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Special Issue on Pandemic Management Strategies and Outcomes in Asian States

Guest Editors: Ahmed Shafiqul Huque and Habib Zafarullah

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Preface to the special issue

The PAP journal was first published in 1992 and has been published online in open access on the Emerald Insight Platform since 2018. This year marks the 31st anniversary of its first launch and 6th anniversary of its online publication with Emerald. It now publishes three issues with at least one special issue and more than twenty articles per year.

PAP is currently indexed and abstracted by Scopus, Emerging Sources Citation Index (ESCI), CrossRef, Directory of Open Access Journals (DOAJ), EBSCO Discovery Service, Google Scholar, Health Research Premium Collection (ProQuest), Healthcare Administration Database (ProQuest), ProQuest Central, ProQuest Central Basic (Korea), ProQuest Central Essentials, ProQuest Central Student, Publicly Available Content Database (ProQuest), Summons (ProQuest), WorldCat and The British Library. Academics and practitioners in public administration, management, public policy, and related fields are welcome to contribute papers to this journal.

In this special issue on "Pandemic Management Strategies and Outcomes in Asian States", we are delighted to have Professor Ahmed Shafiqul Huque from McMaster University and Dr. Habib Zafarullah from University of New England as Guest Editors. The eight articles focus on various pandemic management strategies and outcomes in Asia including New Zealand, Japan, Malaysia, India and Pakistan written by academics and specialists. Please refer to the Introduction to the special issue for brief descriptions of each article. We hope this special issue will make significant contributions to the understanding of pandemic management for policy makers, scholars, and practitioners in various countries around Asia.

Peter K.W. Fong
Editor-in-Chief, PAP Journal
President, Hong Kong Public Administration Association

About the Editor-in-Chief
Professor Peter K.W. Fong, PhD (New York University), is President of Hong Kong Public Administration Association and Editor-in-Chief of PAP Journal. He teaches strategic management and supervises DBA students' dissertations of University of Wales TSD. He was appointed as Advisory/Visiting Professors by Tongji, Tsinghua, Renmin, and Tianjin Universities, Chinese University of HK and HK Poly U. He holds memberships of HK Institute of Planners & Planning Institute Australia. He was a Teaching Fellow of Judge Business School, University of Cambridge; Director of EMBA programme, HKU Business School; Associate Professor, Department of Urban Planning, HKU; Executive Vice President of City University of Macao; Honorary Professor, China Training Centre for Senior Civil Servants in Beijing; Studies Director, Civil Service Training & Development Institute, HKSAR Government; Visiting Scholar, MIT; and Consultants, the World Bank and Delta Asia Bank. Peter K.W. Fong can be contacted at: fongpeter@netvigator.com

Introduction to the special issue

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, was first detected in late 2019 in Wuhan, China, and has since posed a severe threat to global public health. It spread quickly between people and continents and has continued into 2023, with the emergence of new variants posing a significant challenge to containment efforts. The virus's origins and characteristics were initially unknown, causing concern and a feeling of unpreparedness among scientists, governments, and non-governmental organisations (NGOs) worldwide as they struggled to grasp the enormity of the situation and find ways to lessen its effects (Hu *et al.*, 2021; United Nations, 2020).

As it turned out, the pandemic's effects have been far-reaching, with governments in Asia being particularly impacted by a lack of information and resources required to address its numerous challenges. It resulted in the loss of approximately seven million lives globally and had a significant impact on the economic, social, and political spheres altering the fabric of daily life in countless ways. To combat the pandemic's destabilising effects, governments and institutions have had to quickly mobilise and adapt to a constantly shifting, often overwhelming, situation (OECD, 2020; Rodrigues and Plotkin, 2020). Through cooperative efforts between the public and private sectors, the state can be freed of some of the burdens of crisis relief (Park and Chung, 2021).

According to the World Health Organization, a pandemic occurs when a newly discovered disease spreads rapidly across the globe. The United States Centers for Disease Control and Prevention define a pandemic as a worldwide epidemic caused by the rapid spread of a newly emerging infectious virus. Interestingly, pandemics hit approximately every hundred years. The plague outbreak took place in 1720, a cholera epidemic in 1817, and the Spanish flu in 1918, followed by the coronavirus in 2019 (Kertscher, 2020).

The advent of the COVID-19 pandemic necessitated a rapid and comprehensive response from the scientific community and governments, as they sought to contain the rapidly evolving virus through the development and dissemination of effective vaccines. In parallel, governments endeavoured to craft evidence-based public health policies to manage the pandemic, responding to emergency situations with restrictions and lockdowns while mitigating the negative societal and economic impacts of such measures (OECD, 2021).

Although preventive measures such as vaccination and isolation of affected individuals were immediately prioritised, the pandemic highlighted the importance of strategic planning and coordination between governments and the private sector in responding to the crisis (Buse, 2004). However, new infections and restrictions continued to impose a substantial strain on the economies of several countries, despite ongoing efforts to curb the spread of the virus and alleviate its impact.

The pandemic cannot be effectively managed without continuous scientific research, an evidence-based approach to policymaking, and the coordination and cooperation of multiple stakeholders, including governments, businesses, and civil society. These measures are

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critical to mitigating the pandemic's impact and restoring stability to societies profoundly affected by the crisis. There is much to learn from past pandemics and how those were managed.

State capacity and the pandemic

Pandemic management is a multifaceted challenge that necessitates a comprehensive and coordinated response from states. The capacity of states to respond to pandemics is determined by various factors, including the availability of resources, the level of development, scientific and technological advancements, and the quality of governance that allows for the effective implementation of policies with equitable outcomes. It is crucial that all countries, including the Asian ones, develop policies and strategies that can offer immediate guidance for mitigating the problem while also drafting long-term policies that ensure preparedness in the event of new pandemics or the continuing mutation of the COVID-19 virus. In many Asian countries, the pandemic has shed light on preexisting healthcare problems, including societal and economic inequalities. Their capacity to manage pandemics has been relatively weak (OECD/WHO, 2022).

Pandemic management requires a nuanced understanding of the interplay of various social, economic, and political factors that influence a state's capacity to respond to a crisis. Inadequate funding, under-resourced healthcare systems, and weak governance structures can all hinder its ability to respond adequately. On the other hand, states with advanced scientific and technological capabilities and robust institutional frameworks are better able to respond through swift mobilisation and sound policymaking.

An adequate and coordinated response to the current COVID-19 pandemic requires states to put research-based policymaking at the top of their agendas. Such policies ought to be adaptable to new conditions and emerging threats based on ongoing research and scientific discovery. States can respond to crises and lessen their impact on society by investing in the resources, structures, and policies that allow them to do so.

The COVID-19 pandemic has highlighted the challenge of developing state capacity, which will require sustained effort and investment over decades. Given the pandemic's sudden and unprecedented nature, Asian states have had to rely on existing knowledge and technology, as well as the experience of other countries, to develop strategies for managing the pandemic and mitigating its effects. The continuing impacts require persistent scrutiny and assessment of policies, methods, obstacles, and outcomes.

Managing the pandemic has entailed a wide range of actions, such as developing and procuring vaccines, mandating mask use, implementing lockdowns and travel restrictions, and ensuring community safety. It has been a major challenge for governments in the Asia-Pacific to secure and distribute vaccines, overcome resistance to mandatory mask use, and implement and enforce lockdowns. Each of these areas of activity is critical, and examining the strategies used by Asian countries such as India, Japan, Malaysia, New Zealand, and Pakistan provides a glimpse into the region's multifaceted challenges in managing the COVID-19 pandemic.

Serikbayeva *et al.* (2021, p. 927) highlighted the importance of state capacity for dealing with COVID-19 and added that "increased government effectiveness is significantly associated with lower death rates". Capano (2020, p. 326) emphasized the need for preparedness of states with "preexisting protocols to isolate hospitals and care facilities, develop testing and tracing capabilities and stockpile personal protective equipment" that contribute to state capacity. The cases discussed in this issue are at various stages of development and therefore, not equally equipped with the required resources for enabling capacity. This helps understand the variations in their capacity to address the challenges precipitated by the pandemic.

The challenge of devising workable policies and strategies to combat the pandemic, given the complexity and variability of state capacity across the region, has been enormous. Nevertheless, Asian countries have stepped up to the challenge, taking numerous measures to combat the pandemic's effects. These approaches have included developing novel testing and contact tracing technologies, implementing large-scale vaccination campaigns, and executing policies to protect citizens' mental health and well-being.

As the pandemic continues to unfold, it is critical to assess and learn from the experiences of Asian states in dealing with the crisis. Such analysis can assist in identifying best practices and areas for improvement and informing the development of policies and strategies to strengthen state capacity and better prepare for future pandemics.

Pandemic management in Asia-Pacific states

Managing a pandemic entails a variety of approaches. The first and foremost objective is to determine the clinical side of management to ensure prevention and containment. Other requirements include procurement and administration of vaccines, ensuring the practice of social distancing, quarantine, and use of face masks. Additional areas of concern cropped up as states plunged head-on into the uncharted territory of COVID management. The articles selected for this special issue reveal the wide range of tasks required to address the fallouts of the pandemic and analyse their implications. Along with lessons to be learned from the experience of New Zealand as one of the most competent managers of COVID-19, other studies have focused on predictors for receiving vaccines, government intervention strategies for preventing and controlling the virus through systems thinking, resilient leadership and life skills, support to women entrepreneurs, the role of policy actors in implementing social distancing, and co-creation of COVID-19 responses.

The government of New Zealand was considered one of the best responders to the pandemic because of its prompt imposition of lockdown measures, effective communication with citizens, solid and prudent political leadership, and emphasis on testing, despite some concerns about the slow rate of vaccination. Robin Gauld offers a review of the experience of New Zealand in managing the pandemic. He draws attention to the impact of COVID-19 on business and society and highlights lessons to be learned, particularly the importance of strong political leadership informed by public health expertise and advice. Gauld noted the strain on the health system and advocated for financial help to ensure compliance with COVID-19 criteria to decrease negative repercussions on the public and business.

With life expectancies of 88 and 86 years for females and males, respectively, Japan's 'hyper-aged' society faced challenges from the pandemic. The country followed a three-pronged strategy: border defence, slowing down the spread of infection, and damage control. The government succeeded in identifying and protecting the vulnerable aged group through psychiatric hospitals, chronic care hospitals and long-term treatment hospitals. Tomonori Hasegawa, Koki Hirata, and Kunichika Matsumoto noted a concurrent problem of a decrease in birthrate that further exacerbated the problems of an aged society.

Consilz Tan and Chee Yoong Liew analysed the intention to receive COVID-19 vaccines in Malaysia by employing the health belief model from a behavioural economics and institutional quality approach. They discovered that 'perceived benefits' were the strongest predictor and 'perceived barriers' the weakest. They also explored 'perceived susceptibility', 'herding' and 'institutional quality' as potential predictors. Tan and Chee found that the herd mentality, effectiveness of government authority, and regulatory quality were essential contributors to public health policies and quality of intervention in Malaysia.

The team of Jack Kie Cheng, Fazeeda Mohamad, Puteri Fadzline M. Tamyez, Zetty Ain Kamaruzzaman, Maizura Mohd Zainudin, and Faridah Zulkipli examined the intervention strategies used to address the problem of COVID-19 by the Malaysian government.

The study analyses the linkages among the intervention options and their interaction to illustrate the growth or decrease of the transmission of infections. They argue that control and preventive strategies must be used simultaneously to maintain a state of equilibrium and prevent the spread of the virus and its variants.

The role of leadership in managing crises and pandemics is highlighted by Monika Bansal and Surbhi Kapur. Drawing upon insight from an ancient scripture, they identify the leadership requirements that contribute to organisations' effectiveness and improvement. Bansal and Kapur conduct a thematic analysis to determine the qualities of leadership in times of crises. The study emphasises that conventional leadership skills may not be adequate to address pandemics like COVID-19, and recommends resilience in leaders with life skills that entail emotional, intellectual and spiritual strengths and the practice of self-management for developing a style that is purposeful and impactful.

Nida Hussain, Baoming Li and Habib Elahi Sahibzada explore the issue of both financial and non-financial support extended by the government to women entrepreneurs in Pakistan. The study uses the resource-based entrepreneurship theory to reveal that Pakistan's government remained in constant communication with women entrepreneurial representatives to obtain relevant information. The women entrepreneurs received incentives to assist with the continuation of their enterprises. More importantly, Hussain, Li and Sahibzada noted that women entrepreneurs were invited to contribute to the policy process in Pakistan based on their knowledge and experience.

After the outbreak of COVID-19, social distancing was recognised as an important non-pharmaceutical tool for containing the virus. Muhammad Fayyaz Nazir, Ellen Wayenberg and Shahzada Fahad Qureshi examined this apparently simple, yet difficult to implement, practice by examining the role of the policy actors' in implementing this measure in Pakistan. Drawing upon the normalisation process theory, they analysed the roles of the intervention actors, including healthcare providers, district management agents and staff, to identify a higher level of collective action and reflexive monitoring. Nazir, Wayenberg and Qureshi noted that the level of coherence and cognitive participation were not adequate for ensuring the desired results.

Aisha Rizwan, Shabana Naveed and Yaamina Salman evaluate the strategies adopted by the government of Pakistan for managing COVID-19 by involving a multiple set of actors, including the public and private sectors, third-sector organisations, and civil society. The study recognises the impact of the pandemic on social, cultural, economic, and political life of the country and its citizens. They argue that collaborative efforts by multiple stakeholders allowed for a coherent response. The successful management of COVID-19 in Pakistan was facilitated by the creation of a specialised organisation that used data-driven and informed decisions to aggregate for timely actions by the federal and provincial governments.

Analysis and observations

The emergence of the COVID-19 pandemic in Asia caught governments off guard, and they scrambled to devise response strategies. While many Asian countries looked to other countries' experiences in developing their responses in the early stages, they needed to look beyond healthcare to understand the pandemic's implications for demographics, people's behavior, leadership, and economic activities. Consequently, assessing the pandemic's consequences has been difficult, complicated by factors such as abnormal fluctuations in the number of confirmed cases and deaths, the reliability of statistical data, and the timing of research findings.

As the pandemic spread, many Asian countries devised different measures to deal with it. These drew on international and domestic experiences, emphasising the importance of adaptive governance and the need to balance preventive measures with the negative

consequences of policy interventions. Because the pandemic spanned more than just health and well-being, assessing its consequences has been complicated by many factors, such as unusual fluctuations in the number of confirmed cases and deaths, the reliability of statistical data, and the timing of research findings. These issues have proven difficult for policymakers as they coped with the situation's unique and dynamic nature. To this end, researchers and experts keep working on developing novel approaches to measuring the pandemic's impact. Some of these measures have included improved statistical methods that account for the evolving pandemic and its effects on society and the economy. Furthermore, research has been conducted to identify the causal mechanisms that underpin the pandemic's impact, such as the role of leadership and institutional factors in shaping the response. Researchers and policymakers can better understand effective strategies and develop evidence-based recommendations for the future by analysing the multifaceted nature of the pandemic's impacts.

The focus of the battle against the pandemic was, obviously, on the search for antidotes to the virus. Huge investments had to be made on medical research and companies engaged in intense lobbying with governments to ensure advantage from the transactions. Development of a vaccine was certainly critical for public health, but there were several psychological, social, political and economic impacts that cried out for attention in Asian states. Perceptions and actions of the public had to be managed through policies and actions, along with recognized strategies for imposing lockdown, ensuring social distancing and wearing of masks. In addition, citizens needed financial relief as opportunities for employment and entrepreneurship became severely limited during the pandemic. A comprehensive approach to the management of COVID-19 entailed attention to immediate, short- and long-term strategies and actions.

Lipscy (2020) identified uncertainty, time pressure, perception of threats, and ad-hoc leadership as factors that influence the choice of strategies for crisis management. The experience of Asian states presented in this issue reveals other strategies and areas of focus that contributed to the complicated process of containing the virus, reducing infection, and facilitating recovery, as well as support to vulnerable groups and the economy. They employed measures to deal with the direct threat to public health and maintain stability in the social, economic and political framework in the Asian countries. These findings will encourage states to prepare for pandemics and crises and respond proactively to challenges.

Lessons for Asian states

The uniqueness of New Zealand must be acknowledged while considering the state of pandemic management in Asian states. The context is strikingly different because New Zealand is small in size, with a population of approximately 5 million, in a society with well-developed social, economic and political structures. However, the lesson to be learnt is that pandemic management necessitates an open and transparent governance structure that bases public health choices on scientific data and evidence and maintains ongoing communication with citizens.

Japan, India, Malaysia and Pakistan are markedly different even among Asian states. They differ in terms of size, population, the form of government, nature of bureaucracy and, more importantly, the needs and expectations of citizens. These led to problems when governments attempted to formulate responses to the unknown threat of COVID-19 that required substantial adjustments to conditions in society in which the public had to live, work, and perform many other essential tasks. The management styles varied across the countries examined, although the objective was to address the pandemic with short, medium and long-term solutions.

Determining the good and bad performers in managing the pandemic is impossible. Considering the capacity of governments across Asia, it should be recognised that they have performed relatively better due to the attention to specific vulnerable groups such as the elderly in Japan and women entrepreneurs in Pakistan, predictors of possible public reaction to measures for fighting COVID-19, effective intervention strategies, resilience of leadership, implementation of social distancing, and adopting collaborative efforts with multiple stakeholders in the political system. It is obvious that governments need to make critical decisions on public health measures with direct input from the scientific and medical community and use sound strategies for informing and convincing the citizens to work in collaboration to address and contain pandemics. Finally, the social and economic needs of the community and citizens must be included in the arsenal of tools to address pandemics effectively.

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Guest Editors

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A review of public policies on Covid-19: the New Zealand experience

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Abstract

Purpose – This article reviews New Zealand's journey through managing Covid-19. It provides a chronological overview of key developments. The article analyses the impacts of Covid-19 on business and society and offers lessons for others from the New Zealand case.

Design/methodology/approach – The article draws on various sources, primarily media pieces and government information. It also critically analyses and interprets the New Zealand response.

Findings – The initial onset and response from the New Zealand government, albeit with closed borders, was effective in terms of keeping the country relatively Covid free. The country was slow to introduce vaccinations, but the uptake was swift. A vaccine mandate to coincide with a Delta outbreak was controversial. Importantly, the New Zealand case is characterised by political leadership strongly and explicitly informed by public health expertise and advice which was routinely demonstrated throughout the period in discussion.

Originality/value – The article offers an important overview and analysis of New Zealand's experience with Covid-19 and its response, with particular focus on the way in which the government and public health specialist advisors interacted.

Keywords New Zealand, Covid-19, Policy, Government, Economy, Business

Paper type Research paper

Introduction

As with every other jurisdiction globally, New Zealand (NZ) has been caught in the grips of managing Covid-19 since the initial outbreak made its way across borders and around the world from early-2020. NZ has frequently been looked to as an exemplar in terms of managing the Covid pandemic. Outbreaks have been limited and comparatively well-managed, with hospitalisations and death rates both low; for a long period, the country was completely free of Covid while others endured ongoing outbreaks, sickness, lockdowns and severe disruptions to daily life. Vaccination came late to NZ in the latter part of 2021, but swiftly lifted to one of the highest rates globally. Vaccination commenced around the same time as a Delta outbreak, mostly in the Auckland region. This outbreak led to a lockdown of several months, largely affecting Auckland, while the rest of the country remained free of the virus. Early in 2022, when the Omicron variant made its way into the community and became impossible to contain, the country had a vaccination rate of over 90 percent and was rolling out booster shots. Thus, in this regard, it was probably as well prepared as it could have been for an outbreak. A host of factors in the small nation's favour have assisted with its relatively controlled experience.

However, the country has also faced considerable difficulties. These include the impact of border closures, the pandemic's economic effects, and the challenges involved in achieving

high vaccination rates. The health care system also has not been well equipped to deal with the pandemic, which has been a key driver of the government's policy. Initially, this was a policy of Covid eradication by keeping the virus out of the country, which the population was largely behind, and around which there was broad cross-party political agreement. This also involved periodic lockdowns and differing frameworks for managing the virus and communicating to the public about what to expect in terms of behaviour and outcomes. The strict border controls and requirements for all incoming travellers to spend two weeks in managed isolation and quarantine (MIQ) were very controversial. When it came time to do so, the government moved to quickly reopen the borders in part in response to the mounting political pressure and partly as it had reached a point where it appeared to be the correct decision and pathway ahead in public health terms.

This article reviews NZ's response to the Covid-19 pandemic. It outlines the different phases of the government's response. It looks at the public perceptions of the response, the economic and other impacts, and describes how NZ's response has been primarily driven by public health advice and expertise. NZ is one of the few countries in which a public health approach has genuinely and routinely taken precedence over political factors. Some material in the discussions below can be sourced from the New Zealand Government official Covid response website, which is routinely updated in response to new developments in the pandemic and provides a repository of policies and information (New Zealand Government, 2022).

NZ's Covid outbreaks and response - a brief chronology

As Covid swept around the globe and took hold of areas such as northern Italy, New Zealand initially remained largely unaffected. The very first cases arrived in the country only in March 2020. New Zealand has the geographic advantage of being an island nation, a very long way from the most populated areas of the world. That said, the New Zealand population traditionally is very mobile, and the country has been an attractive tourism and business destination. Pre-Covid, there were multiple direct flights per day from many points in North America, Asia and China, and the world's longest direct flights from the Gulf region at over 17 hours. This meant that despite its distance, the country was very exposed, probably only marginally less than the parts of the world where the outbreak initially swept through, albeit less densely populated.

It was only a matter of time before the virus would reach New Zealand. By the time it did, the government was already planning and prepared to respond. When the virus was initially detected in travellers entering the country, it had already made its way into communities throughout the nation, demonstrating its potential to move swiftly and comprehensively throughout a geographically-spread and often remote population. Thus, with only around 72 hours' notice, the Prime Minister, Jacinda Ardern, announced that the country's borders would be closed from midnight on 19 March 2020. She urged all New Zealanders and others with the right to work and live in the country to return immediately, saying that it was unclear when the borders would reopen. Foreign tourists were also encouraged, mostly by their own governments, to depart as soon as possible as the country went into an indefinite lockdown.

Border closure and lockdowns

As with most countries, it was anticipated that the border closure would be short, the virus would be eradicated, and affairs would return to normal within weeks. The border closure was followed within days by the announcement of an immediate national lockdown, with all work to cease or be conducted from home where possible. Only essential services were to remain open such as supermarkets and medical facilities along with some public transport

and services to support staff in essential services. This included a limited range of early childhood and other services. All schools, universities, shops, restaurants and bars, and most other services closed through the lockdown. Wherever possible, school, tertiary education, and other professional services would be delivered online. As with the rest of the world, this stimulated the widespread uptake of digital delivery. New Zealand had previously commissioned a national rollout of fibre cabling to deliver high-speed Internet into homes and businesses throughout the country to its benefit. The government quickly worked to ensure that all Internet service providers removed speed and volume caps to reduce barriers to remote working and provision of education.

New Zealand's initial lockdown lasted for some two and a half months. Through that period Covid cases increased, with some parts of the country more affected than others. The country was most characterised by experiencing a series of linked clusters of cases, with each new case identifying as linked to an existing cluster. The government's focus at that point was on tracing, isolating and monitoring each positive case to ensure that there was no uncontrolled community transmission.

Leading into the first lockdown, the government announced a framework of different lockdown 'levels' that would apply to the country. Each of the levels corresponded with a different set of expectations and permissions, noting that different levels could apply in different regions depending on how many positive Covid cases were in existence and how well cases were being managed. Thus, the framework could see the whole country in lockdown or different regions having different levels of freedom and control. The initial lockdown saw the entire country at Level Four. This was the highest level and applied the most controls. Through this, all educational facilities and shops, restaurants and all but essential services were closed. Supermarkets remained open along with some other essential suppliers and had controls on a number of customers admitted indoors. Travel within the country between regions was also heavily restricted to only essential workers with a permit required to travel. It was also not permitted to drive or travel by other means outside of one's neighbourhood. People, largely families, were expected to adhere to the concept of a 'bubble', meaning that they could agree to meet one another but only for support reasons, such as delivering food to an older relative. Those in a bubble were expected to restrict their contact to one another to contain any infection. People were allowed outdoors for exercise or to obtain essential supplies. The police were charged with monitoring community behaviour, which meant issuing fines to people who were more than five kilometres from their homes without a good reason. They also paid close attention to gatherings, ensuring that the expectations around the bubble were adhered to.

Level Four was relatively straightforward for the country and, for the most part, what the Prime Minister called the 'team of five million' residents adhered to the rules and behaviour expectations. There was a strong sense within the population of responding as the government had requested and working to eradicate Covid. There was limited political debate around the government's decisions and leadership and very few breaches of the rules. The Prime Minister and Director-General of Health staged a daily stand-up meeting updating the country on outbreak's latest case numbers and trends, placing these in the global context. The Director-General routinely spoke immediately after the Prime Minister each day, giving a technical update on the pathway of the virus and the approach being taken. Notably, the Director-General was a medical professional with a public health speciality and so deeply accustomed with epidemiological and public health methods, analyses and responses. Thus, all central government advice had a strong public health underpinning. This was closely coordinated with the Prime Minister's key decisions and messages to the public. There was a sense that the country was faring comparatively well, coming together with a collective goal, giving real hope that the outcome would be positive. By the time the Level Four requirements were dropped to Level Three and then Level Two in May 2020, Covid had been all but eradicated.

Level Two meant that people were permitted to return to their places of work, and educational facilities reopening along with other shops and activities recommencing. Travel within and between regions was again permitted. Level Two, however, had a series of restrictions, including the need to be socially distanced. This placed considerable constraints on most services and activities. Many employees continued to work from home, which was recommended where possible in Level Two, while others were glad to be back to a relatively normal working environment.

