Preface

OVERVIEW

Due to recent pandemic, multinational corporations have accelerated their adoption of digital technologies in order to continue their operations and manage any obstacles they may potentially face. The origin and evolution of new technologies in the face of environmental threats is a major focus of technology analysis and innovation management. When confronted with unexpected and harmful consequences of crises that necessitate an immediate and effective response, we look to emerging innovative solutions for resolution. New crisis scenarios are always emerging, particularly with the recent coronavirus disease (COVID-19), which is being studied for patterns of critical innovation. Our narrative approach to crisis management, grounded in the theory of technological exaptation, examines critical innovative technologies that are ultimately used to manage crisis situations. In light of global crises such as the pandemic threat and the opportunities for global business sustainability provided by innovative technologies, it is necessary to investigate the role of such technologies to manage crisis situations.

CONTEXTUAL FIT

On a global scale, crisis management is critical for long-term business development opportunities. Crisis situations or disaster scenarios that require businesses to adapt to new routines in order to confront and overcome crises necessitate the use of rapidly expanding information and communication technologies (ICTs) and innovations. This book discusses and illustrates the use of a variety of information and communication technologies (ICTs) and innovative technologies in crisis management, including cloud computing, artificial intelligence, virtual reality, blockchain, the Internet of Things, and big data (Ali, 2019, 2020; M. Ali, 2019; Ali M et al., 2018; Ali & Abdel-Haq, 2021; Ali & Edghiem, 2021; Ali et al., 2017; Ali, 2021; Ali et al., 2020a, 2020b). For a long time, these technologies were overlooked as a result of the global economic crisis and businesses' subsequent need to adapt to the new global landscape. As a result, determining the extent to which these innovative technologies contribute to the long-term value and sustainability of the business requires an examination of the crisis management context. Additional research is required to ascertain the extent to which innovative technologies can be used to develop long-term crisis management solutions. The purpose of this book is to educate readers about the potential for information and communication technologies (ICT) and innovative technologies to assist organisations in times of crisis. Organisations must acquire critical knowledge about how to use ICT effectively in order to adapt their business models to current crisis or disaster scenarios.

TARGET AUDIENCE

Crisis management, disaster scenarios, sustainability, information systems, information technology management, business studies, and emerging technologies are all discussed in this book. The book covers a range of topics, including cloud computing, ubiquitous computing, and emerging online technologies like artificial intelligence, virtual reality, and cloud computing systems. Crisis managers, for example, will be interested in the book's findings because they plan and advise businesses on how to respond to a global crisis situations. Anyone with a professional interest in the subject may refer to the information in Table 1:

Table 1. Reading guide for practitioners

Reader Interests	Chapter(s)	Section(s)
Background of technologies and rationale	2-10, 12-15	Introductions
Key Concepts	All	Discussions
Digital/Innovative technologies	2-10, 12-15	Main bodies
Crisis Management/Disaster scenarios	All	Main bodies
Systematic studies of innovations in crisis management	1, 11	Main bodies
Global crisis business cases	8, 9, 12, 13, 14, 15	Cases and main bodies
Conclusions	All	Conclusion

ORGANISATION OF THE BOOK

The book is organised into 15 chapters with a summary of each as follows:

Chapter 1

The COVID-19 crisis has engulfed several countries, leaving policymakers perplexed and unprepared to deal with the situation. Choosing the most appropriate course of action has become more challenging as a result of the infection and its effects on the body. While dealing with the coronavirus crisis and the stress that goes with it, new information technologies are critical in addressing and alleviating that stress. As a result, new information technology capabilities are required to address the challenges confronting policymakers when dealing with pandemic diseases such as COVID-19 in the past. As a result of the systematic review process used in this study, the best available evidence is synthesised from text and opinion to provide actionable advice to policymakers. The findings indicate that the challenges fall into two categories: battling the disease and mitigating its effects. Furthermore, the Internet of Things, cloud computing, machine learning, and social networking all contribute significantly to resolving these issues.

Chapter 2

Disaster management's objective is to minimise the potential damage caused by disasters, to provide victims with immediate and appropriate assistance, and to ensure an effective and rapid recovery. To

accomplish these goals in the aftermath of a disaster, a coordinated and efficient rescue effort is required. As a result, breadth of information about the disaster's impact is required in order to plan an immediate and effective response. The Internet of Things (IoT) is poised to save lives in the event of a natural disaster. This chapter proposes an IoT-based solution for planning rescue operations in the aftermath of natural disasters. This chapter is further validated through an analysis of IoT technology adoption for disaster management using the task-technology fit (TTF) approach.

