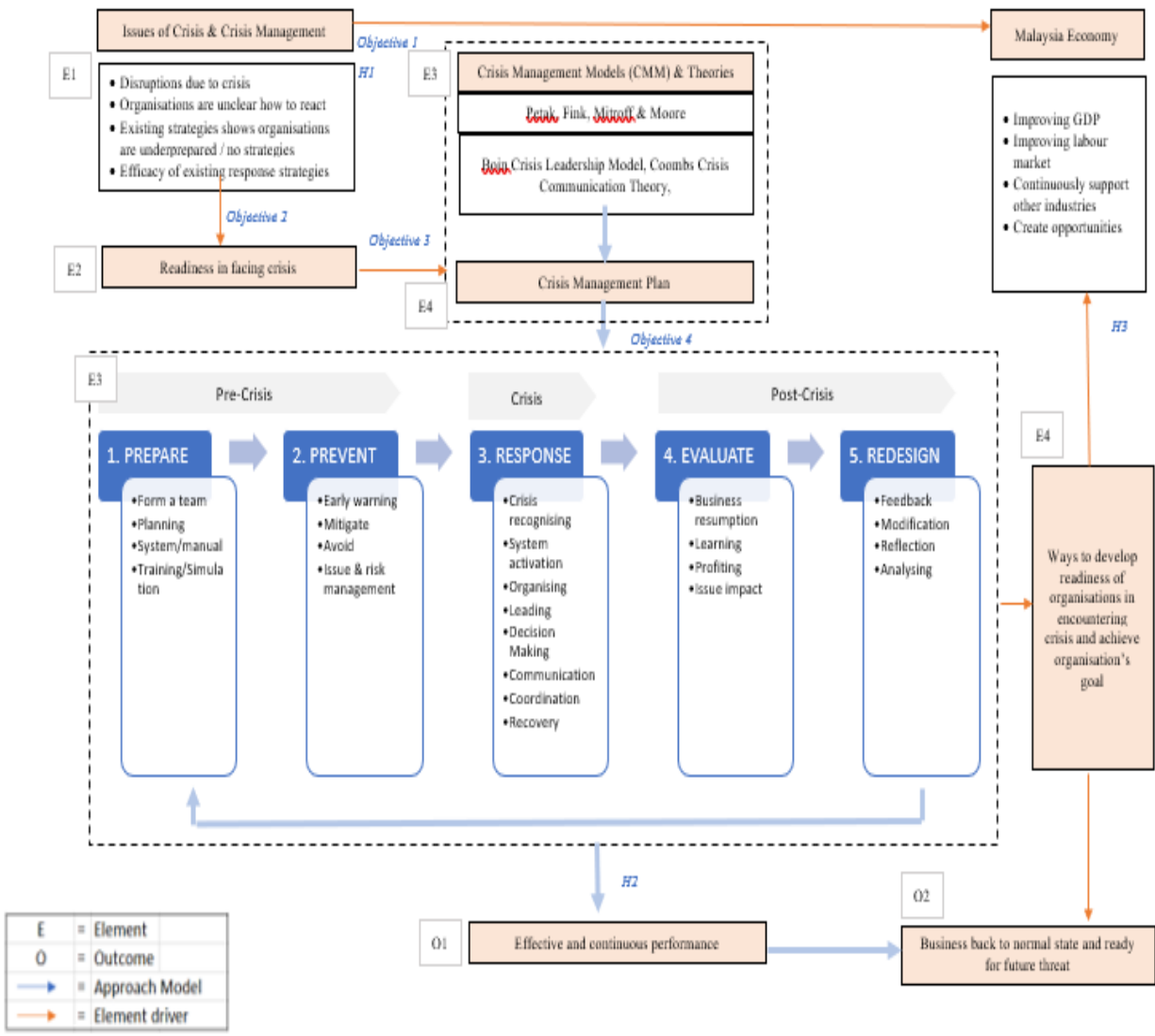
**Table 2:** Similarities and differences between four different models

<b>Petak’s Model</b>	<b>Fink’s Model</b>	<b>Mitroff’s Model</b>	<b>Moore’s Model</b>	<b>Boin &amp; t’Hart’s Model</b>	<b>Coombs’ Model</b>
Mitigate		Signal detection	Situation monitoring	Sensemaking	
Prepare	Prodromal stage	Probing and prevention	Detection support Containment	Decision making	Pre-Crisis
Response	Acute stage	Damage containment	Response	Meaning-making	Crisis
	Chronic stage	Recovery	De-escalation		
Recovery	Resolution stage	Learning Redesign	Recovery	Termination Learning	Post-Crisis