One area that remained tightly controlled was the borders. As the rest of the world continued to experience ongoing and, in many cases, catastrophic and widespread outbreaks, the government message to the New Zealand population was that the country could not risk opening to arrivals without a period of quarantine and isolation. The government decided that what became known as MIQ (managed isolation and quarantine) would only be available for New Zealand passport holders and permanent residents. This began a process that was incredibly difficult for those seeking a place in MIQ and very costly for taxpayers who, via the government, were predominantly funding the MIQ system. The section below describes this in further detail. In short, the government leased out multiple hotels and ran these as tightly controlled MIQ facilities involving the armed forces. Capacity for MIQ was extremely limited and often unable to meet with demand which, overtime, grew. The requirement for MIQ remained in place until the first quarter of 2022, when a staged border opening plan was announced, so for the best part of two years.

Following the step down to Level Two, the country resumed a relatively normal way of life, compared to elsewhere in the world. Large parts of the country, such as the entire South Island, went for over a year without a single case of Covid. There were periodic outbreaks associated with the borders. These tended to derive from a border worker who may have been in contact with an incoming traveler, such as providing transport from the airport to an MIQ facility or contracting Covid in a facility from a MIQ resident. MIQ facilities were receiving positive cases almost daily, reinforcing the government's message that the system was working by providing a barrier for the rest of the country from Covid. There was regular and constant testing of border and MIQ workers, and when the occasional positive case was picked up, the government contact tracing system was enacted. This periodically led to a change in levels. For example, in August 2020, Auckland was once again put into a short lockdown as it emerged that family members of a positive case had attended several large public events and there was uncertainty around how widespread the virus may have been. By this time, the government had put in place a Covid app based on QR code scanning and Bluetooth technology, which also assisted with contact tracing and notifying people considered close contacts. Auckland city bore the brunt of the various Covid outbreaks, given that the international airport was the one point of entry that remained open in the country and where the majority of the MIQ hotels were based.

Government leadership and management
By 2021, New Zealand had gained a global reputation for its management of Covid with the Prime Minister being singled out for her leadership through the pandemic. The 2020 general election, which was delayed several weeks due to Covid, saw the Ardern-led Labour government returned to power with one of the strongest majorities of recent times, indicating considerable public support for its management. Throughout, there had been consistent messaging around the need to take the country's health first while also supporting the economy. A range of support measures was put in place for industries affected by lockdowns and closed borders. Retail was heavily affected along with the hospitality industry and, of course, the tourism industry and related sectors. Measures included wage support and other financial support to assist businesses. This meant that through the lockdowns and beyond, most employees had an income, and many businesses received support to assist with

reorientation. Support was also available for a range of other purposes, such as further education for deployment in different sectors and jobs.

From 2021 onwards, New Zealand became increasingly attractive to expatriates wishing to return. This created several pressures. Firstly, on the MIQ system. Secondly, on the domestic housing market. As with many other countries, the pandemic appears to have significantly impacted house prices. After the initial lockdown in May 2020 when it was predicted that house prices would slump, they did the opposite. New Zealand has since had one of the world's highest increases in house prices, leading to the conclusion that housing is now completely out of the reach of many (*Economist*, 2022). Certainly, data show that New Zealand has become one of the least affordable housing markets globally in terms of average income to average housing purchase price ratios (*Economist*, 2021). Housing rent prices correspondingly increased. The government put in place several measures, some of which pre-existed Covid to try to control property prices. One of these was a ban on foreigners buying into the housing market (with some exceptions). Housing price inflation following Covid appeared to have been driven by the desire amongst residents to invest in a home as they looked to live and invest locally, alongside returning residents often with significant financial means or citizens living offshore seeking to ensure that they had a base back in the country. It was also driven by a simple lack of supply along with escalating building costs, fueled by inflation and supply chain cost increases.

Through 2021, these pressures grew. The government continued to hold fast to the closed borders and freedom from Covid, following the guidance from its public health advisors. In August 2021, the Delta variant made its way through the MIQ system and into the country. This led to a national lockdown lasting around three weeks. However, the Auckland region remained in lockdown until at the end of the year. This was as community transmission through a series of clusters, and newly identified cases persisted, taking considerable time to bring under control and eradicate. The government's intention throughout this time was to maintain its complete eradication policy. While the rest of the country was largely free to travel and live normally, the borders around Auckland, including the north of the city, remained firmly closed for entry and exit.

Vaccination campaign

Meantime, the government launched a national vaccination campaign sometimes after other countries had moved to vaccinate their populations. It decided that the Pfizer double-dose vaccination would be available to all free of charge through a system of public-funded delivery. In what seemed like a race to vaccinate, the uptake of vaccination was rapid as Delta moved its way around Auckland and the rest of the country lived in fear of an outbreak beyond Auckland. By the end of the year, well over 90 percent of the population was fully vaccinated, albeit with lower levels amongst more vulnerable population groups such as Maori people living in rural areas, meaning New Zealand became one of the most vaccinated countries globally. The vaccination campaign was the source of controversy, including that the government had been slow to launch a campaign, there had been a failure to work with Maori people to achieve stronger buy-in and vaccination rates, and, very importantly, that a vaccine mandate had been put in place for many areas of the workforce.

The responses to the vaccine mandate are described below and proved to be divisive. On the upside, most of the public supported a mandate, hence the rapid and high vaccination rates. Alongside the mandate policy, the government developed a vaccine passport for proof that a holder had been fully vaccinated. This was so that venues such as restaurants and bars, as well as workplaces covered under the mandate, could have proof that staff, visitors and customers were vaccinated. The implication was that anyone without a vaccine passport could not be admitted to a venue and could potentially have their employment terminated

depending upon the industry. For example, all health care facilities and schools required all employees to be fully vaccinated. Other industries, such as universities, were given the option to consult with their staff and students about whether vaccination should be mandatory. In a complicated, costly and involved process, most tertiary institutions concluded that anyone on campus, including visiting contractors, staff and students, would need to hold a vaccination passport. Many other employers went through a similar process, reaching similar conclusions. Many gave exceptions to staff not willing to be vaccinated who were able to work remotely. Others had their employment terminated.

Covid in the community
The new year and start of 2022 was a time of celebration as it appeared that eradication had been achieved once again and the lockdown was lifted from the Auckland and Northland region. Shortly after this, it was evident that an increasing number of Omicron cases appeared in MIQ facilities, coming in from overseas. The government's initial response was to cease inbound travel from some high-risk locations such as India. It was not long before MIQ staff contracted Omicron with the Prime Minister warning that the virus would inevitably make its way into the community given its highly infectious nature. This happened from around mid-January 2022. From then, the government shifted its approach to one of managing to live with the virus. It recognised that eradication was no longer achievable, nor was continued closure of the borders. Meantime, the Pfizer booster program had been rolled out from late 2021 so the country was probably in one of the best possible positions to cope with an Omicron outbreak.

With the Omicron outbreak, the virus rapidly spread throughout the country. The number of hospitalisations increased along with the number of deaths. Mostly, people went about daily business with a focus on remaining open for business and learning to live with Covid in the community. The vaccine passport was an important tool for managing the outbreak, with travel by air, visits to many shops and hospitality venues, many public areas such as university campuses requiring a passport. The testing regime also shifted with the outbreak of Omicron, with the government procuring Rapid Antigen Tests (RATs) and distributing these free of charge to citizens making an application through the government's Covid management website. Anyone could order tests, subject to some basic questions, and pick them up immediately from a community pharmacy. Thus, testing and reporting became a dual process of official testing sites with nasal swabbing and self-administered RATs with a request that results be uploaded to the government website by the individual in question.

At the time of writing (July 2022), the wave of Omicron and sub-variants continued to grip the country with a relatively stable number of daily cases and Covid-related deaths. New Zealand's death rate from Covid remained the lowest amongst high-income countries at just over eight per 100,000 people; by comparison, the USA was almost 300 per 100,000 and the UK (Johns Hopkins Coronovirus Resource Center, 2022). Deaths were predominantly amongst older people but also included some younger. There were community-based solid response systems in place, with general medical practitioners pivotal to this, focused on bringing people into hospitals only when necessary. New Zealand has long had subsidies in place for lower-income and vulnerable populations and a strong focus on equity in healthcare, so such populations received close attention. New Zealand also benefited from avoiding the initial Omicron outbreak which swept across the globe in late 2021. The strain of Omicron that arrived in New Zealand was slightly different. A second wave of infection, via a new variant, was spreading in mid-2022. In March 2022, the government announced that its international borders would be reopened. This was with immediate effect for New Zealanders returning to the country, then for Australians wishing to visit and, by mid-year, for all vaccinated international visitors with a requirement of a negative pre-arrival Covid test.

Public response and protests

Through February and March 2022, a large protest group occupied the grounds of Parliament, effectively closing a large part of Wellington city with a significant impact on business, an adjacent university campus, and daily life. The protesters rallied around the mandates. Many were also anti-vaccination, while many were vaccinated and protested government control and intrusion on individual decisions. The protesters also featured hate groups and those known to be monitored by authorities as potential risks to security. It came to light through Covid and the application of mandates that New Zealand has a disproportionate number of such groups and individuals per capita compared with countries such as Canada and the United States (Spoonley, 2022). In a rare political consensus, all political parties in Parliament made a joint statement that they could not condone nor engage with the protesters and asked them to go home. After almost four weeks of occupation and considerable tension, the police in riot gear took control of the situation. They cleared the site, making numerous arrests amidst scenes of violence rarely witnessed in New Zealand. Similar mostly peaceful protests and occupations of central city areas took place in other cities and continued for several weeks beyond the Wellington protest.

Only days after the end of the Wellington protests, the government, under increasing political and economic pressure, announced that vaccine mandates would be discontinued for all but critical sectors such as healthcare, border control and other frontline services. The justification for this was based on epidemiological advice and the best available science that indicated vaccinations were not effective in stemming Omicron infections but were protective of the impact of Omicron on those vaccinated. Therefore, the original justification for the mandates around keeping workplaces safe from those who were unvaccinated no longer held up. That justification and decision around mandates had been taken in the context of the Delta variant where vaccines were clearly an effective barrier to infection.

Analysis of New Zealand's response
Political leadership

Looking at the global literature and analyses of different countries and their Covid responses, New Zealand has often been singled out as world leading. Early articles in key journals such as the Lancet showed the effectiveness of New Zealand's elimination strategy (Oliu-Barton *et al.*, 2022). This certainly meant that those living in the country largely went about their daily activities in a relatively free environment. The situation was the envy of other parts of the world where Covid was ever present and posing extraordinary circumstances for business, for a government seeking to manage the situation, and for education with wide-ranging impacts on the development of children and young people (Chaturvedi *et al.*, 2021). Prime Minister Ardern was regularly singled out for her exemplary leadership and messaging compared with her counterparts. Her constant messages were that every single New Zealander was a member of the team of five million, that everyone was in the situation together and that the country would collectively come through the challenges. She persistently reinforced the message to be kind to one another and watch out for those in need.

The government's response was informed by public health expertise. Notably, the chief advisor to the government, the Director-General of Health, Dr Ashley Bloomfield, was a medical graduate and public health specialist, with significant global health and health service management experience and led the administrative response and advice to the government. Early in the outbreaks, there were daily 1pm briefings by the Prime Minister in partnership with the Director-General of Health; the 1pm daily update became something of a tradition, being delivered seven days a week. These updates were critical to messaging and building public trust and engagement with the government's response. The Director-General's advice was pivotal to the staging of lockdowns and framing of different levels of

activity permitted at different points in managing Covid outbreaks. He gained something of celebrity status as an earnest and honest public servant and one the public trusted and had confidence in. New Zealand's approach to lockdowns could perhaps best be described as carefully constructed and stage-managed. The different levels, in particular, gave reasonable clarity to the public and businesses in terms of what activities were possible. That said, the guidelines were open to interpretation, meaning that many organisations had to develop their own internal guidelines for staff and customers. This sometimes led to confusion, frustration and periodic questions about whether the government was competently managing the situation.

Economic support

The government provided consistent financial aid to businesses unable to function during or affected by lockdowns and border closures. Of course, many found the assistance inadequate or not directed into the right areas. The government continued to be responsive to questions from industry and affected groups, adjusting support along the way. Financial support was represented in the government's budgets with significant corresponding investments. This necessitated borrowing as well as increased taxation for those in the highest tax bracket. Nonetheless, New Zealand continues to have one of the lowest tax rates in the OECD group, with a top personal income tax of 39 percent (33 percent until 2021) with a lower company tax rate.

In the meantime, those on lower incomes have had various additional support mechanisms implemented and some tax reductions granted. In general, there was widespread public and business support for the government's handling of Covid. This was reflected in the results of the 2020 general election, delayed because of a short lockdown, which delivered a resounding vote in favour of the Prime Minister's Labour party. The result produced the first government able to govern alone without a coalition partner since the introduction in 1996 of a proportional representation voting system, and Prime Minister Ardern achieving some of the highest approval ratings seen of any Prime Minister.

Challenges for people and businesses

Stress in households, particularly for parents and mothers, has been particularly high in many countries with females in professional roles known to have ceased employment as the difficulties of juggling a job and homeschooling children have been too much. By contrast, this has not necessarily been the case in New Zealand and certainly not to levels seen elsewhere. This has been due to the limited number of lockdowns with schools mostly functioning. The largest impact was in Auckland, with the five-month lockdown at the end of 2021. Like other world business centres, the city suffered from office workers retreating to home and staying there. It also suffered from a significant decline in international students who resided in the centre of the city where higher education is a key business. With campuses also closed, the centre of Auckland saw many restaurants and retailers close down, along with the growth of homeless people and crime.

The lockdowns were particularly difficult for retailers, hospitality and tourism operators. Closed borders have heavily impacted the tourism industry and related sectors, which was a significant player in the domestic economy and source of foreign income. Around half of the tourists were international. A pickup in the domestic tourism market owing to the inability of New Zealanders to travel abroad for business and holidays provided some assistance, but this was mainly during school and public holidays. Other industries were also affected by closed borders. Universities and schools particularly so, as international students could not enter the country. Many resorted to online delivery to retain or attract new international students. Industries reliant on overseas workers also suffered. This included the large

horticulture sector where seasonal workers traditionally entered the country to assist with fruit picking and other duties, as well as the hospitality sector.

Many professions found it difficult to recruit, given the impossibility of any new employee entering the country. The government's view was that skills should be obtained from within the country in something of an attempt to reset how the country thinks about its supply of human capital. In areas such as healthcare, this was impossible to achieve. New Zealand has the highest percentage of overseas-born and trained doctors in the OECD, composing over 40 percent of the medical workforce. These doctors also have high turnover rate placing additional pressure on the system and recruitment. The nursing workforce has similar characteristics. Universities also have a high proportion of international staff, meaning they too had to rethink recruitment while the borders were closed. Compounding the issues, New Zealand immigration and visa offices went through a restructure and reduced various services. This meant that anyone seeking a visa faced a particularly challenging process with a high likelihood of being denied if it were seen that the skill set was not on the list of critical employment categories. This included most areas of academic staffing.

There was increasing pressure on the government as time went on, particularly through 2021 and the lockdown. Business, in particular, was concerned about the impact on global activities. With it being almost impossible to travel owing to the difficulty of obtaining a MIQ spot on return, many businesses either withdrew from international markets or resorted to sending staff offshore with no prospect of return in the foreseeable future. The situation was exacerbated as the world started to open through 2021, with New Zealand sometimes being described as a closed shop. Pressure also grew from the thousands of New Zealanders wishing to return to the country. These ranged from people eager to see family, often unwell or dying, to those who had lost employment and sometimes their visa and therefore right to live in the country they had been working in. Some became affectively stateless, resorting to living in countries such as Thailand.

The government created a controversial booking system for MIQ which was complicated in that a hotel place had to be booked and then a corresponding flight found. The booking system functioned as a lottery with only a limited number of places available for people with special circumstances, such as seeing a family member likely to die within days. It was not uncommon for people to gain a place in MIQ and the family member to pass away before they had served their 14 days in isolation. Many people simply gave up trying to secure an MIQ place. A group known as 'Grounded Kiwis' lodged an application in the High Court to challenge the government border closure. The case was based on denial of citizens' rights to enter their country (Knight, 2022), with claims these denials were unjustifiably upheld in an April 2022 decision (The High Court of New Zealand, 2022). The findings came as a relief to the claimants, many of whom had suffered considerable financial and psychological harm.

Impact on health system
The impact of Covid on the health system cannot be underestimated, nor the influence of the system's capacity to cope with Covid on the government's decision-making. The government routinely stated that the elimination strategy and border closures were to protect the health system. New Zealand's health system, like the UK, is tax funded with largely publicly provided services (Gauld, 2016). Over the years, the system has endured ongoing austerity in terms of funding with many services and facilities in need of upgrading and staff shortages in various areas. The number of intensive care unit (ICU) beds per capita is almost the lowest in the OECD with only Mexico having fewer; by contrast, Germany has around 10 times the number of ICU beds (OECD, 2020). While the government worked to expand surge capacity, particularly for emergency intensive care patients, suggesting that the health system was well prepared to cope with a Covid outbreak, the health professionals' perspective themselves

was consistently different. This was of an already stressed workforce, finding it difficult to cope with the lockdowns and non-urgent patient needs that were put aside to focus on Covid response and patients. The system had been struggling to see and treat non-urgent patients even pre-Covid, meaning those who could pay would resort to the parallel private sector (Penno *et al.*, 2021). The Omicron outbreak placed considerable pressure on the system, pushing it to the brink. Fortunately, most Omicron cases did not require treatment or hospitalisation.

Conclusion: lessons from the New Zealand case

New Zealand has the benefit of being a remote island nation. This placed it in a comparatively protected situation when Covid first swept around the globe. The country, therefore, commenced the pandemic in a different context from many other countries. New Zealand also benefited through the pandemic from solid political leadership, strongly informed and quite explicitly so by public health advice. This brought considerable consistency to the political leadership and messaging with the Prime Minister routinely deferring decisons to public health advisors and stating that the government was seeking the best possible means to protect the population. This approach produced some policies and initiatives which proved controversial and difficult for many people. This includes the firmly closed borders and MIQ system. It also includes a vaccine mandate. These policies were the centre of considerable public debate between those firmly in favour and those not. If there is a primary lesson from the New Zealand experience for other governments, it is that bringing in public health expertise and the government being open about the impact of this on their decision-making and leadership is critical for effective pandemic management. This would seem to have bolstered public confidence in political leadership along with compliance with public health measures. For political leaders around Asia, this is pertinent, particularly where there have been protests and concerns about political management.

In July 2022, as this article was finalised, the country had emerged from two years of being closed and largely protected from widespread community transmission of Covid; the first months of 2022 saw Covid swiftly take hold as the borders opened and Covid naturally made its way into the community. Re-engaging with the world and rejuvenating the parts of the economy battered by Covid will likely be prolonged and, for many, difficult, as is the case in most countries. The country was struggling with Covid in the community, including considerable strain on the health system. Recognising this, the government continued to provide some financial support to those most affected and invest in the health system. This is the second lesson from the New Zealand case. That is ensuring financial support is in place to support compliance with public health measures such as lockdowns and to counter the effects of shifts in the economy created by a pandemic. This lesson is crucial for many Asian countries, where government support is limited. The New Zealand case demonstrated that such support reduced public and business backlash and improved acceptance of often challenging policies.

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Lessons from
the COVID-19
pandemic in
Japan

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Lessons from the COVID-19 pandemic: strategies and challenges for an aging society in Japan

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Abstract

Purpose – This article analyzes the challenges of infectious disease control under a super-aged society through Japan's experience with COVID-19.

Design/methodology/approach – This article provides an overview of Japan's COVID-19 measures and their characteristics, discusses their successes and failures, and identifies future challenges.

Findings – Japan's basic strategy for COVID-19 consists of three parts: the border defense (Stage 1), slowing down the spread (Stage 2), and damage control (Stage 3). One key policy feature in Stage 2 and Stage 3 is based on "voluntary restriction". It had a certain effect, but it was prolonged with each recurring "wave of infection", resulting in economic exhaustion and people's dissatisfaction. Thus, the effect of the voluntary restriction has weakened, while the percentage of people who have been vaccinated is improving, making it difficult to predict the damage of the next "wave". Under the hyper-aged society, it was necessary to identify and protect particularly vulnerable areas, i.e., psychiatry hospitals, chronic care hospitals, and long term care (LTC) facilities. On the other hand, secondary impacts extend to young people. The most serious one is the decrease in births which further accelerates the aging of society.

Originality/value – This study is original as it investigated why Japan's unique countermeasures against COVID-19 without mandatory lockdown worked well for a considerable period. It also revealed that secondary impacts of the COVID-19 epidemic are broader and more significant than the direct loss of life, and that the social system, especially super-aged society with many vulnerable areas should be reformed in consideration of the threat of infectious diseases. Lessons from the Japanese case may contribute to other countries.

Keywords COVID-19 pandemic, Japan, Aging society, Strategies, Challenges

Paper type Research paper

Introduction

COVID-19 has brought great disasters to Japan and the world, but it has also brought many lessons and opportunities for change. What we learn from the COVID-19 pandemic varies from country to country. Different lessons might be learned in high-income countries where the population is aging and in low- and middle-income countries where the population is relatively young but medical resources are limited. Japan is the most aging country in the world. In 2017, the Japanese people aged 65 years or older accounted for 27.7 percent, and those aged 75 years or older accounted for 13.8 percent (Department of Economic and Social Affairs Population Division, United Nations, 2021). Elderly people are vulnerable to COVID-19. Numerous measures have been attempted to protect them, sometimes successful and sometimes unsuccessful. At the same time, measures were always needed to minimize the impact on the economy. These measures sometimes had conflicting elements. The rigidity of the legal system and the limited amount of available medical resources have always stood as

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barriers. On the other hand, in Japan, laws and regulations for infectious disease control had already been revised based on the lessons learned from the outbreaks of severe acute respiratory syndrome (SARS) in 2003, novel influenza in 2009, and other infectious diseases (Asia Pacific Initiative, 2020). In particular, the threat of a novel influenza was emphasized, and focused measures were developed. Some of these advance measures were applied to COVID-19 and were able to be utilized.

In addition, COVID-19 had a variety of other secondary impacts. These include the impact on the treatment of other diseases, medical checkups, and the increase in domestic violence against women and suicide. Above all, a rapid decline of births could further accelerate the aging of society, which is already a big issue. There is an urgent need to address each of these issues.

This article reviews the flow of measures against COVID-19 in Japan, which had many features, and discusses the results and future issues. This could be beneficial for other countries with aging societies.

Looking back on the COVID-19 epidemic in Japan

In Japan, the first case of COVID-19 infection was confirmed on January 16, 2020 (Ministry of Health, Labour and Welfare, 2020). This case was a Chinese resident of Japan who returned to Japan after a stay in Wuhan. Sporadic, small numbers of infected people had been confirmed since then. Japan first faced the COVID-19 outbreak seriously on February 3, when the luxury liner Diamond Princess arrived at Yokohama. During the cruise, it was found that a person who had disembarked from the ship in Hong Kong on the way had tested positive for PCR. The ship was registered in the UK, but due to the large number of Japanese crew and passengers, the Japanese government decided to accept it and to quarantine it in Yokohama. Eventually, of the 3,711 crew and passengers, 712 were infected and 7 passengers died (Asia Pacific Initiative, 2020). About half infected persons were asymptomatic and the case fatality rate was 1 percent.

Figure 1 and Table 1 show the number of COVID-19 cases and deaths in Japan. Seven epidemics (waves) can be identified. COVID-19 is known to be prone to virus type mutation. As of October 2021, the target of this research's analysis, almost 100 percent were delta variants, but the emergence and epidemic of omicron variants was considered certain. In fact,
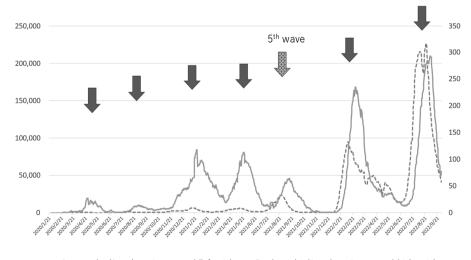
Figure 1.
Number of newly confirmed COVID-19 cases, deaths and case fatality rate in each wave in Japan (**Sources:** *Nikkei Asia* (2022), Ministry of Health, Labour and Welfare (2021a), National Institute of Population and Social Security Research (2022))

5th wave

---- Case per day (1 week moving average) (left axis)   —— Death per day (1 week moving average) (right axis)

	1st wave	2nd wave	3rd wave	4th wave	5th wave	6th wave	7th wave
	2020.1.29-2020.6.13	2020.6.14-2020.10.9	2020.10.10-2021.2.28	2021.3.1-2021.6.20	2021.6.21-2021.12.16	2021.12.17-2022.6.24	2022.6.25-2022.9.20
No of patients	17,422	70,804	343,857	353,612	942,838	7,518,061	11,552,757
No of death	924	692	6,243	6,494	4,018	12,772	12,765
Case fatality rate	5.3%	1.0%	1.8%	1.8%	0.4%	0.2%	0.1%

Note: In Japan, all cases (defined as confirmed by positive PCR test, including asymptomatic cases) must be reported by hospitals or clinics to the local government. The number of deaths and case fatality rate includes those who died from COVID-19 and those who were infected with COVID-19 but died from other causes. Therefore, the number of deaths of COVID-19 shown here does not necessarily match the number of deaths of COVID-19 in vital statistics. Case fatality rate was calculated by (number of deaths during the wave period)/ (number of confirmed cases during the wave period).

Sources: *Nikkei Asia* (2022), Ministry of Health, Labour and Welfare (2021a), National Institute of Population and Social Security Research (2022)

in November 2021, 26.6 percent of the samples analyzed by genome analysis in Tokyo became omicron variants, and since December, it has been almost 100 percent (Tokyo Metropolitan Institute of Public Health, 2022).