Chapter 3

Natural disasters have the potential to cause catastrophic damage and massive economic losses. Actual damages and losses have been increasing in recent years. As a result, disaster managers bear a greater responsibility to safeguard their communities in advance by developing effective management strategies. Numerous studies have been conducted on the processing of disaster-related data using artificial intelligence (AI) techniques, all with the goal of developing more effective disaster management strategies. This chapter summarises current AI applications in the four phases of disaster management: mitigation, preparation, response, and recovery. Numerous AI techniques can be applied to various stages of disaster management, and several practical AI-based decision support tools are demonstrated. It seems that the vast majority of artificial intelligence applications are focused on disaster preparedness and response.

Chapter 4

The regulatory and cyber risk landscapes are reshaping the role of human resources. As a result, information security/information technology (InfoSec/IT) professionals are increasingly being asked to assist organisations in determining and enforcing employee data permissions, training employees on cybersecurity policies, and assisting with employee-related cyber incidents in order to be prepared for any kind of cyber-attack. This chapter delves into the role of HR in managing cyber risk and provides recommendations on how organisations can manage cyber risk effectively to support their HR departments.

Chapter 5

As an occurrence that jeopardises vital national interests or the basic needs of the populace, a crisis necessitates rapid decision-making and coordination between various departments and agencies in order to resolve it effectively. As a result, crisis and disaster management systems are necessary and critical. Crisis and disaster response systems are intricate, requiring numerous phases, techniques, and resources. These systems require useful and necessary data that can be used to make future decisions more effectively, such as historical and current data on crises. The use of machine learning and big data technologies to process data from crises and disasters has the potential to yield significant results in this area. The first section of this document discusses crisis management systems and available tools, such as big data and machine learning. Additionally, a machine learning and big data approach to crisis management systems were developed, which included a description and experiments, as well as a discussion of the findings and the field's future directions.

Chapter 6

Recent events have emphasised the critical nature of making key decisions with the support of innovative technologies to manage crises. This chapter will review pertinent literature on crisis management and existing categorizations or typologies before delving into crisis decision-making. Two distinct modes of decision-making are discussed: rational and intuitive decision-making. The following subsection conducts a review of articles in the literature on artificial intelligence and data-driven approaches, categorising them as rational and intuitive decision-making.

Chapter 7

The recent coronavirus pandemic has wreaked havoc on global economies, heightening interest in crisis management. As a result, it is critical to provide decision-makers with some assistance in improving their decision-making. As a research field, artificial intelligence (AI) has permeated nearly every facet of human endeavour, gradually displacing humans in tasks with promising outcomes. By combining these two fields of research, this chapter proposes ADDS: an artificial intelligence-based decision-making framework for crisis management. It proposes a decision-support framework. The development of such a framework can be beneficial for two reasons: i) it can aid in advanced crisis preparedness, and (ii) it can result in effective and productive communication during a crisis. It is worth noting that a thorough understanding of this can aid in planning, controlling, and managing the situation.

Chapter 8

Demand for the implementation of innovative technologies in accounting continues to grow in lockstep with the advancement of technology innovation. The objectives of this chapter are to familiarise readers with current and potential innovative accounting technologies for obtaining high-quality data and to identify success factors for enterprises implementing these technologies. This chapter expects to provide businesses with practical approaches and recommendations for successfully implementing innovative accounting technologies through a thorough presentation and critical evaluation of the aforementioned key topics. In terms of business success, an effective application can help businesses gain a competitive edge by providing more relevant and reliable accounting and management information necessary to navigate today's difficult economic conditions and volatile business environment.

Chapter 9

The Lebanese economy has been experiencing dramatic changes marking political and financial waves of reform and turmoil over the last decade, and specifically after the latest consecutive recessions. All sectors of the local economy had been substantially affected by the economic recession. The accounting system which is directly connected with business sectors was hindered by the economic crisis developments where the compliance of business entities that are on the verge of collapse with IPSASs (International Public Sector Accounting Standards) became extremely problematic. This chapter explores robotic process automation (RPA) in the accounting domain from the perspective of the Lebanese economic crisis.

Chapter 10

Visual language communication has already gained significant traction in graphic design and marketing literature as a substantial communication approach for expressing visual designs for advertising products and services. However, VLC goes beyond the marketing arena, it has been known to support critical situations such as times of crisis or disaster. This chapter explores the role of visual language communication in managing crisis situations. The characteristics of visual communication are articulated through the lens of crisis management, together with the benefits and challenges that may impede or foster visual language communication to manage crises. The chapter concludes by recommending a typology for managing future crises using VLC innovations.