From Table 2, the five significant phases, namely preparation, prevention, response, evaluation, and redesign, can be characterized. The Crisis Management models provide a graphical representation of the steps to help the organization achieve its goals. These steps will lead to conclusions, and newly proposed solutions will be utilized and re-evaluated from the information gathered. Therefore, the proposed Crisis Management Plan (CMP) is structured with continuous improvement in mind. In this way, the processes should restart every time a new plan is suggested and implemented. According to a model developed by Boin & t Hart (2005) it emphasizes that crisis management typically involves multiple actors such as policymakers, crisis managers, and crisis management teams. Therefore, the model is based on five critical challenges that crisis managers face in an actual crisis management process: sense-making, decision making, meaning-making, terminating, and learning.

As the crisis management, five phases that begin with prepare prevent, respond, evaluate and redesign have been identified, a conceptual framework is being developed. A conceptual framework is an analytical tool with several variations and contexts used to make conceptual distinctions and organize ideas. This is in line with current concerns by United Nations and CIDB, which focus on addressing crisis management issues by providing information and guidance for organizations to manage disruptions and create readiness for future threats (United Nations,2020; CIDB,2020). Inevitably, Sahin & Ulubeyli (2015) has emphasized that construction organization that successfully manage the vulnerable areas during crisis involve construction organization itself, labor, material, supply chain, contractual issues, and financial is agile and resilience while facing a problem with a minimum loss and can expand their market shares after the crisis. In other words, companies that can escape from a situation with zero or minimum damage may strategically have competitive advantages over existing rivals. Rajprasad (2018) convinced crisis management is the method that the organization forms to overcome the crisis.

Therefore, Figure 3 illustrates the conceptual research framework for a crisis management plan in construction organizations and is followed by a detailed explanation of the process. Furthermore, CIDB (2020), through its HEIGHT report, argued that in the current climate, it is essential to take the time to conduct a full crisis assessment on the impact on business activities and evaluate all options and remedies where the actions mentioned by CIDB are the main elements of the Crisis Management Plan. Having reviewed many pieces of literature and reports that highlight most concern on the current necessity to handling and managing crisis, adoption of crisis management models (E3) and developing as well as the implementation of Crisis Management Plan (E4) is expected will endure construction sector is facing a crisis (E1) and (E2) and hopefully will support the development of crisis resilience organizations in a way by bringing back the business to the normal state (O2) and fostering readiness towards a crisis in the construction industry (O1).



**Figure 3:** Proposed Conceptual Framework of a Crisis Management Plan (CMP) for organizations in the construction sector to foster preparedness and response to a crisis

Even though the Covid-19 crisis is very current, and the recommended approaches have yet to be tested in the construction industry, this concept of crisis management is considerable as Sfakianaki (2015), Srinivasan (2015), Babu (2016), and Jose (2019) have also introduced and elaborated these crisis management models in the construction industry. Coombs (2014) stresses that crisis management is a critical organizational function that enables the management and employees to analyze and comprehend the events that might lead to a crisis.

As is known, the rapid development of the construction industry stimulates high income to the country by empowering employment, transportations, infrastructure, sale, and purchase of plant and equipment, building materials, and supporting other industries. It also offers many job opportunities for all levels, from laborers to professionals and boosts the improvement of the supply chain that contributes to growth in the national economy. This is proof of the importance of the relationship between the national economy and



the construction industry as a two-way street. This is the reason why the World Bank (1984) has acknowledged construction activity as an economic stimulus for the last three decades. Considering the substantial role of the construction sector in the economic development of Malaysia, it is essential for an organization and industry need to have a shield known as Crisis Management Plan (CMP) that constitutes a conscious, efficient, organized, and coordinated set of actions performed to avoid crises before a crisis occur or become uncontrollable or to minimize the possible damage if an emergency happens.

## CONCLUSIONS

This paper has provided an overview of the existing literature focusing on the relationships of variables as shown in Figure 2, which proposes a conceptual framework of a Crisis Management Plan (CMP) for organizations in the construction sector to foster preparedness and respond to a crisis. On top of that, this current study is focused on addressing the limitations of the previous research conducted by (Antopoulus & Kostavara, 2013; Sahin & Ulubeyli, 2015) and current concerns by (United Nations, 2020; CIDB, 2020). Thus, it aims to provide the basic information for further research into managing the crisis's disruption areas and creating readiness for future threats.

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