The theme of this research is an analysis of the countermeasures taken by Japan against omicron epidemic, which is expected to spread in the future. The first wave of COVID-19 in Japan began at the end of March 2020. The government issued the first "the state of emergency" for seven prefectures, including Tokyo, on April 7. It was an unenforceable "request" to refrain from going out, and to close restaurants, stores, and businesses. The state of emergency was soon extended to all of Japan on April 16. Since then, the number of newly infected people has been on a downward trend, and the state was lifted on May 26. Even at the highest level, the number of people infected was 708 per day, and the number of deaths was 31 per day in the first wave, which was very low compared to the Unites States and European countries. However, even after that Japan has experienced the spread of the infection and the quelling of the disease by the issuance of the state over and over again. As of October 2021, the fifth wave has just come to an end. The fifth wave was characterized by the predominance of delta variants, the epidemics seen during vaccination, the timing overlap with the Olympic games, and the large number of young people infected. Vaccination in Japan began in February 2021 for healthcare professional, as a part of "de facto" clinical trial. They were relatively young, and well monitored by the healthcare organizations where they worked. The postponed Olympics, Tokyo 2020, was held from July 23 to August 8, 2021, in principle without spectators. Figure 2 shows the number of COVID-19 cases by epidemic wave by age group in Japan. The fifth wave was characterized by the large number of infected young people. Patients under 19 years occupied 11.3 percent of the total number of cases in the second to fourth waves and 60.7 percent in the fifth wave. Infectious disease prevention
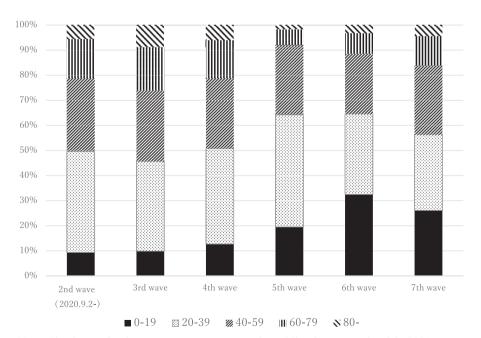
Figure 2.
Proportion of COVID-19 cases by epidemic "wave" by age group in Japan (**Source:** *Nikkei Asia* (2022))

Note: The data as for the age group were open to the public after September 2 in 2021.

measures must be different for young people since the behavioral characteristics of young people may be different from the elderly.

Depending on age and risk, COVID-19 appears as if it were two different diseases. For young people, it is just like the influenza, with a low case fatality rate, which makes it difficult for them to accept behavioral change. For the elderly and people with risk, it is a terrifying disease with a high case fatality rate. When the delta variants were dominant, the case fatality rate was 5.7 percent for those over 60 years old, which was 100 times higher than that for those under 50 years old (data from June 2020 to August 2021, Ministry of Health, Labour and Welfare, 2021b). It is reported that 94.3 percent of deaths due to COVID-19 occurred in people over the age of 60 (National Institute of Population and Social Security Research, 2022).

At the Olympic Games, the activities of the athletes did not only impress us, but also provided valuable insights. At the Olympics Games, as a measure against COVID-19, PCR tests were conducted for athletes at an unusually high frequency. They were requested to take PCR tests twice within 96 hours before departing from their countries, once at the entry into Japan, and every day at the Olympic Village. A few days after entering the Olympic Village, there were several cases of positive PCR results for the first time. We also experienced similar cluster outbreak cases. In several cases, PCR test was negative when the patient was transferred to a hospital or LTC facility, but later became positive and caused clusters (*The Asahi Shimbun*, 2021a).

Therefore, the following characteristics of COVID-19 became a problem for infection control in Japan: the presence of asymptomatic infected persons; relatively long latent time; relatively long infectious period (from -2 days before symptomatic to +10 days after symptomatic); false negative diagnostic test; clusters in hospitals and LTC facilities with high case fatality rates.

Japan's basic strategy for COVID-19
Japan's basic strategy for dealing with COVID-19, developed by the Cabinet's Novel Coronavirus Response Headquarters, can be divided into three stages (Ministry of Health, Labour and Welfare, 2021c). Stage 1 is the "border defense" such as quarantine at Diamond Princess and airports. Fortunately for Japan, it was possible to earn time with border defense. It was virtually impossible in the United State and European countries where infected people were found throughout the country from the very beginning of the epidemic. Stage 2 is to "slow down the spread" of the epidemic. During this time, the medical system can be strengthened to accommodate more patients. It also includes the development of vaccines and treatment methods. Stage 3 is "damage control". This is the stage of coexistence with COVID-19 and includes prevention of aggravation and death. Figure 3 shows a schema of the intent of each of these three stages. As of October 2021, when several therapies against COVID-19 were commercialized and vaccination rates were improving, Japan's current position was considered to be shifting from Stage 2 to Stage 3. Of course, minimizing the impact on the economy should always be considered.
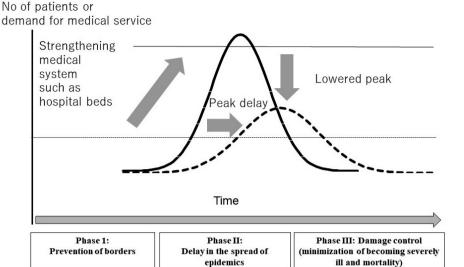
If Stage 1 and Stage 2 function well, it would be possible to improve the medical system, reduce the number of patients during peak hours, and reduce the burden on the medical system.

As for Stage 1, a staged border blockade was implemented, starting with a ban on entry from some parts of China at the end of January 2020. In addition, the Japanese government issued a cabinet order designating COVID-19 as a "designated infectious disease" under the Infectious Diseases Control Law and the Quarantine Act on February 1. This has made it possible to forcibly hospitalize COVID-19 patients and to conduct compulsory medical examinations and tests upon entry into Japan. However, this decision also meant that, by the law, all COVID-19 patients would have to be hospitalized, regardless of their severity. As a

result, a large number of mildly symptomatic or asymptomatic patients occupied hospital beds, and the number of hospital beds was often strained at a later time. Currently, the system has been changed so that mildly symptomatic or asymptomatic patients are kept at home or in hotels.

In Stage 2, behavioral change was the main policy to reduce the spread of infection. The focus is on avoiding unnecessary non-urgent going-out and reducing mobility. In addition, it was encouraged to avoid the three Cs (Closed spaces, Crowded places, Close-contact setting) on a daily basis. A characteristic of Japanese policy is that it is not compulsory, but rather voluntary behavior change based on request. There is no law in Japan that forces citizens to stop going out. In the wake of the COVID-19 epidemic, penalties for going out were often discussed, but no such laws have been enacted to date (*Jiji Press*, 2021; *The Asahi Shimbun*, 2021b). On March 14, the Japanese government amended "the Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response" in response to the increase in the number of cases in Japan (The Prime Minister of Japan and His Cabinet, 2021). This law was originally enacted with the main target of novel influenza, but it was made applicable to COVID-19 as well. Based on the law, the government issued the first "the state of emergency" for seven prefectures, including Tokyo, on April 7. Under this state, prefectural governors can request people to stop going out and cooperate in preventing the spread of infectious diseases, and request restaurants and stores to close. Schools may also be asked to close. This was also a "request" with no penalty. However, restaurants were able to receive support money if they responded to requests for closure. Other companies were also able to receive compensation for the decrease in profits caused by the closures if certain conditions were met. Quite interestingly, the majority of people followed this "request" and refrained from going out. Many businesses and stores closed during the state of emergency.

According to data from the Tokyo Metropolitan Government using cell phone location data, just before the state was issued, the number of people staying in the seven downtown areas of Tokyo (Ginza, Roppongi, Shibuya, Shinjuku-Nichome, Kabuki Cho, Ikebukuro, and Ueno) between 8 p.m. and 10 p.m. was about 900,000, but after the declaration was issued, the

number dropped to less than 200,000 (Tokyo Metropolitan Government Disaster Prevention Information, 2021a). The state was soon extended to all of Japan on April 16. With such voluntary restrictions by the people, the first wave came to an end and the declaration was once lifted on May 25. Since then, the Japanese government has repeatedly declared the state of emergency whenever the infection spreads, and then terminated it when it subsided. As of October 2021, the state of emergency has been declared and lifted four times so far. The second and subsequent states focused on closing restaurants, promoting telework, and curbing cross-prefectural travel, and did not call for closing companies and schools in order to reduce the impact on the economy (*The Asahi Shimbun*, 2021c). In particular, drinking parties held in *Izakaya* (Japanese style pub) were targeted as they were considered to spread the infection.

It is difficult to argue whether the voluntary restrictions in Japan or the enforceable "lockdown" in other countries was better at long-term infection control. The voluntary restrictions gave people more freedom of action and might have less impact on the economy than lockdown. On the other hand, these voluntary restrictions may have accelerated the division of society. It has been pointed out that despite the lack of coercion, Japan has been able to reduce the number of COVID-19 cases due to the conscience and shame of people and the effect of "mutual monitoring" of society (Asia Pacific Initiative, 2020; Ito, 2021; *The Mainichi Newspapers*, 2020; *Toyo Keizai Online*, 2020). However, the perception of the COVID-19 threat varies from person to person. First, it has been realized that there is a difference in the magnitude of fear between generations because the case fatality rate of COVID-19 varies greatly depending on the age. Many elderly people criticized the spread of the COVID-19 by the highly active youth, while young people complained that their freedom was being stifled and the economy stagnated to protect the elderly. There may also have been a gap in perception between people living in urban areas, where there are already many cases, and people living in rural areas, who perceive COVID-19 as an "unknown threat" from urban areas. It was ultimately up to each individual to decide what behavior was acceptable and what was not.

These differences in behavioral norms sometimes led to conflicts among people. Such negative emotions sometimes spiraled out of control, with people harassing restaurants that were not closed and damaging cars with license plates from other prefectures. Of course, these actions are illegal. They were called "self-restraint police" by the media and became a social problem symbolizing the mutual surveillance of the Japanese people (*Mainichi Newspapers*, 2020; *Toyo Keizai Online*, 2020). Even though these were extreme cases, many Japanese people have been living in fear of what others think for the past two years. However, as the state of emergency has been repeatedly declared and prolonged, the effect of voluntary restrictions is diminishing. In the first place, the state and the accompanying voluntary restrictions were initiated for the purpose of "delay in the spread of epidemics" in Stage 2. However, to date, the government is still continuing with the same policies and has failed to take the initiative with a new direction. Although less restrictive than lockdowns, prolonged voluntary restrictions have reduced economic activity and worsened the performance of many restaurants, hotels and businesses (Teikoku Databank, 2021). People's dissatisfaction also accumulated.

The data from the Tokyo Metropolitan Government mentioned above show that the number of people in the downtown area at night increased in the "fourth" than in the "third" (Tokyo Metropolitan Government Disaster Prevention Information, 2021b). On the other hand, some observers believe that even after the government lifts the states, the behavioral norms of people who have been under strictly voluntary restrictions will not change significantly, and consumption will not grow as much as hoped (*Nihon Keizai Shimbun*, 2021). In any case, the power of the government to control people's behavior through "requests" has become weak compared to the beginning. Under such situation, one of the few good news is

that vaccinations are progressing reasonably well. It should be noted whether the power of vaccines can prevent the next wave, keep the damage caused by COVID-19 within acceptable limits in the long term, and create a situation in which the economy can recover is to be observed.

Vaccines are the most effective tool for infection control. As mentioned, in Japan, vaccination first started in February 2021 for 4.8 million healthcare professionals, in April for 36 million the elderly, and in July for young people. As of October 14, 2021, 66.5 percent of the total population had completed vaccination and the coverage rate increased to 81.5 percent in October 2022. Table 2 shows the COVID-19 case fatality rate for each "wave" by age groups. Vaccination was effective in reducing the aggravation and death. After the fifth wave, a significant decrease in case fatality rate is observed especially in people over 60 years old. How long the vaccination is effective is unknown and the booster (second) vaccination began in December 2021 after much debate.

Infectious diseases have historically revealed social structures that were not normally of interest. COVID-19 also identified areas of vulnerability, some of which are related to aging society. In psychiatric hospitals, for example, long hospital stay is often seen, the number of medical staff is limited, there are no specialists for infection control, and it is difficult for patients to cooperate in infection control. A study by the Japanese Association of Psychiatry Hospitals reported that many psychiatry hospitals had COVID-19 clusters, and that it was often difficult to transfer patients to acute care hospitals because of rapid increase of medical demands, resulting in many deaths (Japan Psychiatric Hospitals Association, 2021).

How to protect the elderly should be investigated. Figure 4 shows the number of cluster outbreaks and the number of people infected by the cluster in December 2020. Analysis of clusters showed that clustered in hospitals and LTC facilities had a high number of cases per cluster and a high case fatality rate. Figure 5A shows the case fatality rate, and Figure 5B shows the percentage of deaths that occurred by type of facilities during the third wave in Sapporo. In acute care hospitals, the fatality rate seems high and accounts for the majority of deaths, because they were in charge of treating critically ill patients. But we should know that chronic care, psychiatry hospitals and LTC facilities explain for significant number of deaths. It is also reported that with appropriate support of infection control specialists, clusters could be controlled, and the case fatality rate could improve by 25-50 percent (National Hospital Organization).
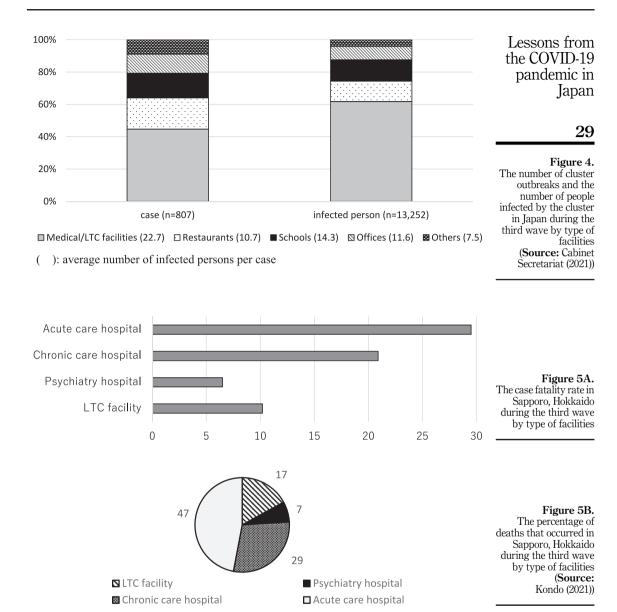
Eradication of COVID-19 from society (zero-corona strategy) is extremely difficult with high infectivity of COVID-19 variants such as delta and omicron, and we are entering the Stage 3, that is the coexistence with the COVID-19 (with-corona strategy). In Stage 3, the most important issue is to coexist with COVID-19 while controlling the social impact of COVID-19 on health and economy in an acceptable level. We should pay special attention to the

	0-49	50-59	60-59	70-79	80+	60+ (subtotal)
2nd wave*	0.10%	0.87%	4.92%	15.58%	38.45%	17.58%
3rd wave	0.00%	0.01%	0.08%	0.24%	0.48%	0.27%
4th wave	0.02%	0.24%	1.24%	4.90%	17.00%	7.01%
5th wave	0.01%	0.15%	1.06%	6.55%	19.82%	6.70%
6th wave	0.00%	0.07%	0.14%	0.31%	0.62%	0.33%
7th wave	0.00%	0.02%	0.06%	0.32%	1.20%	0.45%
Total	0.00%	0.01%	0.04%	0.18%	0.75%	0.28%

Note: * Data only available after 2020.09.02
Source: National Institute of Population and Social Security Research (2022)

Table 2.
The COVID-19 case fatality rate for each "wave" by age groups

Medical/LTC facilities (22.7) Restaurants (10.7) Schools (14.3) Offices (11.6) Others (7.5)

( ): average number of infected persons per case

following. At first, vulnerable areas should be identified. For example, LTC facilities, psychiatry hospitals and chronic care hospitals have limited resources for infection control. Support for these hospitals/facilities by medical specialists is important and should be encouraged in the healthcare system. Cooperation between acute care hospitals and these hospitals/facilities in the areas of patient safety and infection control should also be strengthened.

Secondary impacts of COVID-19 in Japan
Fear of infection and the government's request of behavior change have had secondary impacts in various areas of society. Table 3A and 3B show the medical expenses and use of medical services in FY 2020 by age groups and by departments, respectively. Not only elderly people but also children have a remarkable decrease in the number of medical consultations and medical expenses. Hospitals and clinics lost a total of 1.4 trillion yen in income and were concerned about a business crisis, and the government had to invest 4 trillion yen in subsidies to maintain the medical system. Many people in need of medical care discontinued treatment, and as a result, it is feared that the condition would worsen.

The number of annual medical checkups also decreased. For example, in 2020, the number of people receiving cancer screening at 118 cancer centers in Japan decreased by 30.5 percent from 2019 (The Japan Cancer Society, 2021), and the number of newly confirmed lung cancer cases in 2020 was 6.6 percent lower than in 2019 (The Japan Lung Cancer Society, 2021). It is completely unexpected that COVID-19 will reduce lung cancer and advanced cancer may increase in the long term. In addition to cancer, early detection of several diseases, including fatal ones, may be hindered.

In addition to the sequelae directly related to COVID-19 infection, other health effects were also observed. Stay home does not necessarily mean stay safe. One of the typical examples is domestic violence (DV). The number of inquiries to prefectural DV counseling centers increased by 1.6 times in 2020 compared to 2019 (Gender Equality Bureau Cabinet Office, 2021). Frustration from the prolonged voluntary restrictions and families spending more time at home together may have increased DV. Home stay also may deteriorate ADLs in the elderly. One study reported that the COVID-19 epidemic significantly reduced total physical activity time in April 2020 compared to January 2020 in the elderly (Yamada *et al.*, 2020). Mental health including depression and suicide are also big issue. According to an OECD survey, Japan's national estimate of prevalence of depression or symptoms of depression was 17.3 percent in 2020, more than double the 7.9 percent in 2013 (Organization for Economic Co-operation and Development, 2021). The number of suicides in Japan in 2020 was 21,081, the first increase in 11 years, and 912 (4.5 percent) more than in 2019. Suicide rate increased

	Medical expense (% change compared to 2019)	Use of medical service (% change compared to 2019)
0-5 years	-17.0	-28.2
6-74 years	-2.3	-7.0
75 years or over	-3.3	-7.5
Total	-2.9	-8.2

Table 3A. The change of medical service use in 2020 from 2019 by age group

	Medical expense (% change compared to 2019)	Use of medical service (% change compared to 2019)
Internal medicine	-4.3	-10.1
Pediatrics	-22.2	-31.5
Surgery	-12.0	-15.4
Orthopedic surgery	-3.4	-6.7
Dermatology	-0.8	-0.9
Ophthalmology	-3.3	-7.3
Otorhinolaryngology	-19.7	-24.4

Source: Ministry of Health, Labour and Welfare (2021d)

Table 3B. The change of medical service use in 2020 from 2019 by departments

especially in young women (Ministry of Health, Labour and Welfare *et al.*, 2021). Aside from sequelae of COVID-19, most of them seem to be relatively short-term, but they still require careful monitoring.

Perhaps the biggest impact of COVID-19 on society is the decrease of births. Births in 2020 fell by 2.8 percent in Japan (Ministry of Health, Labour and Welfare, 2021e). Birth rate reflects the situation 10 month ago, and this downward trend is expected to continue in 2021. Similar birth declines have been reported in many other countries (Aassve *et al.*, 2021; Stout *et al.*, 2021; Ullah *et al.*, 2021). Birth rate recovery will be affected by future developments of COVID-19 epidemic, the economic conditions of young people, and support for young people. If continued for a long period of time, it may accelerate the aging of society.

Although COVID-19 may be a terrible disease for the elderly with high case fatality rate, the total number of deaths in Japan decreased for the first time in 11 years in 2020 compared to 2019 (Ministry of Health, Labour and Welfare, 2021e), suggesting that COVID-19, did not cause excess mortality in Japan. There are many possible causes for this, but it is possible that people's behavior has decreased and that infection control and health control have been stricter than usual. On the other hand, the secondary impacts extend to the young, children, and births. Unfortunately, reducing the direct impact of COVID-19 infection and reducing the secondary impact are sometimes opposing concepts. It may not be justified to overburden young people to eliminate the risk of older people. It is important to protect the youth and children in order to make Japan's aging society sustainable. However, in an aging democratic society, it is difficult to have such a discussion head-on in the political arena because it would be perceived as "abandoning the elderly" and subject to strong criticism. In addition, compared to the emotional fear of a newly emerged virus, the casualties of secondary effects are less likely to be noticed or reported. Direct and secondary impacts should be compared fairly. While taking measures to protect vulnerable groups from direct impacts, efforts should be made to stimulate social and economic activities to minimize secondary impacts. At the same time, measures can be taken to protect those who are vulnerable to secondary impacts. For example, adequate measures should be taken against DV, mental health and suicide. Above all, there is an urgent need to take measures against the declining birthrate.

Lessons and future prospects for COVID-19 countermeasures in Japan

The authors have outlined the development of COVID-19 epidemic in Japan and the countermeasures. The measures taken in Stage 1 and Stage 2 seem to have achieved the goal of slowing down the spread of infection to some extent. As a result, the damage caused by the first wave was very low compared to Europe and the United States. In particular, behavior change through the voluntary restrictions was initially often introduced with surprise and admiration in other countries. In a homogenous society like Japan, where the pressure to behave in the same way is strong, just a request from the government with incentives can be effective in controlling the infection. It works particularly effectively when concrete measures such as three Cs are presented together with the request. However, there seems to be a limit to the length of the voluntary restriction. The government's ability to control people's behavior has been weakened. The period during which the request is valid is relatively short, and it is necessary to separately consider how to extend this effect. Not only has it become more difficult to trigger strict restrictions on people's behavior through the declaration of a state of emergency, but the prolonged voluntary restriction has reduced social and economic activities, and the secondary effects cannot be ignored. In an aging society, a new Stage 3 measure to coexist with COVID-19 would minimize the secondary effects, especially on youth, children and births, while protecting vulnerable groups.

Japan thereafter experienced the sixth and seventh waves, where major virus type was omicron, which was characterized by being more infectious and less virulent than other virus types. The fifth wave was a turning point, and despite the increase in the number of infected people after that, the increase in the number of deaths was suppressed. Although it is difficult to quantitively asses, but it seems reasonable to think that the strengthened medical system, and higher vaccination rate had contributed to minimize the burden. With the peaking-out of the seventh wave, Japan has announced policies aimed at post-corona recovery, such as easing quarantine and removing restrictions on restaurants and travel.

It may be too early to clearly imagine a society coexisting with COVID-19, but from experience in Japan, authors think it is highly possible that the following revisions will be made. First, social security resources are likely to shift from welfare for the elderly to measures against the declining birthrate. The accelerating birth decline due to the COVID-19 epidemic may make childcare and schooling support more urgent issues. Next, hospital/LTC facility design will take measures against infectious diseases into consideration. Such facilities with compromised patients and users will need to have larger spaces, better structures for patient isolation and flow line, and more robust systems. Medical care (including medical equipment and drug supply) will be treated as a national security issue. Then, introduction of IT technologies in medical care and society will be accelerated. In Japan, strict regulations had been placed on telemedicine due to opposition from the medical associations, but these regulations have now been relaxed to maintain medical care provision in the COVID-19 epidemic (Japan Medical Association, 2020; Ministry of Health, Labour and Welfare, 2021f). Although this deregulation was introduced as a temporary measure, it will continue. Telemedicine is also suitable for a super-aged society that needs to provide medical services to depopulated rural areas with limited medical resources.

As approached an aging society, we experienced an epidemic as a new threat to healthcare. It is also recognized that this is not just about the health of the elderly, but it also affects various areas of the society. We must continue to think and share ideas of how to establish a robust and sustainable social and medical system.

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Health belief and behaviour: an analysis of the predictors for receiving COVID-19 vaccines in Malaysia

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Abstract

Purpose – The paper examines the 'Intention to Receive the COVID-19 Vaccines' or IRV from three perspectives: the health belief model, behavioural economics, and institutional quality.

Design/methodology/approach – This study provides quantitative analysis by applying Chi-squared test of contingencies, paired sample t-tests, exploratory factor analysis, and multiple linear regression (stepwise method) on the data collected from 591 respondents mainly from Malaysia.

Findings – The results show that Perceived Benefits, Perceived Barriers, Perceived Susceptibility, Herding, and Institutional Quality play roles as predictors of IRV. Perceived Benefits play the most crucial role among the predictors and Perceived Barriers is the least important predictor. People have the herding mentality after being exposed to information encouraging such behaviour.

Originality/value – This study reveals that the respondents changed their behaviour in different circumstances when exposed to information that incorporates the effect of herding. Herding mentality, the effectiveness of government authorities, and regulatory quality have become important factors in enriching public health policies and the effectiveness of interventions.

Keywords COVID-19, Intention to Receive Vaccine (IRV), Herding, Health belief model, Behavioural economics, Institutional quality

Paper type Research paper

Introduction

In December 2019, the first coronavirus disease 2019 (COVID-19) case appeared in Wuhan, China. Since then, it has spread worldwide, resulting in more than 6.38 million deaths (as of 27 July 2022) in 194 countries around the world which are member states of the World Health Organization (WHO, 2022a). As of December 2020, over 200 types of vaccines have been developed around the world to prevent infection of this virus (WHO, 2021). Only eleven of these 200 vaccines have been authorised by the World Health Organization (WHO). These vaccines are AstraZeneca with Oxford University, United Kingdom, BioNTech with Pfizer,

USA, Gamaleya from Russia, Moderna from USA, Sinopharm with Beijing Institute, China, Covavax from Serum Institute of India, India, Novavax from USA, CanSino from China, Janssen from Johnson & Johnson, USA, Covishield from Serum Institute of India, India, Covaxin from Bharat Biotech, India and Sinovac Coronavac from China (WHO, 2022b). Although many vaccines are being developed, it is also important to ensure massive vaccination in society to generate herd immunity, which is the ultimate target to achieve in preventing the infection of this virus (Mercadante and Law, 2020; Paul *et al.*, 2021). Awareness about people's vaccination intentions and the factors that either support or discourage vaccination is crucial for achieving widespread immunisation. Based on this understanding, necessary steps can be taken by the relevant authorities in the country to increase vaccination uptake, such as improving public health communication by organising effective public health campaigns, etc. (Paul *et al.*, 2021; Ruiz and Bell, 2021). Knowing the predictors of people's IRV vaccines is essential.