Chapter 11

The purpose of this chapter is to examine the transition from traditional teaching and learning methods that rely heavily on face-to-face interaction inside lecture rooms to online distance learning in the context of the pandemic. The existing literature is systematically reviewed using the guidelines for conducting systematic information system (IS) literature reviews, with the assistance of NVivo. Diverse experiences navigating the contingency transition to distance learning in the midst of the Covid-19 pandemic. The review's findings are presented in the form of various figures, tables, and graphs. It makes comparisons between the included studies' objectives, methodology, theory application, findings, perspective, and context. Additionally, the analysis compares the findings from prepared (in terms of infrastructure and training) and unprepared implementation cases. This chapter is expected to guide decision-makers in developing strategic action plans to enhance the online learning experience for instructors, students, and institutions as a whole during a crisis situation.

Chapter 12

The UK's higher education HE sector continues to be one of the most dynamic in the world, attracting 2,697,380 students by March 2021. The population of UK higher education students as a whole is extremely diverse and reflects a globalised version of contemporary higher education. Globalization, high-quality education, and increased competition for HE degrees have re-energized student migration, resulting in the formation of cross-cultural student environments at educational institutions worldwide. In essence, this culturally diverse higher education sector in the United Kingdom was expected to experience a range of effects from the Covid-19 pandemic crisis on students with asymmetric cultural backgrounds. This chapter provides a multidimensional experience of remote online education during the Covid-19 crisis.

Chapter 13

Businesses today face more intense competition than in the past as a result of advancements in information and communication technologies. Supporting employees and developing positive relationships with their managers are critical for the organization's and employees' performance. Mobbing behaviour, which is prevalent in the workplace, has a detrimental effect on employees' performance and motivation. The purpose of this chapter was to assess an organization's mobbing behaviour from a management and marketing perspective and within the context of crisis management. The chapter also aimed to determine

whether employee exposure to mobbing results in a significant difference in word-of-mouth communication (WOM). The research concluded that employee exposure to mobbing resulted in a significant difference in WOM.

Chapter 14

The Agri-Food industry is in the midst of a massive crisis pandemic due to low economic growth and production. Recently, the adoption of several AI technologies has aided farmers in producing thousands, thereby reducing human intervention in food production. The components of Artificial Intelligence, which include learning, perception, problem solving, and reasoning, have aided the agri-food business industry in identifying sustainable models for crisis management. In this chapter, the author proposes a four-stage strategic roadmap for addressing the challenges associated with implementing artificial intelligence to manage crises in the agri-food business.

Chapter 15

Citizens' health is a barometer of society's health, and thus healthcare is a primary focus of all governments/societies. Precaution is preferable to cure. It is critical to monitor patients on a regular basis and to treat them pro-actively. Despite being proactive, there is a possibility that patients will require reactive treatment. Over the last century, the healthcare industry has made tremendous strides. Technology has been critical to these advancements. This has aided doctors in diagnosing patients more accurately, resulting in more effective treatment. Healthcare costs have increased, as has the incidence of chronic lifestyle diseases and the ageing population. These factors are compelling healthcare stakeholders worldwide to pursue round-the-clock activity tracking and continuous monitoring of health parameters. Hospitals are critical for monitoring and treating patients. The purpose of this chapter is to discuss how hospitals are implementing newer technologies to monitor and treat their patients through the development of Next Generation affordable Healthcare systems.

CONCLUSION

The book makes a contribution to the fields of ICT/IS, business management, and crisis management by examining the role of ICT or innovations in crisis management in global businesses. The theoretical implication of this book is the identification of an unusually complicated situation through an examination of crisis management culture and global business sustainability via ICT and innovative technologies in the face of global crisis or disaster scenarios. This is supplemented by methodological implications, such as the presentation of comprehensive global business scenarios in which these technologies are used to manage disasters or crises. Case studies revealed some fascinating trends regarding the current state of technology use and the propositions of ICT and innovative technologies that facilitate crisis management in global business settings, even during the most trying times, such as the Covid-19 pandemic. While these technologies provide an alternative business environment to the traditional business environment in the event of a pandemic, it is still unknown whether they can fully manage disasters or crises or whether the technology itself can produce the sustainable outcomes necessary to support a crisis management

business model. Due to the exploration of ICT's potential to manage global crises, the themes of crisis management and sustainable innovative technologies have a significant impact on this book.

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