The purpose of this research is to identify the predictors of the 'Intention to Receive COVID-19 Vaccines' (IRV). Various studies have been conducted to investigate these predictors. Other similar research includes Cerda and García (2021), Coulaud *et al.* (2022), Detoc *et al.* (2020), Eberhardt and Ling (2021), Hao and Shao (2022), Honora *et al.* (2022), Jacoby *et al.* (2022), Kitro *et al.* (2021), Kwok *et al.* (2021), Leng *et al.* (2021), Liao *et al.* (2022), Mercadante and Law (2020), Paul *et al.* (2021), Paul and Fancourt (2022), Ruiz and Bell (2021), Seddig *et al.* (2022), Tan *et al.* (2022), Urrunaga-Pastor *et al.* (2021), Wang *et al.* (2020) and Wong *et al.* (2021). Given that elderly people are the vulnerable ones and we should look across different educational levels, this research will not control the selection of samples and moderating effects because we are more concerned with understanding IRV in time with the introduction of different types of vaccines. This study is amongst the first to investigate whether information incorporating herding behaviour influences people to perceive institutional quality as one of the predictors of IRV. To the best of our knowledge, no other studies have conducted such research by taking herding and institutional quality into consideration of building a model of vaccination behaviour. The research is conducted based upon three perspectives, i.e., the health belief model (HBM), behavioural economics (herding, accessibility, etc.), and institutional quality.

Literature review

A health belief model was utilised to understand what influences people to receive the COVID-19 vaccines, given the severity of the pandemic which engulfed the world. In the context of this research, health belief models are important because they enable us to understand what influences the motivations and barriers of people in their health-related behaviours (Liora, 2021). Furthermore, this model has been utilised massively in vaccination studies, particularly in studies related to influenza vaccination (Liora, 2021). In comparison with other models, HBM was explicitly designed for health research related to the prevention of diseases. Since the 1950s, this model had been modified to be more inclusive and lean more toward interventions that improve health behaviours (Liora, 2021; Mercadante and Law, 2020). The most well-cited concepts are perceived susceptibility, severity, benefits, barriers, and cues to action and self-efficacy. The HBM also suggests that the factors be investigated include respondent characteristics, demographics and information that directly impact people's beliefs that lead to intention (Mercadante and Law, 2020). This research incorporates most of these concepts.

Aside from HBM, the behavioural economics perspective is also important to be incorporated into this research survey. One significant aspect of behavioural economics shows that people are likely to utilise social information from others, i.e. social proofing (Duffy *et al.*, 2021). This type of behaviour is called herding, which is defined as following

what others are doing, even if the private information people possess suggests that they should be doing something else (Banerjee, 1992). Herding also can arise when an informational cascade exists. An informational cascade happens when it is optimal to mimic the behaviour of others without considering one's information after knowing what others are doing (Bikhchandani *et al.*, 1992). Social pressure or herding mentality exists among people, encouraging them to follow the masses (Gradinaru, 2014). The herding mentality is also likely to reduce regret and provide a sense of comfort among people (Muradoglu, 2010). A good example of this herding mentality is the consequence of the COVID-19 pandemic on the European capital markets. As a result of the COVID-19 pandemic, herding behaviour exists in these markets as less informed investors follow well-informed ones (Espinosa-Méndez and Arias, 2021). This research proposes that the herding mentality also exists among people's intention to get vaccinated with the COVID-19 vaccines.
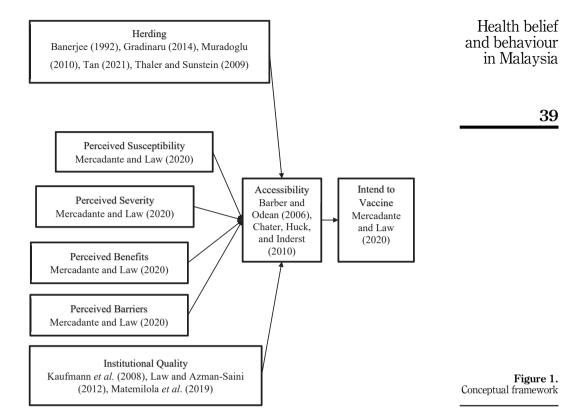
Another important aspect of behavioural economics that is incorporated into our survey is people's response to the accessibility and affordability of the COVID-19 vaccines. Accessibility is important as without adequate accessibility, there will not be massive vaccination to generate herd immunity. Affordability of the COVID-19 vaccines is equally important as 85 percent of the global population originates from low-income and middle-income countries (Wouters *et al.*, 2021). Respondents' perception of the affordability of the vaccine is crucial because people's acceptance of vaccination is likely to be high if vaccines are made affordable or fully subsidised by the government. Concerning this, the pricing of COVID-19 vaccines is extremely important (Wouters *et al.*, 2021).

Another critical perspective incorporated in this research survey is institutional quality, which comprises six indicators, i.e. voice and accountability, political stability and peace, the effectiveness of government authorities, regulatory quality, the rule of law, and control of corruption (Kaufmann *et al.*, 2008; Law and Azman-Saini, 2012; Matemilola *et al.*, 2019). We argued that without good institutional quality, society would have a negative or poor perception of how the COVID-19 vaccines will be managed and delivered to the citizens of the country, thus reducing the confidence of the people to undertake vaccination. For example, if the effectiveness of government authorities in handling this COVID-19 pandemic is poor and if the rule of law of the country is weakly implemented as well as corruption is rampant, the quality of the COVID-19 vaccines delivered may be compromised, and the relevant authorities may cover up any detrimental side effects of the COVID-19 vaccines. An excellent example to demonstrate the poor implementation of the rule of law is the case of Malaysia, where certain politicians escape the brunt of the law by violating the standard operating procedures (SOPs) and lockdown rules of COVID-19. In contrast, ordinary citizens must pay heavy fines or jail terms if caught violating these SOPs and rules (Sukumaran, 2020). Poor implementation of the rule of law may reduce the confidence of the survey respondents to accept COVID-19 vaccination. This study incorporates these institutional quality indicators except political stability and peace.

Based on the health belief model that has been used for studies related to health behaviour in vaccination, we added the behavioural economics concepts of herding and accessibility, and institutional quality to better estimate the IRV. Figure 1 depicts the conceptual framework of this research.

Research methodology

This research employed a quantitative survey using Google form to collect responses from people worldwide. Due to the urgency and unique situation of the COVID-19 outbreak, we have employed convenience sampling and snowball sampling methods to collect responses during the pandemic. These non-probability sampling methods are deemed suitable, especially during the pandemic. The researchers sent out the questionnaire to respondents

through emails, social media platforms such as Facebook, LinkedIn, and researchers' contacts. The data collection started from 1 December 2020 to 15 January 2021. The questionnaire consists of three sections, and it took approximately 15 minutes for each respondent to complete the survey. The first section contains questions related to the background of respondents such as gender, age, marital status, number of children, employment, education level, ethics, area and country of residence, and the likelihood of taking a vaccine against COVID-19 infection when it is available in the market, etc.

Table 1 shows the items of measurement of the intention to undertake vaccination based upon the health belief model, behavioural economics, and institutional quality perspectives. The questionnaire employed a 10-point Likert scale to obtain a more quantifiable result. The scales are represented as 1 for strongly disagree to 10 for strongly agree. The following statement:

> Based on a recent survey conducted in Malaysia, more than 90 percent of the respondents have the intention to take the vaccine when it is available in the market.

was stated before respondents were asked again about their intention to get vaccinated. The purpose of this statement was to assess the availability of information and the occurrence of herding behaviour as a means of altering respondents' vaccination intentions. The statistic of 90 percent is gathered from a recent study conducted by Wong *et al.* (2021).

The second section asked the respondents to provide feedback regarding their decision making in receiving COVID-19 vaccines. The third section focuses on the influence of

Label of items	Measurements
Herding 1	I follow others' choice in taking the COVID-19 vaccine.
Herding 2	I am more likely to take the vaccination if a lot of people are going to take it.
Herding 3	I prefer to follow the decision of my family members and friends.
Perceived Susceptibility 1	My chance of getting COVID-19 in the next few months is great.
Perceived Susceptibility 2	I am worried about the likelihood of getting COVID-19.
Perceived Susceptibility 3	Getting COVID-19 is currently a possibility for me.
Perceived Susceptibility 4	I will always be at risk for getting COVID-19.
Perceived Severity 1	Complications from COVID-19 are serious.
Perceived Severity 2	I will be very sick if I get COVID-19.
Perceived Severity 3	I am afraid of getting COVID-19.
Perceived Benefits 1	Vaccination is good idea because it makes me feel less worried about catching COVID-19.
Perceived Benefits 2	Vaccination decreases my chance of getting COVID-19 or its complications.
Perceived Benefits 3	Having myself vaccinated protects me from COVID-19.
Perceived Benefits 4	Having myself vaccinated protects the public from COVID-19.
Perceived Benefits 5	Vaccination prevents the economic and labour losses due to COVID-19.
Perceived Benefits 6	Vaccine developed for COVID-19 have gone through comprehensive research and investigation.
Perceived Benefits 7	I would rather spend on the vaccine now than getting infected by COVID-19 later.
Perceived Barriers 1 (effectiveness and safety)	Worry the possible side-effects of COVID-19 vaccination would interfere my usual activities.
Perceived Barriers 2 (effectiveness and safety)	I am concern about the efficacy of the COVID-19 vaccination.
Perceived Barriers 3 (effectiveness and safety)	I am concern about the safety of the COVID-19 vaccination.
Perceived Barriers 4 (effectiveness and safety)	I think that some ingredients in the vaccine may negatively affect my health.
Perceived Barriers 5 (informative and cost)	I am concern of my affordability (high cost) of getting the COVID-19 vaccination.
Perceived Barriers 6 (informative and cost)	I do not have any information about the vaccine (such as where, when, and how this vaccine is administered).
Perceived Barriers 7 (informative and cost)	Cost of vaccination influences my decision to receive vaccination of the COVID-19 vaccine.
Intend to Vaccine 1	I will take the vaccination to protect myself
Intend to Vaccine 2	I want to take the vaccination for the benefits of myself and the public.
Intend to Vaccine 3	I intend to take the vaccination to decrease the chance of getting COVID-19.
Institutional Quality 1	The amount of opportunity to provide feedback on the COVID-19 vaccine influence my decision to receive vaccination of the COVID-19 vaccine.
Institutional Quality 2	The accountability of my government of any side effects as a result of the COVID-19 vaccination influences my decision to receive vaccination of the COVID-19 vaccine.
Institutional Quality 3	The political stability of my country influences my decision to receive vaccination of the COVID-19 vaccine.
Institutional Quality 4	The effectiveness of my government in handling and managing the COVID-19 pandemic influence my decision to receive the vaccination.
Institutional Quality 5	The regulations imposed by my country to prevent the infection of COVID-19 as well as the effectiveness of the legal enforcement influence my decision to receive the vaccination.
Institutional Quality 6	The effort exerted by my government to control corruption influence my decision to receive vaccination of the COVID-19 vaccine.

Table 1.
Items of measurement

institutional quality on receiving COVID-19 vaccination. The data were coded upon the completion of data collection, and several quantitative analysis techniques were used to compute the results. Exploratory factor analysis and reliability tests were used to categorise the variables into latent behavioural factors. Cronbach's alpha test for internal consistency was conducted to examine the inter-correlation of variables within each factor. Hence, this paper presented the results using exploratory factor analysis, reliability, paired sample t-tests, and multiple linear regression analysis. Besides SPSS Statistics, this paper also utilised Microsoft Excel to complete the data analysis and present the results.

Quantitative analysis
Demographic profiles
This section discusses the demographic profile of the respondents. In total, 591 survey forms were analysed (Tables 2 and 3). The respondents comprised 54.1 percent females and 45.6 percent males. There is higher participation in the age group under 45 years old (69.5 percent), no children (63.5 percent), Asian (87.0 percent), city (78.0 percent), and Malaysian (78.3 percent). Only a small proportion reported their health status as poor (0.7 percent) and 31.1 percent reported that they knew someone infected with COVID-19. Pearson's chi-square test of contingencies (with $\alpha = 0.05$) was also used to evaluate whether the demographic attributes are related to whether the participants intend to take COVID-19 vaccination. The chi-squared tests are statistically significant for attributes such as age group, marital status, occupation, number of children, education, and race/ethnicity/origin. However, the associations are quite small, denoted by *Cramer's V* in Table 2.

Factor analysis and reliability test
Factor analysis is a well-known statistical method used in reducing a huge number of measured variables into a smaller number of factors. There are 591 responses collected and factor analysis was applied. The questionnaire contains 34 variables and factor analysis was applied to identify the cluster and, in the end, 33 variables are used. With the potential existence of a correlation between the factors, exploratory factor analysis is conducted by employing principal component analysis and the oblique rotation method. The results of the first round of analysis suggest that it is factorability, where the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.921 and Barlett's test of sphericity is significant ($\chi^2(528) = 15294.392$, $p = 0.000$). It is significant to group the variables into seven components. These seven components have eigenvalues of more than 1, which explained 65.864 percent of the variance. The seven components which comprise the factor analysis are Herding, Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, Institutional Quality, and IRV.

By using Cronbach's Alpha Internal Consistency method, the study achieved Cronbach's alpha of more than 0.70 for each factor. Table 4 presents the rotated factor pattern with the corresponding Cronbach's alpha.

Table 4 shows that Cronbach's alphas for the determinants are all more than 0.70. Although the preliminary factor analysis indicated that Perceived Barriers shall be separated into two different components, Cronbach's alpha showed a better internal consistency as one component. Table 5 presents the correlation among construct scores to identify the predictors of IRV.

As shown in Table 5, there is a very strong relationship between IRV and Perceived Benefits (0.847). Perceived Barriers seem to have a very weak relationship with the IRV (0.114). The other constructs which have a moderate to a weak relationship with IRV, include Herding, Perceived Susceptibility, Perceived Severity, and Institutional Quality.

Demographic Attributes	Overall N (%)	Intention to take COVID-19 vaccines	
		Do not intend (definitely not/ probably not) n = 88 (14.9%)	Intend (Maybe/Probably yes/ Yes, definitely) n = 503 (85.1%)
Gender[m]			
Male	267 (45.6)	41 (15.4)	226 (84.6)
Female	317 (54.1)	44 (13.9)	273 (86.1)
Other	2 (0.3)	1 (50)	1 (50)
	χ^2(2, 586) = 2.252, *Cramer's V* = 0.062, *p* = 0.324		
Age group (Years)			
18 – 24	151 (25.5)	10 (6.6)	141 (93.4)
25 – 34	138 (23.4)	17 (12.3)	121 (87.7)
35 – 44	122 (20.6)	17 (13.9)	105 (86.1)
45 – 54	96 (16.2)	15 (15.6)	81 (84.4)
55 – 64	63 (10.7)	21 (33.3)	42 (66.7)
65 – 74	16 (2.7)	5 (31.3)	11 (68.8)
75 years and above	5 (0.8)	3 (60.0)	2 (40.0)
	χ^2(6, 591) = 37.311, *Cramer's V* = 0.21, *p* = 0.000***		
Marital status			
Single	306 (51.8)	31 (10.1)	275 (89.9)
Married	258 (43.7)	47 (18.2)	211 (81.8)
Divorced	15 (2.5)	5 (33.3)	10 (66.7)
Widowed	7 (1.2)	2 (28.6)	5 (71.4)
Others	5 (0.8)	3 (3.3)	2 (0.4)
	χ^2(8, 591) = 30.281, *Cramer's V* = 0.226, *p* = 0.000***		
Number of children			
No children	375 (63.5)	43 (11.5)	332 (88.5)
One child	63 (10.7)	11 (17.5)	52 (82.5)
Two children	90 (15.2)	19 (21.1)	71 (78.9)
Three children	34 (5.8)	7 (20.6)	27 (79.4)
Four children	22 (3.7)	5 (22.7)	17 (77.3)
Five or more children	7 (1.2)	3 (42.9)	4 (57.1)
	χ^2(5, 591) = 12.803, *Cramer's V* = 0.147, *p* = 0.025**		
Occupation category			
Professional	173 (29.3)	30 (17.3)	143 (82.7)
Management	78 (13.2)	14 (17.9)	64 (82.1)
Administrative Staff	37 (6.3)	2 (5.4)	35 (94.6)
Support Staff	22 (3.7)	1 (4.5)	21 (95.5)
Consultant	22 (3.7)	4 (18.2)	18 (81.8)
Researcher	43 (7.3)	4 (9.3)	39 (90.7)
Self-employed/Partner	58 (9.8)	13 (22.4)	45 (77.6)
Student	129 (21.8)	14 (10.9)	115 (89.1)
Other	29 (4.7)	6 (20.7)	23 (79.3)
	χ^2(26, 591) = 40.491, *Cramer's V* = 0.262, *p* = 0.035**		
Highest education level			
Primary/Elementary	4 (0.7)	0 (0.0)	4 (100.0)
Secondary/High	41 (6.9)	11 (26.8)	30 (73.2)
Tertiary	236 (39.9)	21 (8.9)	215 (91.1)
Postgraduate	293 (49.6)	53 (18.1)	240 (81.9)
Other	17 (2.9)	3 (17.6)	14 (82.4)
	χ^2(14, 591) = 33.960, *Cramer's V* = 0.240, *p* = 0.002***		
Race, ethnicity, origin			
American Indian or Alaska Native	3 (0.5)	0 (0.0)	3 (100.)
Asian	514 (87.0)	67 (13.0)	447 (87.0)
Black or African American	12 (2.0)	6 (50.0)	6 (50.0)

(*continued*)

Demographic Attributes	Overall N (%)	Intention to take COVID-19 vaccines	
		Do not intend (definitely not/ probably not) n = 88 (14.9%)	Intend (Maybe/Probably yes/ Yes, definitely) n = 503 (85.1%)
Hispanic, Latino or Spanish origin	5 (0.8)	0 (0.0)	5 (100.0)
Middle Eastern or North African	11 (1.9)	3 (27.3)	8 (72.7)
Native Hawaiian or Other Pacific Islander	1 (0.2)	0 (0.0)	1 (100.0)
White	34 (5.8)	11 (32.4)	23 (67.6)
Some other race, ethnicity, or origin	11 (1.9)	1 (9.1)	10 (90.9)
$\chi^2(7, 591) = 24.447$, Cramer's V = 0.203, $p = 0.001$***			
Area			
City	461 (78.0)	63 (13.7)	398 (86.3)
Town	114 (19.3)	22 (19.3)	92 (80.7)
Village or rural area	16 (2.7)	3 (18.8)	13 (81.3)
$\chi^2(2, 591) = 2.481$, Cramer's V = 0.065, $p = 0.289$			
Overall health status			
Very good	181 (30.6)	27 (14.9)	154 (85.1)
Good	345 (58.4)	51 (14.8)	294 (85.2)
Fair	61 (10.3)	10 (16.4)	51 (83.6)
Poor	4 (0.7)	0 (0.0)	4 (100.0)
$\chi^2(3, 591) = 0.812$, Cramer's V = 0.037, $p = 0.847$			
Known any friends and family, neighbours, and colleagues infected by COVID-19			
Yes	184 (31.1)	30 (16.3)	154 (83.7)
No	407 (68.9)	58 (14.3)	349 (85.7)
$\chi^2(1, 591) = 0.422$, Cramer's V = 0.027, $p = 0.516$			
Nationality			
Malaysia	463 (78.3)	60 (13.0)	403 (87.0)
Non-Malaysian	128 (21.7)	28 (21.9)	100 (78.1)
$\chi^2(1, 591) = 6.290$, Cramer's V = 0.103, $p = 0.012$**			

[m] missing data
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 2.

This study also sought to determine whether a herd mentality exists in the decision-making process and the effect of information accessibility on IRV. As mentioned above, participants were first asked about the likelihood of taking the vaccine if the vaccine is available on the market. After they provided their feedback on the predictors of vaccination, a statement comprising the information on the percentage of respondents who have the intention to take the vaccine in a recent study was presented to the participants. With that, we examine whether there is a significant difference in the score using a paired sample t-test. Table 6 depicts the mean scores of IRV before and after the presentation of the statement. This difference is statistically significant, t (590) = 1.766, $p < 0.10$, with a mean difference of 0.12183 and a standard deviation of 1.67720.

With the aim to further investigate the predictors of the Intention to Receive COVID-19 vaccines, a multiple linear regression analysis (stepwise method) was conducted. The analyses on the histogram of regression standardised residual, skewness, and kurtosis were conducted to ensure that the assumptions of multiple linear regression and expectation of normal distribution are fulfilled. Five out of six factors are significant predictors of intention to get a vaccine, whether with or without the accessibility statement.

Country/Region	Frequency	Percentage (%)	Country/Region	Frequency	Percentage (%)
Afghanistan	1	0.17	Maldives	3	0.51
American Samoa	1	0.17	Malta	1	0.17
Antarctica	1	0.17	Mexico	5	0.85
Australia	5	0.85	New Zealand	2	0.34
Bangladesh	5	0.85	Oman	1	0.17
Bosnia and Herzegovina	1	0.17	Pakistan	1	0.17
Botswana	2	0.34	Philippines	2	0.34
Brunei	1	0.17	Portugal	1	0.17
Cambodia	8	1.35	Russia	1	0.17
Canada	1	0.17	Saudi Arabia	1	0.17
China	17	2.88	Singapore	5	0.85
Croatia	1	0.17	Spain	1	0.17
Egypt	2	0.34	Sri Lanka	1	0.17
France	11	1.86	Switzerland	1	0.17
Germany	1	0.17	Tanzania	2	0.34
Hong Kong SAR	3	0.51	Thailand	3	0.51
India	5	0.85	Ukraine	2	0.34
Indonesia	6	1.02	United Kingdom	9	1.52
Japan	5	0.85	United States	8	1.35
Malaysia	463	78.34	Uzbekistan	1	0.17
$N = 591$					

Table 3.
Residing country of respondents

A significant regression equation is found (F (5, 586) = 216.123, p = 0.000), with an R^2 of 0.596. Table 7 presents the overall results of multiple linear regression using data collected before exposing the participants to the statement regarding the accessibility of information and herding. In this analysis using standardized beta coefficients, it was found that Perceived Benefits (t = 21.593, p = 0.000, beta = 0.694) played the most important role in affecting IRV, then followed by Perceived Barriers (t = -4.904, p = 0.000, beta = - 0.135), Herding (t = 3.444, p = 0.001, beta = 0.109), and Perceived Susceptibility (t = 2.203, p = 0.028, beta = 0.065). Perceived Barriers is a predictor that has a negative association with the intention to receive a vaccine (unstandardised coefficient B in negative sign). This implies that the higher the scores of Perceived Barriers, the lower the IRV.

The analysis was repeated using a new IRV score after the participants are being informed that there were more than 90 percent of the respondents in a recent survey possess the intention to take the vaccine. A significant regression equation is found (F (3, 587) = 521.171, p = 0.000), with an improved R^2 of 0.727. Table 8 presents the overall results of multiple linear regression. In this analysis using standardized coefficients of beta, Perceived Benefits is still the most important factor in affecting IRV (t = 35.445, p = 0.000, beta = 0.814), then followed by Institutional Quality (t = 3.444, p = 0.001, beta = 0.109) and Perceived Barriers with negative association (t = -4.904, p = 0.000, beta = -0.059). It is observed that the negative association between Perceived Barriers and IRV becomes weaker. Besides, the effect of Herding becomes insignificant (compared to results in Table 7) when we have the statement that incorporates the impact of herding and the accessibility of information. Institutional Quality turned out to be a significant predictor now.

Discussion
Hwang (2020) suggests that mechanisms that lead to vaccination behaviour are especially important during this pandemic. The evaluation of health information sources is related to vaccine uptake. Chowdhury et al. (2021) highlighted widespread misinformation during

Determinants	1	2	3	4	5	6	7
Herding 1	0.772						
Herding 2	0.673						
Herding 3	0.570						
Perceived Susceptibility 1		0.630					
Perceived Susceptibility 2		0.326					
Perceived Susceptibility 3		0.894					
Perceived Susceptibility 4		0.650					
Perceived Severity 1			0.612				
Perceived Severity 2			0.719				
Perceived Severity 3			0.729				
Perceived Benefits 1				0.829			
Perceived Benefits 2				0.871			
Perceived Benefits 3				0.873			
Perceived Benefits 4				0.842			
Perceived Benefits 5				0.763			
Perceived Benefits 6				0.648			
Perceived Benefits 7				0.743			
Perceived Barriers 1 (effectiveness and safety)					0.716		
Perceived Barriers 2 (effectiveness and safety)					0.896		
Perceived Barriers 3 (effectiveness and safety)					0.868		
Perceived Barriers 4 (effectiveness and safety)					0.567		
Perceived Barriers 5 (informative and cost)					0.673		
Perceived Barriers 6 (informative and cost)					0.305		
Perceived Barriers 7 (informative and cost)					0.821		
Intend to Vaccine 1						0.844	
Intend to Vaccine 2						0.869	
Intend to Vaccine 3						0.850	
Institutional Quality 1							0.538
Institutional Quality 2							0.613
Institutional Quality 3							0.656
Institutional Quality 4							0.838
Institutional Quality 5							0.768
Institutional Quality 6							0.796
Cronbach's alpha	0.841	0.781	0.809	0.944	0.823	0.972	0.889

Table 4.
Rotated factor pattern
and Cronbach's alpha
for vaccination
decision

	Herding	Perceived Susceptibility	Perceived Severity	Perceived Benefits	Perceived Barriers	Institutional Quality	Intention to Vaccine
Herding	1.000						
Perceived Susceptibility	0.303***	1.000					
Perceived Severity	0.262***	0.492***	1.000				
Perceived Benefits	0.501***	0.424***	0.480***	1.000			
Perceived Barriers	0.290***	0.164***	0.314***	0.144***	1.000		
Institutional Quality	0.507***	0.172***	0.263***	0.343***	0.469***	1.000	
Intention to Vaccine	0.482***	0.389***	0.418***	0.847***	0.114***	0.372***	1.000
*** $p < 0.01$, ** $p < 0.05$, *$p < 0.10$.							

Table 5.
Correlation among
construct scores

large-scale infectious disease outbreaks since 2000, where conspiracy theories are also part of the misinformation, especially on vaccination. The methods we deliver health information are important in determining the success rate of vaccination uptake and public health intervention programs. From the study of Lu *et al.* (2020), it is apparent that American and Chinese people have different sources preferences and how they seek health information showed that the accessibility of information is different across populations and cultural backgrounds. Besides, we shall not ignore the role of audience involvement and a sense of affinity for a celebrity in promoting healthy behaviours (Kresovich and Noar, 2020).

In the context of promoting herd immunity during the pandemic, this study revealed that nudges on the positive responses of others towards COVID-19 vaccination (i.e. providing accessibility of information to the respondents with regards to the positive responses of others) influence IRV. This indicates the significance of herding behaviour and nudging in public health interventions. The findings are consistent with Sasaki *et al.* (2022), who found that nudges about the information of others on COVID-19 vaccines can positively influence IRV without hindering their independent decision-making.

In addition, the findings are also consistent with Mouter *et al.* (2022) who found that people's IRV are higher when they know about the experience of others with this vaccination. As per results shown in the above session, herding played a significant impact on IRV.

Table 6.
Statistical Test using Paired Sample t-tests to test for differences

Constructs	Mean (without)	Mean (with)	t-stat	Sig.
Intention to Vaccine	7.6277	7.5059	1.766	0.078*

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Regression Statistics

Multiple R	0.772
R Square	0.596
Adjusted R Square	0.593
Standard Error	1.61135
Observations	591

ANOVA

	df	SS	MS	F	Significance F
Regression	5	2244.594	561.148	216.123	0.000
Residual	586	1521.511	2.596		
Total	590	3766.105			

	Unstandardised Coefficients B	*Standard Error*	*Standardise Coefficients* Beta	*t Stat*	*P-value*
Intercept	1.990	0.329		6.045	0.000
Perceived Benefits	0.814	0.038	0.694	21.593	0.000
Perceived Barriers	-0.186	0.038	-0.135	-4.904	0.000
Herding	0.106	0.031	0.109	3.444	0.001
Perceived Susceptibility	0.077	0.035	0.065	2.203	0.028

Table 7.
Multiple Linear Regression Results for IRV (without the accessibility statement)

Dependent variable: Intention to Receive (without accessibility statement)

Regression Statistics					
Multiple R	0.853				
R Square	0.727				
Adjusted R Square	0.726				
Standard Error	1.27966				
Observations	591				

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	2560.283	853.428	521.171	0.000
Residual	587	961.224	1.638		
Total	590	3521.507			

	Unstandardised Coefficients B	*Standard Error*	*Standardise Coefficients* Beta	*t Stat*	*P-value*
Intercept	0.392	0.260		1.504	0.133
Perceived Benefits	0.922	0.026	0.814	35.445	0.000
Perceived Barriers	-0.078	0.033	-0.059	-4.904	0.000
Institutional Quality	0.106	0.031	0.109	3.444	0.001
Dependent variable: IRV (with accessibility statement)					

Table 8.
Multiple Linear
Regression Results for
IRV (with the
accessibility statement)

However, when the respondents were informed that there were more than 90 percent of the respondents in a recent survey who have the intention to take the vaccine, institutional quality turned out to be a significant variable in explaining the vaccination behaviour. This shows that the accessibility of information is crucial in influencing behaviour. Hence, given the importance of herd immunity and institutional quality, the effectiveness of a vaccine strategy that helps to boost non-pharmaceutical interventions, such as testing and magnifying vaccine impact, are also hugely dependent on the communication channels, content, and the ways health messages are sent to the public. Be it a vaccination program, face mask-wearing (e.g. Suzuki *et al.*, 2021), or other interventions, world leaders must take immediate actions to manage the pandemic (Ajmal *et al.*, 2021). Signorelli *et al.* (2020) also highlighted that public health authorities should continue monitoring herd immunity's effects as one of the approaches to control the COVID-19 outbreak.

In the meantime, institutional quality plays an important role in promoting the quality of the healthcare system (see also Gille and Brall, 2020). Public health practices and strategies will not be effective and efficient without collaboration between public and private sectors, as well as individuals. Ferrari and Salustri (2020) conducted research using a European panel data set and showed that corruption impacts public healthcare services, especially females and those in society with lower socioeconomic status.

There are certain limitations of this study. It was conducted before the efficacy of the various COVID-19 vaccines was known to the public. The survey results may be different if the respondents had known this information. Another limitation of the study is that the scope of the perspectives used is limited to HBM, behavioural economics, and institutional quality. Future research can incorporate other perspectives which are relevant as predictors of IRV, for example, religions, philosophy, history, politics, etc.

Moreover, given the non-probability sampling method, the result of this study may not be generalisable to other research settings. With the urgency of examining IRV in time with

different types of vaccines developed and getting approval from the World Health Organization (WHO), we faced time constraints in implementing a random sampling method. Moreover, with the uncertainties that arise with the efficacy of the vaccines, there are challenges such as low response rates and insufficient responses from different countries. Future studies shall use a random sampling method to replicate such research in understanding vaccination behaviour or choice behaviour in health-related studies. Besides, studies in the future shall use structural equation modelling (SEM) to examine the relationship of the predictors with vaccination behaviour.

Conclusion

This study is one of those few cross-country studies investigating the predictors of IRV as well as the first to investigate how one of these predictors, i.e. the institutional quality and herding, influence IRV. Based upon multiple regression analyses, this study found five significant predictors of IRV: Perceived Benefits, Perceived Barriers, Perceived Susceptibility, Herding, and Institutional Quality. The results reveal that the respondents behaved differently before and after they were provided information incorporating the impact of herding. Before they were provided with the information, Perceived Benefits, Perceived Barriers, Herding, and Perceived Susceptibility were the predictors of IRV. After they were provided such information, Perceived Benefits, Perceived Barriers, and Institutional Quality became the significant predictors.

This research shows that once people possess the herding mentality after being exposed to information encouraging such behaviour, their focus shifts to institutional quality as one factor influencing their IRV. This reflects that the effectiveness of government authorities, regulatory quality, the rule of law, and control of corruption are also significant predictors of IRV but only within a herding mentality.

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Evaluation of the effectiveness of government intervention strategies to control and prevent COVID-19 in Malaysia by systems thinking

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Abstract

Purpose – This paper aims to identify the interaction of different intervention strategies implemented in Malaysia towards flattening the curve of COVID-19 cases. Since the outbreak of COVID-19, many approaches were adopted and implemented by the Malaysian government. Some strategies gained quick wins but with negative unintended consequences after execution, whereas other strategies were slow to take effect. Learning from the previous strategies is pivotal to avoid repeating mistakes.

Design/methodology/approach – This paper presents the cause, effect of and connection among the implemented COVID-19 intervention strategies using systems thinking through the development of a causal loop diagram. It enables the visualisation of how each implemented strategy interacted with each other and collectively decreased or increased the spread of COVID-19.

Findings – The results of this study suggested that it is not only essential to control the spread of COVID-19, but also to prevent the transmission of the virus. The Malaysian experience has demonstrated that both control and preventive strategies need to be in a state of equilibrium. Focusing only on one spectrum will throw off the balance, leaving COVID-19 infection to escalate rapidly.

Originality/value – The developed feedback loops provided policy makers with the understanding of the merits, pitfalls and dynamics of prior implemented intervention strategies before devising other effective intervention strategies to defuse the spread of COVID-19 and prepare the nation for recovery.

Keywords Intervention strategy, COVID-19 pandemic, Systems thinking, Causal loop diagram, Malaysia

Paper type Research paper

Introduction

Coronavirus (COVID-19) is an infectious respiratory disease caused by a newly discovered coronavirus. The COVID-19 outbreak started in Wuhan City, Hubei Province, China. In December 2019, the Huanan Seafood Wholesale Market was identified as the possible point of origin of COVID-19 infection. Since then, this infectious disease has spread to nearly every region of the globe. Owing to the outbreak's alarming level of spread and severity, on 11 March 2020, the World Health Organization declared the COVID-19 outbreak as a global pandemic (WHO, 2020a). As of 30 September 2021, a total of 233,184,584 cases of COVID-19 have been confirmed, including 4,777,009 deaths (WHO, 2021).

The first case of COVID-19 in Malaysia was detected on 25 January 2020 (Zack, 2020); since then, Malaysia has been in a fierce battle against COVID-19. Twenty months after the first detected case, the number of daily confirmed cases showed prominent decrease in September 2021 owing to the nationwide vaccination programme as depicted in Figure 1. As of 30 September 2021, Malaysia has witnessed a total of 2,232,960 confirmed cases of COVID-19 with 26,143 deaths (WHO, 2021).

The earliest counter measure to prevent the wide spread of COVID-19 in Malaysia was through the enforcement of Movement Control Order (MCO) on 18 March 2020 (Povera and Harun, 2020). This restriction of movements included barring interstate and overseas travelling, prohibiting mass gatherings across the country, and shutting all businesses, except shops selling food and daily necessities. Three months (as of 10 June 2020) through the implementation of the MCO, the COVID-19 curve in Malaysia was flattened significantly, and it marked the enforcement of the recovery MCO. During this phase, other restrictions were relaxed, allowing interstate travelling, resumption of social and religious activities and the opening of schools and universities (Povera and Chan, 2020). Unfortunately, Malaysia witnessed the horror of a third-wave spike in COVID-19 cases starting at the end of September 2020. Subsequently, the Malaysian government decided to implement a conditional MCO from 9 November 2020 to 6 December 2020 on nearly all states in Malaysia (Daud, 2020). Interstate travelling was not allowed during the phase of the conditional MCO, and only essential businesses were permitted to operate.
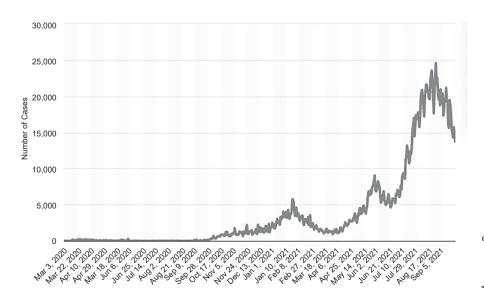

Figure 1.
Number of daily
confirmed COVID-19
cases in Malaysia from
March 2020 to
September 2021
Source: MOH (2022)

Ever since the spike of the third wave in September 2020, the COVID-19 cases fluctuated in an ascending trend, which later compelled the Malaysian government to place the nation under total lockdown (full MCO) in June 2021 for an indefinite period until further notice (Ram, 2021). In late September 2021, the number of COVID-19 cases started to show signs of downturn with the full enforcement of a nationwide vaccination programme. Entering October 2021, Malaysia eased the movement restriction by allowing interstate travelling and all businesses to resume operation after a year of cessation.

Malaysia was committed towards vaccinating the population by the end of 2021. Although COVID-19 vaccine does protect people against severe illness and death due to the virus, the vaccine does not prevent the spread of COVID-19. Additionally, the threat from more deadly new variants of the COVID-19 exists. Therefore, the risk of a surge in COVID-19 cases surfaces as people start to resume their daily interactions as well as travelling interstate and internationally.

Putting the nation in another lockdown is a costly measure as it affects the people's livelihood and places Malaysia's economy at risk of collapsing (Tan, 2021). The prolonged confinement has caused many people to face financial struggles, unemployment, depression as well as other mental health issues. Lockdown is no longer a sustainable measure to contain the virus. The Health Ministry Malaysia recognised the need for a circuit breaker to stop the outbreak of infection other than resolving with full-scale lockdown or movement restriction across the country should the infection cases rise again in the future (Yunus and Yusof, 2021).

This study presents the use of systems thinking through the development of a causal loop diagram in which various governments' responses to the COVID-19 pandemic are visualised by means of feedback loops. By linking these feedback loops, a clear pattern of behaviours representing the merits and pitfalls of the implemented measures against COVID-19 infection will emerge.

Literature review
Overview of systems thinking
A system consists of interrelated and interdependent parts working together where every change in one part of the system affects other parts and the entire system. The nature of systems is interconnected, fused with feedback and delays, which intensify the dynamic complexity. Even when confronted with a seemingly simple dynamic problem, the human mind has difficulty comprehending and making decisions (Sterman, 2000). Traditional problem-solving approaches tend to break the problem into smaller parts and tackle each part individually. By thinking in systems, Whitehead *et al.* (2015) affirm that all the encompassing aspects of a system will be considered to innovate change and determine optimal solutions that will collectively achieve the system's objective.

Barry Richmond, a system scientist, credited with introducing the term systems thinking in 1987 (Arnold and Wade, 2015), defines systems thinking as the art and science of making reliable inferences about behaviour by developing an increasingly deep understanding of the underlying structure (Richmond, 1994). Most sources accord that systems thinking embraces holistic thinking instead of dissected thinking, with focus on the relationships among system components rather than individual components (Monat and Gannon, 2015).

Systems thinking enables systems to be re-designed by actively creating desirable results after identifying the root cause and focusing on the right vital leverage areas (Hassan *et al.*, 2020). As the world is now increasingly complex, uncertain and intertwined, the need arises for a method which can effectively solve complex problems with many interrelated components. Systems thinking particularly shines in areas of strategy, such as discovering hidden opportunities, untapped leverages and internal contradictions, which are often neglected by other methodologies (Cavana and Maani, 2000).

Government bodies and industry sectors have utilized systems thinking in numerous areas, particularly for strategy or policy formulation and testing (Cavana and Maani, 2000). In managing disasters, systems thinking is applied to recommend effective long-term flood disaster response policies by identifying key stakeholders and factors for disaster risk reduction in Pakistan (Rehman *et al.*, 2019). Islam *et al.* (2022) used systems thinking for a holistic understanding of Bangladesh's disaster and climate change impacts on agriculture to advise the government about effective intervention programmes. Within the theme of disaster management, Lin and Chien (2019) applied systems thinking to explore the root cause of the Kaohsiung gas explosion disaster; the developed causal loop diagram revealed that safety management was compromised to expedite production and pipe line control.

Shams Esfandabadi *et al.* (2020) developed a causal loop diagram to analyse the environmental effects of car-sharing services and proposed relevant strategies to track the causes of changes in the environmental impacts. Similarly, Laimon *et al.* (2022) adopted systems thinking to analyse current energy development policies in Australia with aims to improve and support sustainable energy development policy. Systems thinking is also used to evaluate China's marine fisheries management system and determine how interaction among stakeholders affects the convergence to sustainable fisheries management in the study by Su *et al.* (2022). Sunitiyoso *et al.* (2022) explored the interactions among stakeholders to understand maritime logistics systems in Indonesia for performance improvement and intervention, whilst Kim *et al.* (2021) used systems thinking to explore potential strategies for South Korea's automotive retail industry in facing the impact of technological disruption.

Systems thinking and COVID-19

The systems thinking approach has been widely used with regard to public health issues before the COVID-19 crisis (Diez Roux, 2020; Gonella *et al.*, 2020; Zięba, 2021). The COVID-19 pandemic has vividly brought systems interconnectedness to the forefront of human thinking (Hassan *et al.*, 2020). Luke and Stamatakis (2012) asserted that society operates akin to a complex adaptive system; hence, systems thinking is capable of enlightening policymakers by helping them understand and influence the spread of infection and observe the consequences across the community. Systems thinking through causal loop diagram offers a glimpse beyond the spread of COVID-19 to recognise the implications of decisions and actions involving many interconnected factors in such complex situations (Bradley *et al.*, 2020).

Sahin *et al.* (2020) developed a causal loop diagram to identify the interconnectivity between health, economy, society and environment in managing the COVID-19 pandemic. Jackson (2020) used critical systems thinking to understand the complexity of COVID-19 transmission in the UK and argued that effective improvements and interventions are possible only when the complexity is untangled. Hosseini Bamakan and Haddadpoor Jahromi (2021) constructed a causal loop diagram to model how social responsibility plays a significant part in preventing the spread of COVID-19 within the community. With the goal to reduce the transmission risk of COVID-19 for healthcare staff and patients during mass testing in the emergency department, Araz *et al.* (2020) used the systems approach to propose a systematic framework for drive-through COVID-19 testing sites. Phang *et al.* (2021) simulated several scenarios to determine medical staff and patient safety issues in healthcare services when in contact with infectious diseases based on systems thinking.

The systems thinking approach by Diez Roux (2020) affirmed that social distancing and movement restrictions affect the population health beyond COVID-19 and may result in unintended consequences. Sturmberg *et al.* (2022) on the other hand viewed COVID-19 crisis as an opportunity to redesign the health policy using systems thinking in that the dynamics of infectious disease, health system and crisis management are considered. Adamu *et al.* (2020)

developed a causal loop diagram to illustrate how COVID-19 and related control strategies adversely affect the timely childhood immunization in African countries.

Systems thinking approaches have been applied to address issues related to COVID-19. High emphasis is given to identifying and understanding the complexity of COVID-19 from different perspectives. On intervention strategies, the recent studies tend to either focus on preventive measures (Bradley *et al.*, 2020; Diez Roux, 2020; Sahin *et al.*, 2020) or control measures (Gonella *et al.*, 2020). The current study aims to fill this research gap not only by untangling the complexity but also identifying the interaction of different intervention strategies implemented in Malaysia to reduce the spread of COVID-19.

Research methods
This study was conducted during the peak of COVID-19 infection in Malaysia from May to September 2021. Considering the impact and threat of COVID-19 outbreak in Malaysia, the National Security Council (Majlis Keselamatan Negara) was instructed on March 2020 by the then Prime Minister, Tan Sri Muhyiddin Yassin, to manage, coordinate and devise policies to curb the number of COVID-19 cases (Rafidah and Ahmad Suhael, 2020). All endorsed national strategies to control COVID-19 infection in Malaysia were announced and made available through the National Security Council's official website and social media.

Since March 2020, information related to COVID-19 in Malaysia has been updated daily by the Ministry of Health through its official website and social media. On September 2021, the Ministry of Health launched a new COVID-19 data website with comprehensive infographic tracking the daily administered vaccine, daily active COVID-19 cases along with the percentage of active cases on home quarantine, at the Low-Risk Quarantine and Treatment Centre (PKRC), hospitalised and in Intensive Care Units (ICU). Table 1 presents the list of data and information collected for this study.

Systems thinking provides a framework that assists policy makers to make sense of the big picture by understanding the interconnectedness of different parts and how these parts trigger different consequences of decision making, thus giving the policy makers an

Data / Information	Sources
Malaysia COVID-19 Standard Operating Procedures	The Ministry of Health's official website on COVID-19: https://covid-19.moh.gov.my/ The National Security official website: https://www.mkn.gov.my/web/ms/sop-perintah-kawalan-pergerakan/
Announcement and Guidelines of Intervention Strategies in Malaysia	The Ministry of Health's official website on COVID-19: https://covid-19.moh.gov.my/
Data related to COVID-19 (Number of daily infected cases, exposed, quarantined, death and recovered; Update on new COVID-19 clusters and new COVID-19 variants, etc.) in Malaysia	The Ministry of Health's official website on COVID-19 (Prior to September 2021): https://covid-19.moh.gov.my/ The Ministry of Health's official website on COVID-19 (September 2021 onwards): https://covidnow.moh.gov.my/
Information on the Perception and Impact of Implemented Intervention Strategies in Malaysia	Local and international newspapers official websites; General public's comments over social medias on the implemented intervention strategies.
Worldwide data and information on COVID-19	WHO COVID-19 Dashboard: https://covid19.who.int/ WHO COVID-19 Resources: https://www.who.int/emergencies/diseases/novel-coronavirus-2019

Source: By authors

opportunity to devise effective strategies to reduce unintended consequences (Bureš, 2017; Luke and Stamatakis, 2012). The application of systems thinking leads to the development of comprehensive models (Bureš, 2017) to understand the interrelations and interconnectedness of different parts in a system. Following the COVID-19 outbreak, other studies that use systems thinking emerged, demonstrating the potential of this method in tackling the labyrinthine interrelations triggered by the pandemic (Haley *et al.*, 2021; Zięba, 2021). Systems thinking also provides stakeholders with a better understanding of the implications of different responses by looking beyond the chain of infection in designing the best approach to battle against COVID-19 infection (Bradley *et al.*, 2020).

The essence of systems thinking is tapped by developing a causal loop diagram. Causal loop diagrams serve as visual tools capable of representing the dynamic complexity in a system (Bogdewic and Ramaswamy, 2021). After gathering the necessary information, a causal loop diagram is developed by recognising the feedback loops and causal-and-effect relationship among variables. The causal loop diagram involves interpreting important or meaningful variables and how these variables form feedback that influences the system (Linnéusson *et al.*, 2022).

The process of synthesising the causal loop diagram is guided by the outcomes from action and reaction loops whilst identifying potential unintended consequences (Dianat *et al.*, 2021). A causal loop diagram comprises variables connected by arrows representing the causal influences where these linked variables will form feedback loops. The feedback loops consist of interconnected balancing loops (represented by B) and reinforcing loops (represented by R). The reinforcing loop indicates that if the cause increases, the effect increases; whereas if the cause decreases, the effect decreases as well; on the other hand, the balancing loop signifies that if the cause increases, the effect deceases; and if the cause decreases, the effect increases (Sterman, 2000).

The developed causal loop diagram is then validated by subject matter experts. In this study, four subject matter experts were invited to review, comment and validate the developed causal loop diagram in a focus group discussion. The subject matter experts consist of expert panels with knowledge and experience working with COVID-19 pandemic in Malaysia. Table 2 depicts the profile of the expert panels. The names of the expert panels were concealed for anonymity.

The developed causal loop diagram is then refined and improved on the bases of the comments and suggestions gathered from the expert panels.

Results and discussion

The developed causal loop diagram on intervention strategies implemented in Malaysia to battle against the spread of COVID-19 had brought forth a total of six reinforcing loops and eight balancing loops. This paper presents the intervention strategies in two parts. The first

Subject Matter Experts	Profile
Expert Panel 1	Medical Doctor, Centre for Communicable Diseases Epidemiology Research, Institute for Public Health, National Institutes of Health
Expert Panel 2	Medical Doctor, Ministry of Health, Malaysia
Expert Panel 3	Environmental Health Researcher, Centre for Communicable Diseases Epidemiology Research, Institute for Public Health, National Institutes of Health
Expert Panel 4	Environmental Health, Inspectorate and State Legislation Officer, Kuala Lumpur and Putrajaya Health Department
Source: By authors	

Table 2.
Profile of subject
matter experts

part focuses on the implemented strategies to control the spread of COVID-19, i.e., after the population is exposed to the virus. The second part concentrates on the implemented strategies to prevent the spread of COVID-19, i.e., before the population is exposed to the virus.

Intervention strategies to control the spread of COVID-19

Figure 2 describes the narrative of balancing and reinforcing feedback loops corresponding to strategies implemented to curb the spread of COVID-19 after the population is exposed to the virus. A total of five different strategies are implemented to control the infected population from experiencing further snowballing of the spread. These strategies are tracking, screening and testing, home quarantine for the exposed, home quarantine for the infected, Low-Risk Quarantine and Treatment Centres (PKRC) Quarantine for the infected, and isolating patients in the hospitals. How these strategies responded, interacted with other implemented strategies and ultimately reduced or increased the transmission of COVID-19 will be explained through the developed balancing and reinforcing feedback loops.

The first loop in Figure 2 is R1 reinforcing loop, which explains that an increase in the spread of COVID-19 increases the number of people exposed (exposed population) to the virus. Similarly, as depicted in R2 reinforcing loop, if the number of people exposed to the COVID-19 increases, it will increase the number of people infected by COVID-19; the spread exacerbates other COVID-19 clusters which in turn expose more people to the risk of contracting COVID-19 (R3 reinforcing loop).

The B1 balancing loop shows that by rigorously conducting tracking, screening and testing the exposed population, the spread of COVID-19 can be reduced. Likewise, as the number of exposed populations being tracked, screened and tested increases, more exposed populations will be put under home quarantine, which will further reduce the spread of COVID-19 (B2 balancing loop). In Malaysia, COVID-19 cases are classified according to five
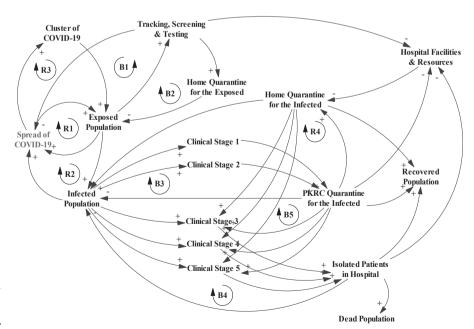

Figure 2.
Causal Loop Diagram of strategies implemented to control COVID-19
Source: By authors

different categories, depending on the severity of the patients (MOH, 2020) as per the description in Table 3.

As the number of exposed population increases, the number of infected population grows. The infected population, depending on their severity, are quarantined and isolated. Infected patients who are in clinical stages 1 and 2 are quarantined at the Low-Risk Quarantine and Treatment Centres (PKRC). As more clinical stages 1 and 2 patients are quarantined, the infected population will be reduced along with the spread of COVID-19 (B3 balancing loop). However, an increase in clinical stages 1 and 2 infected patients being quarantined at the PKRC causes two ripple effects.

Firstly, the high number of patients quarantined at the PKRC reduces the capacity (in terms of bed capacity, facilities, staff and medical officers). When the PKRC is crowded and unable to accommodate more patients, the clinical stages 1 and 2 infected patients will be diverted to home quarantine. The interviewed expert panels revealed that home quarantine for infected patients is ineffective in restraining the spread of COVID-19. Infected patients who underwent home quarantine risk, were spreading the virus to their household members due to sharing of toilets, other necessities and poor ventilation. As depicted in reinforcing loop R4, an increase in home quarantine for the infected raises the number of infected population and further increases the spread of COVID-19.

By contrast, as illustrated by balancing loop B5, with more clinical stages 1 and 2 infected patients being quarantined at the PKRC, these patients tend to become critically ill over time and then be re-categorised as clinical stages 3, 4 or 5. The increase in clinical stages 3, 4 and 5, infected patients will increase the number of isolated patients at the hospital and will collectively reduce the number of infected population and the spread of COVID-19. The last balancing loop B4 explains that with an infected population growing, the number of infected patients falling under clinical stages 3, 4 and 5 increases. Consequently, it escalates the number of patients to be isolated and be given intensive treatment at the hospital. This procedure will then help prevent the further spread of COVID-19.

Apart from the balancing and reinforcing feedback loops, several auxiliary variables are also being identified as shown in Figure 2. Hospital facilities and resources play an important role in strategies such as tracking, screening, and testing; PKRC quarantine for the infected and isolating critical patients in the hospital. Without adequate medical equipment and manpower, all these three strategies will fail to outpace the rate of COVID-19 transmission in Malaysia. Therefore, if the number of exposed and infected cases increases beyond the capacity of hospital facilities and resources, the implemented strategies to control the spread of COVID-19 will collapse. Table 4 summarises the narrative of all balancing and reinforcing feedback loops that corresponded to the strategies implemented to control COVID-19 transmission.

Intervention strategies to prevent the spread of COVID-19
Figure 3 sets forth the balancing and reinforcing feedback loops of strategies implemented to restrain the spread of COVID-19 in Malaysia. The major strategies imposed to prevent the

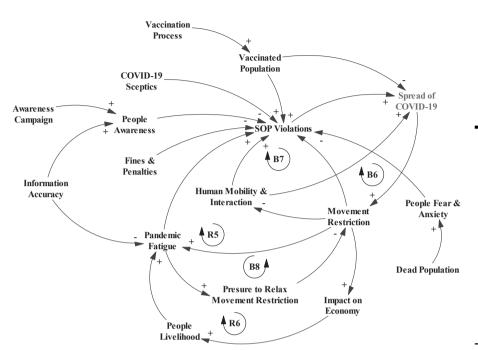| Clinical Stage	Indicators
Clinical Stage 1	Asymptomatic
Clinical Stage 2	Symptomatic, No Pneumonia
Clinical Stage 3	Symptomatic, Pneumonia
Clinical Stage 4	Symptomatic, Pneumonia, Requiring Supplemental Oxygen
Clinical Stage 5	Critically Ill with Multi-Organ Involvement
Source: MOH (2020)	

Table 3.
Clinical stage of
COVID-19 infection in
Malaysia

Feedback Loop	Representation
R1	Increase Spread of COVID-19 > Increase Exposed Population > Increase Spread of COVID-19
R2	Increase Spread of COVID-19 > Increase Exposed Population > Increase Infected Population > Increase Spread of COVID-19
R3	Increase Spread of COVID-19 > Increase Clusters of COVID-19 > Increase Spread of COVID-19
R4	Increase Spread of COVID-19 > Increase Exposed Population > Increase Infected Population > Increase Clinical Stage 1/Clinical Stage 2 > Increase PKRC Quarantine for the Infected > Increase Home Quarantine for the Infected > Increase Infected Population > Increase Spread of COVID-19
B1	Increase Spread of COVID-19 > Increase Exposed Population > Increase Tracking, Screening & Testing > Reduce Spread of COVID-19
B2	Increase Spread of COVID-19 > Increase Exposed Population > Increase Tracking, Screening & Testing > Increase Home Quarantine for the Exposed > Reduce Exposed Population > Reduce Spread of COVID-19
B3	Increase Spread of COVID-19 > Increase Exposed Population > Increase Infected Population > Increase Clinical Stage 1/Clinical Stage 2 > Increase PKRC Quarantine for the Infected > Reduce Infected Population > Reduce the Spread of COVID-19
B4	Increase Spread of COVID-19 > Increase Exposed Population > Increase Infected Population > Increase Clinical Stage 3/Clinical Stage 4/Clinical Stage 5 > Increase Isolated Patients in Hospital > Reduce Infected Population > Reduce the Spread of COVID-19
B5	Increase Spread of COVID-19 > Increase Exposed Population > Increase Infected Population > Increase Clinical Stage 1/Clinical Stage 2 > Increase PKRC Quarantine for the Infected > Increase Clinical Stage 3/Clinical Stage 4/Clinical Stage 5 > Increase Isolated Patients in Hospital > Reduce Infected Population > Reduce the Spread of COVID-19

Table 4.
Summary of feedback loops that depict strategies implemented to control the spread of COVID-19

Source: By authors

transmission of COVID-19 are the enforcement of standard operating procedures (SOPs), movement restriction and nationwide vaccination programme. Except for the vaccination programme, which is currently ongoing, the other two strategies were implemented during the period of Movement Control Orders (MCOs). The comprehensive SOPs include guidelines on general health protocol for businesses that serve the public, business and service sectors that allow them to operate religious activities, sports and recreation activities, and many other activities (MOH, 2021). As for the imposed movement restriction during MCO, interstate travelling within Malaysia was not allowed, and the allowable travelling distance was within 10-km radius from the point of residence.

Looking at the narrative of Figure 3, balancing loop B6 reveals that if the spread of COVID-19 increases, the movement restriction will be tighter and therefore reduce human mobility and interaction which will then reduce the spread of COVID-19. Balancing loop B7 explains a similar scenario that when human mobility and interaction are reduced, the number of SOP violations decreases and tends to lower the spread of COVID-19. When the movement restrictions are tightened, pandemic fatigue grows among the public. Pandemic fatigue gradually happens when the public are exhausted with all the pandemic measures and become less likely to follow the guidelines due to emotions, experiences and perceptions (WHO, 2020b). The rise of pandemic fatigue triggers the concern of mental health issues and suicidal cases which hence increase the pressure to relax movement restrictions.

The interconnectedness between pandemic fatigue and movement restrictions are illustrated by balancing loop B8. Reinforcing loop R5 shows that the escalation of pandemic fatigue increases SOP violations among the public and increases the spread of COVID-19. Disruption in life and livelihood triggers pandemic fatigue as elucidated in reinforcing loop R6. Prolonged movement restriction has an adverse impact on the economy and affects livelihood as people are losing their jobs due to downsizing and closure of businesses.

A few auxiliary variables are also identified in Figure 3 as strategies that are capable of either increasing or decreasing the number of SOP violations which will have a direct influence on the spread of COVID-19. The first strategy is the vaccination programme whereby expediting the vaccination process will gradually increase the inoculated population. However, our expert panels revealed that people who are already vaccinated tend to violate the SOP and consequently spread the virus (although once infected, their severity is largely reduced than those who are yet to receive the first dose of vaccination).

On a more positive side, by vaccinating the majority of the population, the spread of COVID-19 can be reduced (i.e., if they strictly adhere to the SOPs). Imposing stricter fines and penalties, increasing people's awareness through accurate and genuine information and awareness campaigns can evidently reduce SOP violations. Misinformation and fake claims spread rapidly on social media throughout the period of the COVID-19 pandemic, causing confusion to the general public and perturbed pandemic fatigue. The fear and anxiety over the high number of COVID-19 cases and death forced people to adhere to the SOP regulations. COVID-19 'sceptics' also contributed to the rise in SOP violations, thereby increasing the spread of COVID-19. Table 5 shows the summary of feedback loops that explain the strategies implemented to prevent the spread of COVID-19.

Merging the implemented intervention strategies
Figure 4 illustrates the combined causal loops of Figures 2 and 3. By combining these feedback loops, the representation in Figure 4 shows a coherent view on how each implemented strategy affects other initiatives and collectively as a whole contributes to the control and prevention of the spread of COVID-19. With the spread of COVID-19 acting as the 'nexus', the loops on the right (in Figure 4) depict intervention strategies implemented to respond or curb the ongoing spread of COVID-19, whilst the loops on the left side of the nexus focus on the intervention strategies implemented to prevent the transmission of COVID-19.

Evidently, intervention strategies from both sides (left and right) of the causal loop diagram need to be in a state of equilibrium to successfully flatten the curve of COVID-19 cases. Focusing more on strategies to control the spread (right) will end up exhausting the hospital facilities, medical resources and not to say burning out medical officers as the number of transmissions escalates without effective prevention measures. This scenario will result in a high number of deaths (in COVID-19 patients) and COVID-19-linked deaths (e.g., could not be admitted due to depleted medical resources). As per Figure 4, a high number of deaths prevalently will create anxiety and fear among the public which will exacerbate pandemic fatigue and other psychological issues among the people.

At the other end of the spectrum, focusing heavily on intervention strategies to prevent the spread (left) but neglecting intervention strategies to control the spread (right) will risk those who are exposed and infected with COVID-19 not having proper isolation, medication and treatment. Undoubtedly, it severely aggravates the spread of COVID-19. Therefore, excessive focus on strategies either to control or only to prevent the transmission of COVID-19 will result in potential unintended consequences that will hinder the main purpose which is to reduce the spread of COVID-19.

Conclusion

This paper aims to identify the interaction of different intervention strategies implemented to flatten the curve of COVID-19 cases in Malaysia. A causal loop diagram was developed to capture the cause, effect and relationship among these implemented strategies. The developed feedback loops enabled visualisation of how each implemented strategies interacted with each other and then collectively decreased or increased the spread of COVID-19 in Malaysia. The causal loop diagram evoked an important message where a necessity arises not only to control the spread of COVID-19 but also to prevent the transmission of the virus. These two sets of strategies (to control and to prevent) need to be in a state of equilibrium to demonstrate the reduction in the spike of COVID-19 cases. Focusing only on one set of strategies will throw off the balance and rapidly escalate the spread of COVID-19.

In the early stage of the pandemic, the Malaysian government emphasised movement restriction, a strategy to prevent the spread of COVID-19 and isolating infectious patients in hospitals to control the infected population. A status quo was achieved, but eventually, with prolonged confinement, pandemic fatigue occurs, resulted in more SOP violations and the continuous spread of COVID-19 within the community. This was alarming as the hospitals could not cope with the sudden spike in COVID-19 cases. With an effort to reinforce the control strategies, the Malaysian government introduced mass quarantine centres, mass

Feedback Loop	Representation
R5	Increase Spread of COVID-19 > Increase Movement Restriction > Increase Pandemic Fatigue > Increase SOP Violation > Increase Spread of COVID-19
R6	Increase Spread of COVID-19 > Increase Movement Restriction > Increase Impact on the Economy > Increase Impact on People Livelihood > Increase Pandemic Fatigue > Increase SOP Violation > Increase the Spread of COVID-19
B6	Increase Spread of COVID-19 > Increase Movement Restriction > Reduce Human Mobility & Interaction > Reduce Spread of COVID-19
B7	Increase Spread of COVID-19 > Increase Movement Restriction > Reduce Human Mobility & Interaction > Decrease SOP Violation > Reduce Spread of COVID-19
B8	Increase Movement Restriction > Increase Pandemic Fatigue > Increase Pressure to Relax Movement Restriction > Reduce Movement Restriction

Table 5.
Summary of feedback loops that illustrate strategies implemented to prevent the spread of COVID-19
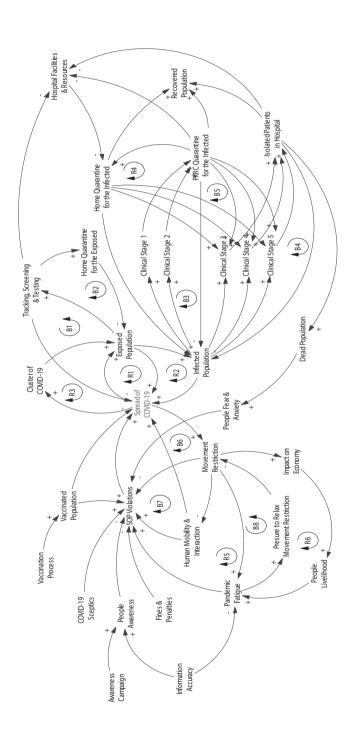
Source: By authors

Figure 4.
Complete Causal Loop
Diagram on
implemented strategies
to control and prevent
COVID-19 infection
Source: By authors

tracking, screening and testing, and home quarantine. As Malaysia needs to reopen its border, in order to prevent a catastrophic COVID-19 surge, mass vaccination programme is introduced. Therefore, it is evident that a balance of control and prevention strategies are crucial to break the chain of COVID-19.

The causal loop diagram developed by Diez Roux (2020) and Bogdewic and Ramaswamy (2021) support that preventive measures such as movement restriction and economy shutdown reduce the spread of COVID-19 but adversely affect people's survival and mental health. Similar to Hosseini Bamakan and Haddadpoor Jahromi (2021) and Bradley et al. (2020), this study agrees that raising public awareness and concern about COVID-19 serves as an effective preventive measure to battle against COVID-19 transmission. Cultivating social responsibility within the community reduces the rapid spread of COVID-19 and avoids the collapse of the healthcare system (burden on the control strategies). In contrast to Diez Roux (2020) who emphasised that government action is critical to protect the public health, this study puts forward the need for the responsibility to be shared by the community. In the long run, individuals' responsibilities will be more effective in shielding the community from the threat of COVID-19 infection as the nation moves into the endemic phase.

For future research, this study can be replicable to any viral outbreaks of diseases that pose threats to the community. In addition, whilst this study focused on different intervention strategies enforced during the response phase of COVID-19 outbreak, future studies can explore the interaction among strategies and potential strategies implemented in other pandemic phases such as mitigation, preparedness and recovery. Overall, the developed causal loop diagram provides policy makers a clearer understanding about the interaction and effect of different implemented intervention strategies. It will result in more informed decisions during the process of crafting effective strategies to control COVID-19 infection.

By the end of September 2021, the rate of COVID-19 infection in Malaysia began slowing down, thanks to the massive outreach vaccination programme. As of mid-October 2021, all movement restrictions were lifted, interstate and international travels (in transition) were eased and all economic sectors were allowed to open with strict standard operating procedures. As Malaysia is transitioning to the epidemic phase, living with COVID-19 is the new normal. The battle against COVID-19 shows no guarantee of approaching endgame. Anything may trigger the surge of cases again, and Malaysia may be unable to endure another round of nationwide lockdown. Therefore, more effective strategies need to be crafted, especially strategies that can protect the life of the people against COVID-19 without compromising their livelihood. This developed causal loop diagram provides policy makers a gateway to recognise the merits and pitfalls of all previously implemented intervention strategies with the aim of devising more effective intervention strategies to further defuse COVID-19 infection and prepare the nation towards recovery.

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Life skills for resilient leadership during pandemic times: the current and ancient Indian perspectives

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Abstract

Purpose – Leaders today are continuously seeking models to navigate through the challenges posed by the pandemic times, so as to help the organizations flourish in the volatile business environment. This paper attempts to explore the alignment of insights drawn from the ancient Indian scripture, the Bhagavad Gita, with today's leadership requirements, towards the betterment of both the leaders and organizations.

Design/methodology/approach – A qualitative approach with thematic analysis is used to identify leadership qualities pertinent in difficult times through interviews with 15 employees at leadership positions. It establishes the alignment of the qualities with the sapient advice from the Holy Scripture, maneuvered by today's leaders to become more purposeful and impactful.

Findings – The discernments from the Bhagavad Gita holistically entwine the emotional, intellectual and spiritual aspects of resilient leaders and provide guidance on the leaders' attitude towards work, behaviour and self management, to help steer through the challenging environment. With turbulent changes during the COVID-19 pandemic, conventional leadership skills would be outmoded, and hence the leaders need to strengthen the critical shifts in their own established sets of attitudes as well as that of their workforce.

Originality/value – Under the changing work environment, while the new leadership narrative of the world beyond takes shape, this study delves both into ancient Indian wisdom and current opinion to identify a template of workable practices that would differentiate extraordinary leaders from the rest.

Keywords Leadership, Resilience, Life skills, Self management, Bhagavad Gita, India

Paper type Research paper

Introduction

In the present pandemic times, as the business landscape becomes increasingly complex, chaotic and volatile, it challenges the conventional business paradigms and compels the organizations to align their strategy with the market and technology shifts. Many successful companies, which have been vigilant about competitive moves, catered astutely to their customers, and invested aggressively in new technologies, still lose market dominance and eventually fail and die relatively young (Christensen, 1997). According to a study conducted by McKinsey, the average life span of companies listed in Standard & Poor's 500 was 61 years in 1958, and it was less than 18 years in 2016. With the same trend, 75 percent of the companies currently quoted on the S&P 500 will disappear by 2027 (Garelli, 2016), possible reasons for which could be wasted potential, resources, and adverse effect on individuals, communities and economies. Amidst such turbulent and disruptive business environment, leaders of organizations strive hard to build a sustainable organization which is adaptive to the dynamic forces and able to seize opportunities.

Scherr and Jensen (2007) stated that a leader is a person with a commitment towards the achievement of results. This definition, more often than not, speaks of a result-oriented leader and drifts towards the myopic short-term results and could imperil the long-term sustainable growth of the organization, as the organizational success is highly susceptible to the power of leadership behavior (Kets de Vries *et al.*, 2009). This predicament can be broken by having a concerted effort towards organizational renewal from the leaders. Hence, there is a need to identify the attributes that can define a leader and leadership in a more holistic manner.

The Bhagavad Gita is one of the most treasured and prominent Indian ancient philosophical and spiritual scriptures. It dispenses the sapient advice rendered by Krishna to Arjuna – two eminent leaders of Mahabharata, the epic of the feud between two clans – the *Pandavas* and the *Kauravas* in the battlefield of Kurukshetra. In that battlefield, Arjuna, on observing his own kinsmen lined up against him, became anxious at the thought of fighting with them. Krishna then counselled Arjuna, and the dialogue between the two was presented in the eighteen chapters of the Bhagavad Gita.

Bhagavad Gita has been studied through the ages with great interest in the contexts of philosophy, theology and literature. However, the ancient scripture has seldom been researched in the context of leadership. The wisdom imparted in the Bhagavad Gita encompasses many leadership lessons analogous to contemporary leadership theories and practices. This is because the Bhagavad Gita is a profound and holistic treatise embracing a long-term action-oriented vision rather than a myopic result-oriented goal. It encompasses ethical conduct, performance of actions in accordance with one's nature, skills and talents (*svadharma*) without worrying about results and performance metrics (karma yoga), leadership by example, stress management, maintenance of equanimity, diversity, motivation, self-improvement, and so on. Many intellectuals like Albert Einstein, Ralph Waldo Emerson and Henry David Thoreau have echoed the teachings of the Bhagavad Gita in their compositions. The Holy Scripture has been quoted by Senge (2006), one of the leading management thinkers, in his books *The Fifth Discipline* and *Presence*. The leadership lessons in Bhagavad Gita are analogous to the concurrent leadership theories and practices. Bhagavad Gita advocated about work and knowledge thousands of years before Frederick Taylor and Peter Drucker, and also about character, integrity, emotional intelligence before the theories on these aspects came into being.

Literature review

Conventionally described as an art of getting things done, management is an integral component of daily life, both personal and professional. The management process involves planning, organizing, staffing and controlling, with human efforts to achieve desired goals. It also aims at resolving the physical, technical and behavioral crisis through optimum utilization of the available resources. Lack of proper management induces disorder, turmoil, wastage, depression and stress. Men, Money and Material, the proverbial 3 of the 5Ms, if managed well, will lead to the illimitable success of an organization (Omoregie, 2015). Various fields of study, such as psychology, sociology, anthropology, political science, economics and finance have endowed the field of management (Muniapan, 2008). Inter-disciplinary research on management have associated it with several fields of humanities, but morals and virtues, till recently, had been forsaken. Consequently, despite many organizations devising unprecedented business models and bringing about best practices, scams and insolvencies continue to plague businesses. Several companies, such as Lehman Brothers, AIG, Bank of America, General Motors, Circuit City, etc., which embodied the use of best practices in the industry have problems owing to the failure in creating morally and ethically sound practices, with majority of decisions being based on "profit" alone. It is a fallacy that management science saw the light of the day in the West and pioneered the proverbial wheel of

development all around the world and that the East was bereft of management. In fact, India has its own management principles, deeply entrenched in its rich ancient scriptures, culture and heritage, which guides its people during times of upheaval and uncertainty. In the last couple of years, the world has validated a resilient India, better equipped to manage the global crisis. Several Indian giant corporations like Tata, Bharat Forge, and Ranbaxy have demonstrated resilience and adaptive agility like no other, and few prime Indian companies are heading towards bankruptcy. Managerial effectiveness, thus, is of paramount importance in today's incessantly capricious and volatile business environment and is vital for organizations to first generate and then endure their competitive edge (Samson and Daft, 2009).

According to Mintzberg (1973), leaders have to perform ten roles to augment their effectiveness, broadly categorized into interpersonal, informational and decisional roles. To portray these roles effectively, managers require technical skills, human skills and conceptual skills, which are required in different combinations across various levels of hierarchy, with lower levels needing more of technical skills as against leaders at higher levels requiring intense conceptual skills. Since leaders work with people, they ought to have excellent interpersonal skills for communication, motivation and delegation to the workforce (Muniappan, 2008).

During difficult times and dilemmas, one may feel that the lone path to prevent oneself from being overwhelmed by emotions is to avoid those emotions. Sentiments which make one feel fearful and anxious tend to precipitate the defense mechanism of the body, which sabotage one's ability to exert resilience – communication gets distorted, coordination erodes, and the final outcome turns out to be more adversity. On that account, resilience requires tackling the emotional aspects promptly, and using 'relational pauses' by shifting the focal point from team's output of work to its feelings (Barton and Kahn, 2019). The corporations that have an outlook towards employee welfare and spirituality outperform with regard to practicality and creating value (Belwalkar and Vohra, 2016). Teams should be counseled to discuss their emotional turmoil, while listening energetically to others, demonstrating compassion and validating the feelings of all. Resilient teams perceive adversity to be that of the entire team, thus facilitating the diffusion of the emotional strain and creating the scope of acknowledging and repairing all the dysfunctional interpersonal patterns precipitated by anxiety. Such relational pauses increase the likelihood of survival of teams during crises and build relational resilience for the future.

In times of a global crisis, resilience also entails rapid learning and understanding the business environment (Barton *et al.*, 2020), and developing an effective response, by redesigning and reframing prevailing routines, roles, reallocation of resources, knowledge and idea sharing, and acknowledging emotions. Teams and leaders around the world recognize that everyone can benefit from sharing their learning and simultaneous edification through others' experience as opposed to banking upon 'trial and error' (Myers, 2018), thus helping in dissemination of best practices and building a resilient global community.

Bhagavad Gita, the ancient Indian scripture is known throughout the world for profoundly enumerating the constituents of resilient leadership in a holistic manner. Bhagavad Gita's verses 29 and 5 of Chapter 6 pragmatically revolve around a democratic and resilient leader who is able to lead his followers in extremely critical situations and assert that the democratic and resilient leadership is closely intertwined with the leader's personality in terms of his physical, mental and spiritual development, having a sense of tranquility and believing in the philosophy of interdependence (Nayak, 2018).

The COVID-19 pandemic has been an atypical global stressor affecting every aspect of life and lifestyle. It changed the world swiftly and pushed organizations and people towards uncertainty and fear. Thankfully, the wealth of wisdom in ancient scriptures such as the Bhagavad Gita aids in building psychological resilience. This study is conducted to

understand the life skills relevant to leadership in the present and post pandemic times and to showcase the alignment of the ancient Indian wisdom with the current leadership requirements. Furthermore, it endeavors to identify the leadership aspects, leadership styles and failure management as part of resilient leadership.

Research methodology

In addition to collection of secondary information from the ancient Indian scripture Bhagavad Gita, 15 interviews were conducted with employees at the mid-senior and senior leadership levels in the age group of 40 to 60 working in software/computer, aviation, education technology, healthcare, lifestyle, automotive and insurance sectors. During August 2021, telephone interviews were conducted as suggested by the respondents due to the pandemic protocol. Besides questions about their work profile and type of organization, four questions were asked with the objective of gathering the viewpoints of these employee leaders who are at the centre of leadership experience. The questions were as follows:

1. With the Coronavirus outbreak and its plethora of unpleasant side effects, multiple dilemmas and anxieties, what life skills do you feel are of utmost demand in the leaders around the world today?

2. Leadership being a behaviour based role, what aspects of leadership will be gaining popularity in the post pandemic world?

3. What can the leaders of today do to manage the personal as well as professional failures, for themselves as well as their employees in the present situation?

4. According to you, what will be the new workable leadership style(s) in the present and post pandemic times?

The responses to the questions dotted with experiences provided clear understanding of leader opinion and the common thread running across varied industries in terms of leadership. Each interview lasted until information reached saturation, became repetitive and ceased to contribute towards new information (Byrne, 2001).

Validity check

The content validity of the questionnaire was established through consultations with a panel of experts in the fields of management and academics, who reviewed the questionnaire, and as per their suggestions, the statements not commensurate with the scope of the study were removed, and some of the questions were reframed. The inclusion of greater diversity in the sampling groups, i.e., including younger leaders, in the age group of 40 to 50, as well as the veteran leaders of the age group of 50 to 60, helped the researchers to reduce the bias towards any particular type of outcome, thus establishing valid results. Another technique of data blinding was used, wherein the amount of information shared with the respondents, and the questions asked did not talk about the Bhagavad Gita. This has ensured that the research was not biased towards the teachings of ancient Indian literature with preconceived notions of the respondents. All the above steps helped in establishing the validity of the results, and thus prove the accurateness of the qualitative research.

Reliability check

Two processes were conducted for ensuring reliability. The first process comprised of recording the data in a tabular form to facilitate an overall assessment of the data collected. This also helped in quickly interpreting the results as per the record of every individual

respondent and in the concise construction of the preliminary codes for the thematic analysis. The second process used was theoretical data triangulation, wherein other research works in the areas of leadership and the Bhagavad Gita were analyzed and presented as a literature review to support the results obtained. The triangulation of data provided an additional layer of reliable stamping to the research.

The online versions of the Holy Scripture by Mukundananda (2014) and Swami (1971) were referred to for all the quoted verses and translations of Bhagavad Gita.

Data analysis
All interviews were recorded and manually transcribed to minimize the errors. The data were then recorded manually on MS Excel. Table 1 provides an overview of the responses.

Thematic analysis of the responses was implemented using NVivo 7 software. This included several readings of the transcripts, formation of preliminary codes built on response data followed by assemblage and conversion into specific themes which were further classified into two categories of Leadership Life Skills and Resilient Leadership. The Thematic Maps I and II are diagrammatic representations of the same which provide clear graphic guidance (Sharkey and Caska, 2019) while alleviating repetitive review of themes.

Findings
The first category of Leadership Life Skills, as depicted in Figure 1, includes the seven themes of Empathy, Interpersonal/Team Skills, Communication, Time Management, Adaptive Agility, Decision Making and Problem Solving which come across as mandatory skills in the present and post pandemic continuum. What surfaces is a strong amalgamation of empathy, "personal connection with team members" be it physical teams or "hundred percent remote teams distributed across time zones", time management to cater to "no work life balance due to work from home" with the adaptive agility in terms of survival, solution and people orientation extended to inclusive decisions. These become the requisites for "balancing company growth objectives with people morale objectives" leading to organizational sustenance and relational resilience.

Similarly, Figure 2 illustrates the second category of resilient leadership, as comprising of three themes:

Leadership elements where values, empathy, "clear vision" and farsightedness handhold to navigate through uncertainty and prompt the willingness to adapt to technology or change, manage stress and ensure "prioritization of health and wellness and work life balance of self and staff" so as to balance profit and people.

Failure management which includes acceptance of "self and employee failure and moving on", rectification, alternate plan readiness "to spring back", collaboration through "online tools training", employee empowerment and development "to take on bigger roles" and vicarious learning or "learning from others' mistakes" to understand best practices and foster collective resilience.

Leadership styles where leader responses take centre stage with a shift towards time management and not micromanagement, team and individual task balance, delegation with responsibility, positive error handling, collaborative/transformational, assertive/participative and the oft repeated decisive authoritarian with friendliness and empathy. What comes across clearly is a stress on the twin ability to manage productivity and motivation as well as a profit - employee- shareholder focus, a paradigm shift from "profit only to people also". Moreover, some respondents were of the opinion that "leadership models may not be new, but the job models are surely altered". To cater for this, what is required is a new leadership orientation with a focus on human capital and long term development.

With the Coronavirus outbreak and its plethora of unpleasant side effects, multiple dilemmas and anxieties, what life skills do you feel are of utmost demand in the leaders around the world today?	Leadership being behaviour based role, what aspects of leadership will be gaining popularity in the post pandemic world?	What can the leaders of today do to manage the personal as well as professional failures, for themselves as well as their employees in the present situation?	According to you, what will be the new workable leadership style(s) in the present and post pandemic times?
Ability to manage (productivity/motivation) etc. for 100% remote teams distributed across time zones, time management has become a big challenge with no life/work balance due to WFH, building personal connection with team members, showing understanding and empathy with the impacted people, balancing company growth objectives with people morale objectives	Effective communication, time management, empathy/ care attitude, balancing growth with humane perspective	Time management to balance work and family, both for self and employees, better training in online collaboration tools	Change management style from time driven to task driven, no scope of micromanagement, time management
Compassion and resilience	Tenacity	Be a life-long learner, and being a good human being	Balance of focusing on team task and individuals
Positive attitude, compassion	Values and skills	Accepting failures and moving on	Collaborative style
Adaptability and compassion	Quick and smooth decisions that are transparent and reliable, not necessarily democratic or consensus based	Have a clear vision, predict and share info, on basis of accurate data collation and analysis	Transformational / collaborative
Stress management, farsightedness and finding opportunity in distressed situation	Resilient approach, creating work life balance	Take failure as lesson to improve upon than to indulge into it	More delegation with responsibility, expressing confidence and handling mistakes with positivity
Optimistic and positive thinking, risk taking, critical thinking, complex problem solving, predictability skills	Empathetic, inclusive, technology, adaptable	Learn from others' mistakes, empathetic, collaborative, inclusive	Assertive leadership style
Empathy	Motivational	Realistic target fixing and assessment	Participative
Empathy, patience, flexibility	Communication, resilience	Be human, show empathy, put employees first when making decisions (instead of profits), be transparent	More transparency, more communication, more empathy, more balance between profits, employee welfare and shareholder benefits, more voice of employee in decision making
Adaptability, perseverance and empathy	Leadership is a contextual phenomenon and flexibility is something that will be gaining popularity going forward, very rigid notions of what behaviour, personality type and skill sets are appropriate and what are less relevant would be detrimental to effectiveness	Learn from your failures and from your success as well	It will be the same. The pandemic and its effects are not very different from large disruptions (global financial crash of 2008 for example) of the past. The essence remains the same. Those who can weather the storm remain.

Table 1.
Leader respondent's verbatim for the questions asked

(*continued*)

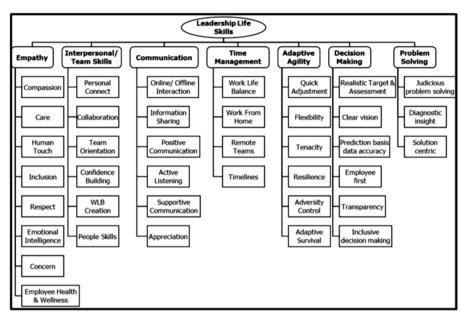|			
Effective communication considering increase in virtual work, respecting each-others personal space & time	Emotional Intelligence	Develop ability & mindset to bounce back	Leadership styles are an individual behaviour and all styles have their own pros and cons. I don't see any change in those styles post pandemic
Discipline, dealing with uncertainty, physical fitness	Displaying empathy, prioritisation of health and wellness of staff, displaying strength in face of adversity	Leaders should think of every failure as a step towards eventual success rather than treating it as a missed opportunity or to fix accountability or blame. Teams should be given psychological safety that they will not be penalized for failures if attempt was sincere	Decisive and authoritarian leadership styles will gain more and more prominence as it is needed to push business in an uncertain world, but the leader also will need to display utmost friendliness and empathy
Leaders need to be compassionate and specially in these current times must have positive attitude towards the unpredictable scenarios! Moreover, build confidence of people that good times will be back and ensure employees do get into some sort of lifestyle change by indulging in health related activities	Resilient leadership	Be a little patient, switch to some yoga program and make it a lifestyle change, believe any adversity is a platform for some new beginning … tough times never sustain only tough people do! A never give up attitude helps to fight the scenario! Manage financials in a more efficient manner and look out for some opportunity which can help sustain financially!	Leadership is all about managing humans so styles will not change due to pandemic but job styles may change … There may be more new job models coming up having to work from home and digital interventions will increase!
Good communication and motivational skills	Compassion and respect for individuals	Training and development of their manpower and empowerment of individuals to take on bigger roles	Providing independence to work in any environment and flexibility of working hours, yet maintaining good communication with team members
Versatility, thinking on the feet, gravitas	Multifunctional experience, tech ability	Develop professional skills and physical fitness	Empathetic, collaborative
Transversal soft skills like communication & collaboration, stress management, adaptability, analytical thinking & problem solving, empathy & sympathy	Empathy, communication, human aspect, hearing the unspoken, engagement	Proactive in perspective, connecting the dots, process based accountability matrix, real time data analytics, engagement	Leading from the front, trust in the team, technology orientation, change management

Table 1. Source: By authors

Discussion - situational shift and walking the talk

The coronavirus pandemic has been a touchstone for decision and disposition of leaders across the globe. Over and above wrecking havoc in people's lives, the economic upheaval caused by it is significant and radical, precipitating an unparalleled change. As a result, the health of businesses is amalgamated with the well being of its workforces and the entire ecosystem like never before. This has urged the companies to revamp swiftly and recognize creative, alternative mechanisms for survival. Today's leaders have to confront the demands of both the professional as well as personal fronts, while playing a pivotal role in steering their organizations across the impediment of the COVID-19 crisis. During difficult conditions, the leaders will influence the overall culture of the organisation (Uygun and Gupta, 2020) as the colleagues will look up to them to emulate.

Source: By authors

Figure 1.
Thematic Map I

*yad yad ācharati śhreṣhṭhas tat tad evetaro janaḥ sa yat pramāṇaṁ kurute lokas tad anuvartate
II3.21II*

Whatever actions great persons perform, common people follow. Whatever standards they set, all
the world pursues.

With the turbulent changes in the business world in the post pandemic era, the conventional
leadership skills will be outmoded. Leaders need to fortify the critical shifts in their own
established sets of attitudes as well as that of their workforce. Self awareness and
introspection of the leader's capacities, traits, values and needs, when mapped with the
reflected indicative capacities, competencies, external actions, and behaviours provide
positive reverberations for them (Narayanan and Vijayalakshmi, 2020). The cardinal step
towards recovery of organizations would be to rediscover its purpose. Many companies and
their leaders are now looking forward to grabbing a niche to bounce back and change their
business models. As per one leader respondent, "The need of the hour is more transparency,
better communication, more empathy, more balance between profits, better employee welfare
and shareholder benefits, and an inclusive voice of employee in decision making."

*niyatam kuru karma tvam karma jyayo hyakarmanah sharira-yatrapi cha te na prasiddhyed
akarmanah II3.8II*

You should thus perform your prescribed duties since action is superior to inaction. By ceasing
activity, even your bodily maintenance will not be possible.

In lieu of narrowing down their focus, resilient leaders should disengage themselves from
bleak thoughts and move towards the ancient Indian wisdom and guiding principles to
furnish positive resonances to their followers. The current social milieu should be exploited
for the situational shift of discovering opportunities amidst crisis through unconventional
utilization of their resources to steer their organization towards stability. Many
organizations, during the present pandemic got involved in corporate social responsibility
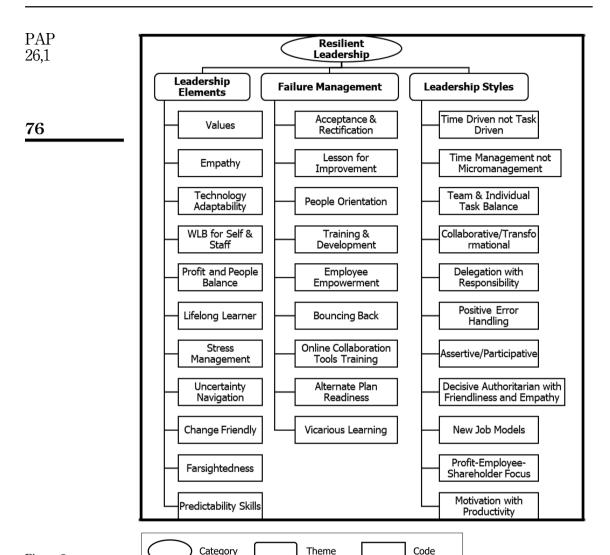
Figure 2.
Thematic Map II

Source: By authors

activities and took to the manufacturing and distribution of face masks, sanitisers and other personal protective equipments (Dwivedi and Kumar, 2021). At this juncture, this shift has to be from short-term contingency planning to mid- and long-term economic and scenario planning, ensuring the alignment of financial resources to revamp the business. Business continuity models wherein alternative work procedures utilizing new prototypes like social distancing, flexible workplace, and sanitization, along with the best use of technology need to be set up. In the post pandemic era, automation and state of the art technology should be regarded as inextricable components of business resilience instead of a mere cost-saving mechanism.

People-centric approach and better interpersonal relationships:

*tmaupamyena sarvatra samam pashyati yo 'rjuna sukham va yadi va duhkham sa yogi paramo
matah"* II6.32II

I regard them to be perfect yogis who see the true equality of all living beings and respond to the joys
and sorrows of others as if they were their own.

For leaders, the miniscule gesture of providing more support to one's employees just like his
own, with the lone aim of lending a helping hand and to steer them through the crisis will help
reap big dividends. While resuming businesses, leaders must consider and provide for the
physical as well as the mental well-being of their employees. Resilient leaders would be
expected to be kind and compassionate towards their employees with a focus on creating a
sanguine and healthy ecosystem, enabling their employees to thrive. A stronger belief in
Aparigraha or the feeling of non-possessiveness, and generosity, when practiced, has a
positive impact on group performance (Bali *et al.*, 2019). Decisive leadership styles will gain
more and more prominence as it is needed to push business in an uncertain world, but the
leader will also need to display utmost friendliness and empathy towards the workforce,
irrespective of the levels and social standing.

vidyā-vinaya-sampanne brāhmaṇe gavi hastini śhuni chaiva śhva-pāke cha paṇḍitāḥ sama-darśhinaḥ
II5.18II

The truly learned, with the eyes of divine knowledge, see with equal vision a Brahmin, a cow, an
elephant, a dog, and a dog-eater.

The frontrunner companies, known for being customer centric, attentive towards competitive
moves, new technologies lose market leadership and perish prematurely. Similarly, the result-
oriented leaders exhibit myopic focus on short term results and fail to keep an eye on long
term sustainable organizational growth. New business models and best practices
notwithstanding, the real icons fail primarily due to profit alone decision making and lack
of ethically sound practices. What emerges is a major shift from micromanaging to macro
concern for team turmoil and demonstrating compassion. The team in turn tends to respond
in terms of efforts towards productivity and countering crisis. Adversity then belongs to the
entire team which leads to stress diffusion, emotional repair, and survival through crisis. This
resilient leadership also brings rapid learning of business environment, vicarious learning
from others' mistakes, sharing relevant best practices while simultaneously building
collective resilience.

Therefore, according to another leader respondent, "the twin ability to manage
productivity and motivation for 100 percent remote teams distributed across time zones,
and time management has become a big challenge with no work life balance due to work from
home" and the solution seems to be "building personal connection with team members,
showing understanding and empathy with the impacted people and balancing company
growth objectives with people morale objectives". The single thread traversing the leadership
firmament seems to be the human element being as important as the growth factor in present
times as was consistently vouched by ancient proposition of *Vasudhaivkutumbakam* (the
whole world as one family), which was buried under the debris of only profit chasing
relegating people contribution and well being to the background.

Conclusion
COVID-19 is a global issue and excellent leadership is required to navigate through this crisis
which provides leaders with the scope to bring about enhanced team coherence and
solidarity. Businesses henceforth will continue to face drastic changes and business leaders
must ensure that they devise and implement strategies foreseeing the future dynamics, which
equip them with indispensable business agility to enhance productivity and gain success in

the post-COVID world. The significance of resilient leadership is not just for the continuity of business operations, but also for being both people- and result-centric. It is important as COVID-19 may not be a temporary crisis but perhaps a continuous hazard which therefore places a huge demand on resilient leadership, business agility to navigate uncertainty and progressive yet demanding alteration in organizational mindsets. A typical crisis, according to Deloitte (n.d.), plays out over three time frames:

Respond - react with the present situation, prepare and manage continuity

Recover - learn and emerge stronger

Thrive - the ability to confidently prepare for the next normal

Encapsulated in few sentences, the strong interconnectedness between the ancient Indian wisdom, as propagated by the Bhagavad Gita continues to bring paradigm shifts in the way today's leaders bring a renewed and enriching perspective towards improving ecological consciousness, communitarian roots and compassion at workplace among others. Leaders today have the significant responsibility to skillfully consider all the three time frames concurrently and work accordingly on resource allocation to mitigate the impact of the pandemic and help their organizations strive and grow.

armany-evādhikāras te mā phaleṣu kadāchana mā karma-phala-hetur bhūr mā te saṅgo 'stvakarmaṇi II2.47II

You have a right to perform your prescribed duties, but you are not entitled to the fruits of your actions. Never consider yourself to be the cause of the results of your activities, nor be attached to inaction.

This extensively celebrated and frequently quoted verse from the Gita expounds the direction of actions towards a goal, without the consternation of the outcome of those actions. Actions get converted into passion when they are free from the subjugation of results, and passion is eternal. With such a perspective, the crisis has the likelihood of providing a huge scope to trudge ahead and add greater value and pragmatic impact on society, instead of just bouncing back to the status quo.

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Government support to Pakistani women entrepreneurs during the COVID-19 pandemic

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Abstract

Purpose – Under the unique context of COVID-19, this paper aims to analyze how the Government of Pakistan (GoP) provides financial and non-financial support to women entrepreneurs in Pakistan. Drawing on the resource-based theory of entrepreneurship (RBTE), the study advances the understanding of resources and grants offered by GoP to women entrepreneurs to help them in business survival.

Design/methodology/approach – The study adopts qualitative research method to address the questions: how does the Pakistani government respond to issues faced by women entrepreneurs during the COVID-19 pandemic, and what assistance and initiatives were implemented by GoP? Semi-structured interviews were conducted with twenty on-job government officials related to the entrepreneurial sector in Pakistan.

Findings – The paper reveals that during the pandemic, GoP keenly communicated with women entrepreneurial representatives to comprehend their business challenges. In addition, waivers and incentives were provided to support their business activities. GoP further invited women entrepreneurs to contribute their knowledge and give suggestions in policy making.

Originality/value – Lots of research have been conducted to identify the issues faced by women entrepreneurs during the pandemic. However, the specific strategies, policies, and support provided by the governments to address these issues have often been overlooked. This paper fills such gap with focus on the governing bodies and policymakers in Pakistan towards women entrepreneurship during the COVID-19 crisis.

Keywords Governing bodies, Policymakers, Women entrepreneurship, COVID-19, Technology adoption, Financial support, Pakistan

Paper type Research paper

Introduction

Over the years, governments around the world work hard to implement the policies and sustain economic growth (Ruvalcaba-Gomez *et al.*, 2020). Governing bodies try to ensure that Small and Medium Enterprises (SMEs) and entrepreneurial ventures engage with each other and contribute to social and economic growth (Juergensen *et al.*, 2020; Priyono *et al.*, 2020). Nevertheless, the COVID-19 pandemic has changed the business operating dimensions. Not only venture owners are worried about their sustainability in the market, even governments around the world are also stressed to overcome this crisis (Porcher, 2020; Stevens, 2020). Strict lockdowns and social isolation cause a massive financial shock which pushed governments to provide unusual financial assistance for employment, livelihoods, damaged enterprises, and entrepreneurial ventures (Chaves and Fedriani, 2020). Additionally, COVID-19 adversely

affected the economic situation, especially, caused market recession (Nikbin *et al.*, 2021), mental health issues (Hussain and Li, 2022b), and unpaid social work (Ratten, 2020). Scholars also concerned about the situation of women entrepreneurs during the COVID-19 pandemic (Mustafa *et al.*, 2021; Salman *et al.*, 2022). Women entrepreneurs in the commerce, service, and informal sectors were disproportionately affected by the lockdown (Kumar and Singh, 2021).

The researchers are keen to identify the factors and issues faced by women entrepreneurs during the COVID-19 pandemic (Brown, 2021; Manolova *et al.*, 2020; Vasilić *et al.*, 2020). For example, study by Mustafa *et al.* (2021) showcased the challenges faced by women entrepreneurs in Pakistan. Their study emphasizes that Pakistani government should respond to the social-economic challenges encountered by females during the COVID-19 lockdown. Furthermore, it was identified that most women entrepreneurs were using conservative business models and that they endeavoured to shift to a digital business model (Ge *et al.*, 2022). In addition, Shafi *et al.* (2020) conducted a descriptive study in Pakistan to understand the consequences of the imposed isolation during the COVID-19 pandemic on SMEs. They found that the majority of entrepreneurs were unprepared for such a big crisis. Under the unexpected lockdown, the entrepreneurs and business owners had to shut their businesses as they had no experience of dealing with such circumstances. This study also revealed that the major drop in sales and profit was due to a limited supply chain, bans on mobility and excessive transportation, and increase in raw material costs. Thus, mostly entrepreneurs were not able to adapt to this unusual market pressure and advancement in fintech (Ayoungman *et al.*, 2021), and marketing (Hinson *et al.*, 2021).

Meanwhile, GoP launched the "Ehsaas Emergency Cash Program", under which PKR144 billion was allocated to 12 million families of daily wage earners. Thus, it immediately distributed cash relief of PKR12,000 among indigent families (KPMG, 2020). However, no clear policy and support was offered by GoP to entrepreneurs during the pandemic. During April 3-14, 2020, the Small and Medium Enterprises Development Authority (SMEDA) acknowledged that 920 SMEs and other small businesses in Pakistan were inadequate to generate any revenue and that the pandemic has posed a serious threat to the survival of SMEs (SMEDA, 2020).

Scholars tried to address issues and provide suggestions to policymakers for developing policies for women entrepreneurs. However, the research on the strategies, policies, and support provided by governing bodies to women entrepreneurs has been overlooked. Therefore, this paper aims to fill the gap by exploring the support provided by governing bodies and policymakers to the Pakistani women entrepreneurs during the COVID-19 pandemic. The objectives of the study were to identify and analyze the supporting programs proposed by GoP for women entrepreneurs. The research questions are: how does the Pakistani government respond to issues faced by women entrepreneurs during the COVID-19 pandemic, and what assistance and initiatives were implemented by GoP? The authors conducted interviews with on-job government officials under the light of resource-based theory of entrepreneurship (RBTE).

The RBTE addresses the availability and accessibility to required resources for business operations (Alvarez and Barney, 2017; Barney, 1996), especially resources reachable to entrepreneurs (Alvarez and Busenitz, 2001). It is referred as a prearranged strategic sustenance that allows business entities to compete with their competitors in the market (Acedo *et al.*, 2006; Das and Teng, 2000), and is an extended version of the Resource-Based Theory (RBT). Grant (1991) claimed that available resources that are valuable, infrequent, difficult to reproduce, and not interchangeable best describe a firm or business for long-term success. It is also argued that business competitive advantage, accuracy in timely utilize available resources and skills provide business leverage (Barney, 1996; West *et al.*, 2008).

This study is an effort to link the RBTE with support provided by GoP to women entrepreneurship during the COVID-19 pandemic. If the government provides support and available resources to the women entrepreneurs, they can likely survive in the longer run. Accessibility of resources plays a significant role in an entrepreneurial venture. Globally,

some organizations signed a partnership with the governing bodies to empower women entrepreneurs (Noor *et al.*, 2021). However, legislative rights are not properly exercised by the government bodies to empower women at root level (Rasche and Waddock, 2021).

Research methodology

The study deploys a qualitative method which according to Bengtsson (2016) can effectively communicate the expression of government officials. The purposive sampling technique was adopted to ensure the specific groups of people answer questions, and the researchers to understand their point of view (Campbell *et al.*, 2020). To collect the data, the researchers obtained informed consent from the officials so that they were duly informed about the purpose of the research, the nature of interview questions focusing on women hurdles, the government's up-to-date response towards COVID-19 pandemic and business continuity, and policy options. With the consent of on-job government officials that their name, identity and position will be kept confidential, interviews were conducted. Thus, the respondents in this study were kept anonymous. Appointments were made with government officials in Islamabad (the federal capital of Pakistan). The majority of officials were part of SMEDA and members of the chambers of commerce of four provinces, Women Business Development Center, and National Incubation Center.

Interviews were conducted during November and December 2021. A total of twenty officials were approached for interviews with practising COVID-19 standard operating procedures: twelve interviews were conducted face to face, six interviews were through online phone, and two were on zoom meetings. With the respondents' consent, audio-based interviews were recorded, which lasted from fifteen to twenty minutes. The interviews were conducted in English and Urdu. For data analysis, all interviews were properly compiled and transcribed in English. In case of Urdu word translation, lack of clarification, and grammatical omissions, the researchers used square brackets to insert the word as this technique is suggested by Bryman (2016).

Data analysis was conducted by NVivo version 12. Conceptual content analysis was implemented to analyze the data, and codes of themes and sub-themes were drafted accordingly (Bengtsson, 2016). The main themes identified in the study were: government response, assistance, and initiatives in COVID-19 and women entrepreneurs in policy options. Some sub-themes were further identified.

Findings

The following responses from the on-job government officials revealed that GoP attempted to assist Pakistani women entrepreneurs during the COVID-19 pandemic. First, the preference was to organize online trainings that help them in changing business models. Second, support in paying utility bills is rendered so that they can operate businesses. Third, GoP assists banks to recompense them with financial loans so they can survive accordingly. Fourth, they initiated to invite women entrepreneurs to join as a partner in policy making. The participation of women entrepreneurs in policy development helps the government to derive women entrepreneurial policies that support them in the long run.

The researchers used the abbreviations of Government Official Response with the number (GOR1, GOR2 . . . GOR20) to illustrate the twenty respondents.

Theme 1: Government response, assistance, and initiatives in the COVID-19 pandemic
Digitalization by trainings
The primary task preferred by governing bodies was to help women entrepreneurs to upgrade their business models with latest technology adoption. Before COVID-19, GoP

promotes self-employment by providing managerial and technical skills training, particularly for women who wish to start a business and pursue entrepreneurship in line with their interests and objectives, while also contributing considerably to socio-economic growth (Afshan *et al.*, 2021). However, these trainings were more focused to motivate women towards starting business. Therefore, businesses were mostly operating with manually and traditional methods. It was stated by several officials that mostly women entrepreneurs were using typical conservative business operational methods in market. Women were mostly performing their tasks manually. Therefore, governing bodies address technology gap on priority basis. According to GOR1, GoP initiated various online trainings and online awareness sessions for Pakistani women entrepreneurs to expand or shift their business models to technology-based ventures. GOR1 particularly identified the situation by stating that:

> Women usually operate businesses conventionally. They have to change and upgrade according to global standards. Our priority is digitization, e-commerce and efforts for the transformation of IT sector of the country are underway. IT Board, SMEDA, and government institutions are playing a significant part by enabling the youth and especially the female to run their businesses online through workshops using digital tools and platforms.

Same in this regard, GOR2 clarified by saying that GoP equipped provincial IT and entrepreneurial boards to serve entrepreneurial community. He narrated that:

> We provide different online coaching related to digitalization and technology implementation. IT board is working hard to train plenty of female entrepreneurs. However, I must say that right now, there is no digital platform available solely for female sellers to display and market their products. To avail this facility, making of a Women IT Park is in the pipeline. Our future project also includes a one-window facility, for both genders, but fair sex will be prioritized for services provision. All different departments will be brought under one roof so that entrepreneurs will find it easy to legalize the process.

In addition, GOR3 identified various departments and boards performing the task of delivering online training, GOR3 mentioned that:

> The government introduced the following digital platforms; to train women enterprises for digital businesses such as Plan9 (Incubation Center), Punjab-IT Board (PITB), Kyber-KhatunKhawa IT board (KP-ITB), Provincial Incubation Center, and National Incubation Centers (NIC) program for digital/online businesses. Various workshops on digital businesses through SMEDA and Digital youth Summit were held in October - November 2021.

GOR6 expressed that GoP never discriminates against women entrepreneurs, women hold significant positions culturally and socially in Pakistani society, therefore, they are kept on priority. He justifies as:

> I am a part of the incubation centre where soft skills training and mentorship is provided that's required for business development. During COVID-19 when we are working on developing e-commerce training, we noticed that many women are inquisitive about Amazon and want to engage with the brand. Therefore, the government initiated research and come up with a digital platform for women, including Amazon. A lot is happening in this context, as, other business websites like eBay do exist and will open doors of business opportunities. The government is already engaged with women entrepreneurs. An e-commerce council has been set up and women are encouraged to utilize these facilities because digitalization, technology or e-commerce is the future.

Such was the stance of the respondents regarding this aspect of the business community, especially about the women entrepreneurs. GOR1 highlighted the conventional way of business operation by women entrepreneurs which is due to limited resources, knowledge, and awareness. Most women entrepreneurs are still executing their business with old methods. However, GOR1 clarified that the government is focusing on the execution of

business processes and also tries to help women entrepreneurs by the adoption of technology in businesses. Comments by GOR2 and GOR3 recognize the priority of GoP towards the digitalization of business. Therefore, various departments were connected to utilize available manpower resources to train women entrepreneurs during the COVID-19 pandemic. GoP took a stance to support conventional businesses and trained women entrepreneurs to upgrade their businesses by adopting technology.

Relaxation in utility bills

In total, 95 percent of small businesses use commercial electric and natural gas meters (Rizwan, 2020). GoP reported the wavier of utility bills for business community (Rizwan, 2020). In industrial zones, special package of PKR70 billion for laid-off workers has been announced (KPMG, 2020). Likewise, GOR7 discussed the precautionary measures taken by GoP. He narrated that:

> On realizing the severe effects of COVID-19 pandemic on the national and local economy, the federal and local governing bodies initiated the following steps to offset the adverse effects of COVID-19:

i. Rebate in utility bills.

ii. Exemption from rent where SMEs were housed in the government property.

iii. Announced special matching grant package for COVID-19 affected SMEs out of Multi-Donor Trust Funds (MDTF).

iv. Grant facility for SMEs.

v. Business Recovery and Resilience.

vi. Provision of grant facilities for industrial stitching units owned by females.

In support of this argument, GOR10 mentioned that GoP attempted to adopt tax policy by providing subsidies to affected women entrepreneurs during this ongoing pandemic. GOR10 narrated:

> Government has announced 25% reduction in tax liability for women entrepreneurship development, for income from business where banking will be based on equality policy for financial inclusion of women.

The government is addressing the economic woes of the business community, especially for small traders, and their electricity bills will be waived for the then-upcoming six months. GoP announced six months wavier to SMEs and entrepreneurs in electric and natural gas utility bills in the first wave and strict lockdown of March and April 2020 (Rizwan, 2020). Some policies are in the formulation process for sustaining the businesses and economy.

Interest-free loans

Prime Minister Imran Khan announced a PKR100 billion ($63 million) package for agricultural sector, SMEs, and small industrial zones, and for exporters loan interest payments were remained deferred temporarily (*Dawn*, 2020). GOR11 recounted that GoP has strained to discourse business policies. He said that with the collaboration of State Bank of Pakistan (SBP), his department kept a certain quota for SMEs and industrialists as a relief in the form of financial measures. Such financial measures comprised of schemes like interest-free loans, subsidies, and tax incentives. In support of GOR11, the statement of GOR12 is worth noting:

Talking about the financial support, GoP and SMEDA implemented various development projects. Donors and investors were called, and different grants for the business community were advertised. It is important to mention that women were given special priority. The female entrepreneurs, who were hit hard by the pandemic can benefit from these grants and revive their businesses. They are eligible to apply for opportunities announced by the government free of cost. Several women applied, and around thirty women were beneficiaries of this project in KP or Punjab [provinces of Pakistan]. A variety of businesses were assisted, including the saloons, educational institutes, health clinics, etc. The grant ranged from four hundred thousand to one million and this helped their businesses to survive, and thus are operating smoothly.

On the other hand, confrontation is observed by women entrepreneurs for loans from banks. Mostly, women entrepreneurs are followers of Islam. A loan is considered a gratuitous contract in Islam. Therefore, huge opposition is observed as they prefer to bypass commercial banks. Conversely, few women entrepreneurs stated that banking system is very complex for women, as banks have lengthy procedures, heavy markups, hidden charges, and interests that dishearten them (Mirza and Jabeen, 2020; Zubair and Chaudry, 2014)

In this regard, GOR13 narrated that:

As a Muslim, we prohibit interest on loans. Mostly, females resist taking a loan. The government is working strictly on this domain. We are doing a collaboration with Islamic finances and the 'sharia' council to guide us on interest-free loans and provide solutions for this situation. We are optimistic to ensure that friendly policies and processes will be created for women entrepreneurs.

The Islamic Republic of Pakistan legislation is based on Islamic principles (Abbas and Riaz, 2013). Islam as a religion never stops women to control and own businesses. Such as the first wife of Prophet Hazarat Muhammad (PBUH), Khadija was a successful business woman (Peracha, 2017). Thus, religion is not an issue, however, some pre-Islamic tribal practices (mostly social and cultural practices) often influence social settings (Abbas and Riaz, 2013). Therefore, women in Pakistan face hurdles in performing business activities. In some cases due to lack of awareness, influence of social and cultural practices, and no proper support for governing bodies, women entrepreneurs are nonexistent among male entrepreneurs (Kalnins and Williams, 2014; Noor *et al.*, 2021; Shaista and Filzah, 2020).

From the above analysis of the opinions and comments of the respondents, it can be asserted that the government is keenly observing each aspect of providing loans and especially interest-free loans for women entrepreneurs to carry out their businesses.

Theme 2: Women entrepreneurs in policy options

Back in the 6th Five-Year Plan (1983-88), Pakistani legislation significantly brought a major policy shift for women. Women are considered as a source of empowerment and progress in economic growth. Benazir Bhutto was the first woman to head a democratic government in a Muslim majority country (Pakistan) (Shafqat, 1996). She served as the 11th and 13th prime minister of Pakistan from 1988 to 1990 and from 1993 to 1996 (Ziring, 1991). In her regime (1989), the First Women Bank Limited (FWBL), a state-owned commercial bank was functional to support the financial requirements of women entrepreneurs (Bilquees and Rauf, 1991). FWBL's mission is to enhance women's socioeconomic and financial situation in both urban and rural areas by simplifying banking processes for them, and to help achieve their financial goals. Thus, plenty of women entrepreneurs are now freely operating their businesses in the Pakistani market (Nabeel, 2003). In her second term, she introduced various loan schemes for women entrepreneurs (*Dawn*, 2008; Fatima, 2021). Moreover, SMEDA is interlinked with women chambers of commerce and industries in all four provinces, fully functional to help and support women entrepreneurs of Pakistan.

On-job officials narrated that their departments are closely monitoring and assisting women chambers. GOR15 quoted that his department invited women entrepreneurs to

discuss issues and challenges faced by women entrepreneurs during the pandemic. Furthermore, women entrepreneurial representatives were asked to participate in policymaking sessions. Frequently, heads of women chambers approached departments like SMEDA to highlight issues and proposed solutions to their problems. However, the undertaking of policymaking is difficult in COVID-19 scenario as it might take more time than usual. GOR16 reported that:

> Policies are not formulated only for weeks, they are framed for months or years. The policy is yet in the formulation phase and it will take a bit of time to get this task accomplished so, the concrete things pertinent to COVID still exist. As the COVID is a recent phenomenon, therefore, all aspects are kept in mind by policymakers while developing policies. I must add this time government invited women entrepreneurs especially, so they can contribute to the policymaking process.

GOR2 also mentioned in reply that:

> We invited women entrepreneurs in policy-making matters like getting their recommendations regarding formulation of Federal Budget, devising SME Policy, SME Action Plan, and Trade Policy through chambers and on an individual basis as well. However, the issue is they are not actively participating in such activities.

Hence, women participation in policymaking will strengthen the role of women entrepreneurs. Officials' positive response towards women entrepreneurs' participation in policymaking sessions shows that GoP is taking women seriously in economic development.

Awareness of policy making
Women chambers of commerce and industry are functional in all four provinces of Pakistan, with the latest and modern types of equipment and office requirements. In the beginning, difficulties were faced by almost every organization (Koen *et al.*, 2011) and the newly established business chamber finds it difficult to be run smoothly (Bennett, 2016). Therefore, the chamber's executive committee sought assistance from donor organizations to ensure that the organization develops and thrives (G. Moodie and Mitra, 2020; Katsaitis, 2020).

GOR17 commented on the advertisement of the ease in applying reliefs of utility bill, grants, wavier of tax, and loans with zero interest as announced by GoP. Governing bodies try to keep the women entrepreneurs aware of new policies and strategies of government. GOR18 commented that:

> During this pandemic, SMEDA helped a lot of women entrepreneurs, but the problem is a lack of understanding and awareness. Although the government is providing them with a helping hand, they [women entrepreneurs] failed to understand that the government cannot at any cost give 100%, whether its finance, platforms for selling products or training provision. There is a sharp contrast between reality and expectations. As the government can only support and try to push businesses. It is concerned about traders, industrialists and entrepreneurs and for their betterment, formulation of policies is in progress.

GOR20 revealed that their departments arranged interactive sessions for women entrepreneurs regarding addressing policy requirements. He told:

> When it comes to decision making and taking opinions for policy formulation, the government supports the women. In this regard, a series of meetings were held with the women representative, women chambers, women entrepreneurs, women in tourism; education, and beauty related business etc.

Due to social and cultural influence most of women entrepreneurs lack in entrepreneurial and policy making knowledge (Rehman and Azam Roomi, 2012). However, various awareness sessions have been arranged by business chambers and women helping organizations to educate women (Langbridge, 2021; Shaista and Filzah, 2020). Therefore, knowledge plays a significant role for any success (Hussain and Li, 2022a) and achieving targets.

Women in policy making
When conducting the interviews, it was observed that the officials mostly identified the lack of legislative knowledge among women entrepreneurs in Pakistan. They mentioned that women entrepreneurs were hesitated to register their businesses. Women entrepreneurs prefer to operate underground as GOR19 quoted that:

> Certain issues do not concern males, rather these are women-oriented and can be better understood and resolved by women. In devising policies regarding public welfare i.e. business enhancement, women should be involved too. Therefore, they should be prioritised in the policy-making mechanism and businesswomen are welcomed. However, their reluctance to register businesses, account for the reason they are not made part of policymaking. Women are operating in the market, but we don't know who they are. Because they prefer to be underdogs. And we can't help them until they properly register their businesses.

Contradicting to the above statement, GOR2 identified a few registered women entrepreneurs. According to GOR2, these women are enjoying perks and benefits offered by GoP. GOR2 narrated:

> I am part of policymaking; we invite registered women entrepreneurs from all over Pakistan. Their suggestions are taken constructively in various sessions. The efficiency of policies will depend on the sincere comments on issues from these women. We are always ready to support our sister entrepreneurs. However, females mostly show resistance. I feel due to social and cultural pressure, they avoid speaking for their right and business. But those who are registered with business chambers, SMEDA, and other governing bodies are enjoying the benefits provided by GoP during an ongoing pandemic.

Furthermore, government officials also identified that women entrepreneurs are more privileged in various aspects than male entrepreneurs. Due to the social and cultural status of women in Pakistani society, women entrepreneurs enjoy extra incentives. However, due to the lack of knowledge and awareness, they were left behind. GOR 18 stated:

> If new industrial policy is scrutinized, then there would be a vivid difference in the new and old policies. New policies are almost antithesis to the old, outdated policies. Under new policies, there are certain initiatives where women entrepreneurs are kept more privileged than their male counterparts. There are certain areas where women entrepreneurs are given exclusive privileges. For instance, they are given 50% exemptions in all business activities. The reason for giving extra privilege to women is to increase their number in industrial sector. Furthermore, women should be a part of policymaking at all tiers. Women have to take interest in legalities. Therefore, policies cannot be formulated without women's active participation.

Thus, all the replies from government officials reveal that GoP is working seriously on the issues faced by Pakistani women entrepreneurs in the ongoing wave of COVID-19 pandemic. GoP provides support to women entrepreneurs in technology adoption which is one way for them to survive in the market, on top of relaxation in utility bills and offer of loan facilities. Inviting women entrepreneurs to policymaking sessions obligated GoP to equally treat women entrepreneurs with male entrepreneurs. Thus, policymaking is the translation of government visions to meet the objectives.

Discussion
The research provides valuable insights into the responses, assistance, and support of women entrepreneurs of Pakistan. During the COVID-19 pandemic, the Government of Pakistan tried to bring all the provincial and local governing bodies together for developing several online training platforms. The focus is on solving issues faced by women entrepreneurs and helping them to change their business models accordingly. Governing bodies aimed to shift women businesses from traditional business models to technology adoption models. Various scholars identified that women entrepreneurs themselves try to

upgrade their business models (Afshan *et al.*, 2021; Mustafa *et al.*, 2021). Besides, it was identified by government officials that there is no government based online platform for women entrepreneurs. Nevertheless, it was mentioned that women entrepreneurs' presences on social media (Facebook and Instagram) demonstrate the somehow adoption of technology among women (Zafar *et al.*, 2019). Moreover, SMEDA (2020) published newsletter to promote an online platform for SMEs named "Meet SMEDA". This portal is planned and technologically advanced under the National Business Development Program. The aim is to enable digital existence and connection between SMEs and SMEDA's officials.

Drawing upon the empirical evidence under the context of COVID-19 pandemic, the RBTE significantly contributes to the existing knowledge by revealing the government resources provided to women entrepreneurs to sustain their businesses. Thus, the study also tries to link the RBTE with support and resources provided by government to women entrepreneurs, such as the ease in electricity and utility bills relief during the pandemic crisis. Giving leverage and relaxation in utility bills is a kind of resource-based support provided by government to women entrepreneurs.

The study potentially contributes to the understanding of the critical factors related to interest-free loans for women entrepreneurs. On 9 September 2020, a report published by (KPMG, 2020) stated that an official notice was issued by the SBP for interest-free loans approval. Moreover, the SBP introduced temporary regulatory measures to maintain banking system soundness and sustain economic activity. Refinancing applications, reduction in end-user mark-up up to 5 percent and easy banking system was the priorities of government plan of action. GoP tried to simplify the banking process for women entrepreneurs. It also dialogued with private sector banking to offer low mark-up or interest-free loans for women entrepreneurs.

Until a decade ago, there was a hindrance regarding women participation in legislation process. The compatibility of the Trade Organizations Ordinance 1961 (Government of Pakistan, 2016) is not supported in this modern era of dealing business functions. With the passage of time, business environment has been drastically changed around the globe (Nikbin *et al.*, 2021). In modern days, economic growth of a country is associated with women participation, and technology adoption is considered as a significant variable for making business (Afshan *et al.*, 2021; Manolova *et al.*, 2020). Still, in some societies women participation in policymaking is limited (Al-Ahmadi, 2011; May *et al.*, 2005). However, the on-job officials admitted that their departments requested and connected with women entrepreneurs to assist them in COVID-19 related business policy. Therefore, platforms like women chamber, PITB, Durshall, or KPIT-Board and Plan9 responsibly contributed to providing more policy-making sessions.

Nabeel (2003) identified in his research that due to various factors, there were few women entrepreneurs in legislative processes. His study revealed that the lack of opportunities, freedom of mobility, social and cultural influence, and no access to education are the basic reasons of women's not being part of policymaking. However, this situation of women entrepreneurs remains the same due to lack of awareness and education about policies (Hussain *et al.*, 2019; Shaista and Filzah, 2020). A joint report by SMEDA and GoP declared that only 50.42 percent of SMEs in Pakistan were well aware of the policies and aid announced by government during the COVID-19 pandemic (SMEDA-Abli, 2021).

Conclusion
Under the knowledge of RBTE, access to essential resources encourages business owners to grow in the market. It is vital to recognize that the association of resources such as leadership, finance, human resources, socio-economic situation, and political stability has strong influence on entrepreneurial performance (Hayter, 2013; Songling *et al.*, 2018). In this study, the role of government has been linked with RBTE and is visible by the government responses to women entrepreneurs.

To conclude, this research has identified that GoP is keen to deliver all existing resources and capital to the community for their business survival. Likewise, free online training for shifting business models is a priority of governing bodies. It is worth noting that COVID-19 might bring governing bodies and women entrepreneurs on the same page in terms of communication to solve the problems of Pakistani women entrepreneurs.

Recognizing the challenges faced by Pakistani women entrepreneurs during the COVID-19 pandemic, the government has taken various initiatives to ensure equal opportunities and a level playing field. Several independent agencies, such as the SMEDA, the Women Chamber of Commerce and Industry, and the First Women Bank, have been working to provide them with incentives. These regulatory authorities assist women entrepreneurs in obtaining microfinance, taking advantage of market opportunities, and receiving administrative support in order to manage a successful business. We cannot overlook the COVID-19 shocks that have negatively impacted the entire socio-economic and business environment. Nevertheless, the pandemic has posed a challenge to the traditional entrepreneurial operations and allowed women entrepreneurs to think out of the box. They have to register their business and participate actively in government-organized activities. By doing this, they could avail grants, reliefs and support for business survival in this pandemic as well as other future crises.

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Exploring the role of policy actors in the implementation of social distancing: a case of COVID-19 in Pakistan

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Abstract

Purpose – At the outbreak of the COVID-19 pandemic, the absence of pharmaceutical agents meant that policy institutions had to intervene by providing nonpharmaceutical interventions (NPIs). To satisfy this need, the World Health Organization (WHO) issued policy guidelines, such as NPIs, and the government of Pakistan released its own policy document that included social distancing (SD) as a containment measure. This study explores the policy actors and their role in implementing SD as an NPI in the context of the COVID-19 pandemic.

Design/methodology/approach – The study adopted the constructs of Normalization Process Theory (NPT) to explore the implementation of SD as a complex and novel healthcare intervention under a qualitative study design. Data were collected through document analysis and interviews, and analysed under framework analysis protocols.

Findings – The intervention actors (IAs), including healthcare providers, district management agents, and staff from other departments, were active in implementation in the local context. It was observed that healthcare providers integrated SD into their professional lives through a higher level of collective action and reflexive monitoring. However, the results suggest that more coherence and cognitive participation are required for integration.

Originality/value – This novel research offers original and exclusive scenario narratives that satisfy the recent calls of the neo-implementation paradigm, and provides suggestions for managing the implementation impediments during the pandemic. The paper fills the implementation literature gap by exploring the normalisation process and designing a contextual framework for developing countries to implement guidelines for pandemics and healthcare crises.

Keywords COVID-19, Normalization process theory, Nonpharmaceutical interventions, Policy actors, Social distancing, Pakistan

Paper type Research paper

HKPAA

Introduction

In the initial days of the COVID-19 pandemic, no pharmaceutical drugs were available to prevent the spread of the virus. With the lack of better alternatives to treat the disease and reduce contamination, government policies were introduced as solutions (Moraes, 2020). Public health policy institutions intervened with the provision of nonpharmaceutical interventions (NPIs) to prevent or reduce the burden from the disease. NPIs include state policy decisions to limit and manage the pandemic, such as social distancing (SD), imposing a ban on public gatherings, mandating home confinement, enforcing the closure of schools and nonessential businesses, compulsory face masks, and forced quarantine (Fong *et al.*, 2020). This study focuses on SD in medical establishments in the local context (i.e., in the Multan district of Pakistan's Punjab province) given the worldwide adaptability of SD in managing the pandemic (Prem *et al.*, 2020). SD is vital modus of augmenting the space between the public to reduce disease contamination (Sen-Crowe *et al.*, 2020).

The role of policy institutions in the absence of pharmaceutical agents urged the need to study COVID-19 under a sound theoretical and methodological lens. Accordingly, to understand the implementation of SD in actual settings in the context of COVID-19 in Pakistan, researchers studied the implementation intervention performed by the policy actors guided by the following core research question: How do policy actors engage in SD while performing their professional duties?

The first necessary step is to identify the relevant actors. For example, Amanor-Lartey (2019) recognised that identifying key actors within functional groups could improve the implementation process. In response to WHO guidelines, the Pakistani government implemented "The National Action Plan for COVID-19" as a principal policy document. It is pertinent to explore how these policy guidelines helped SD implementation. SD plays a crucial role in mitigating the spread of the pandemic (Guimaraes *et al.*, 2021). Other methods, such as testing and screening for the virus, are financial burdens for low- or middle-income countries (Lammers *et al.*, 2020), such as Pakistan. Healthcare providers were instructed to closely follow SD (Anthony, 2021) as they are more prone to the disease because of the nature of their work (i.e., characterised by close patient contact). Razaq *et al.* (2020) observed that approximately 10% of reported infections were among healthcare workers. Therefore, SD can reduce the risk of infection in healthcare workers and help manage the disease's financial implications. It is pertinent first to identify the sub-group of policy actors or those actively involved in SD implementation, followed by healthcare workers' adherence to SD. Accordingly, the core research question was divided into the following two sub-questions:

1. Who are the policy actors actively implementing SD in the local context?

2. How do healthcare providers integrate SD into their professional lives?

In the forthcoming sections, the authors explain the current state of implementation literature, and identify a research gap in the context of a complex and dynamic environment. The following section describes the theoretical framework, wherein we illustrate the importance of a theory for understanding the implementation process and indicate the reasoning behind the selection of Normalization Process Theory (NPT). The methodology section covers the settings, sampling strategy, sample size, and primary and secondary data collection. The section on data analysis and results addresses the sub-questions by first identifying the active policy actors in the implementation of SD, followed by explaining SD integration in the professional lives of healthcare workers as per the operating mechanisms of NPT.

Literature review

Brodkin and Kingdon (1985) observed multiple interest groups or networks in the policy process. Howlett (2018) prolonged the policy actors' concept of these authors by including the

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policy implementation stream after combining the advocacy coalitions framework and policy cycle model with the multiple streams framework. Howlett concluded that the policy actors identified in the initial stages of the policy cycle also participate in its later stages (i.e., implementation).

The contemporary issues for policy scholars are policy choices and implementation. Public policy and its implementation are never self-enacting. Rather, relatively organisational activities link the government's determination to fix certain problems. Such calamities as the COVID-19 pandemic require a mandate with immediate and coordinated actions. Implementation is a significant piece of policymaking and indicates a collaboration between several relevant actors and institutions (Stewart *et al.*, 2008). Moreover, introducing contemporary concepts in policy sciences relocates the administrative functions of institutions and actors with the collective aim of streamlining coordination and implementation (Lester and Krejci, 2007). Policy implementation progresses according to certain factors, such as political, social, economic, organisational, and attitudinal. However, the role of policy actors in policy implementation cannot be ignored (Goggin *et al.*, 1991).

The literature has been expanded, indicating that implementation research is growing under relevant themes (Roll *et al.*, 2017). Implementation researchers have explored policy implementation issues and focused on developing analytical frameworks and explicit theory building, which has yet to be realised (Paudel, 2009). The contemporary paradigm of implementation research has emphasised revisiting the subject and object of implementation for theory building, testing, and application (Howlett, 2018). Dickinson and Sullivan (2013) highlighted the need to search for new conceptual tools to understand implementation dilemmas and apply existing tools in such novel scenarios as the COVID-19 pandemic. Lotta *et al.* (2020) observed how actors have addressed COVID-related implementation challenges, and Roziqin *et al.* (2021) pointed out that the virus, as a complex issue, requires unique frameworks to be followed for the successful implementation of disease prevention and control policies.

The lack of a sound implementation theory, the resultant calls within the current implementation paradigm, and the importance of actors' role in implementation highlight the literature gap that there is a need to understand the role of policy actors while applying the implementation theories in a complex and dynamic environment, such as that of the COVID-19 pandemic.

Theoretical framework

Policy practitioners and researchers have understood the practical importance of policy research, leading many to adopt explicit theories for studying the implementation process (Nutley *et al.*, 2010; Woolf, 2008). Theories offer applicable frameworks in diverse settings, such as in knowledge accumulation, analysis (Forster *et al.*, 2011), and understanding the various implementation factors. Theories may develop the capacity to design, shape, and improve policy interventions and implementation processes (MacFarlane *et al.*, 2012). It is thus key to analyse new models and theories – which may originate from different disciplines – to review their applicability and utility for the healthcare field (Murray *et al.*, 2010).

The implementation literature has advocated adopting certain frameworks or theories to study policy interventions. The Non-adoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) framework seems to be more adaptable regarding technological intervention. However, in the case of healthcare intervention, NPT is more frequently used (Morrison and Mair, 2011). NPT emphasises the implementation process between the context, actors, and objects consistent with social and interactive research models. The theory originated from studies exploring implementing complex and innovative interventions within the healthcare setting. Therefore, NPT is highly relevant to our case of understanding the implementation of SD as a complex and innovative intervention in a COVID-19 context.

NPT can help understand how any healthcare intervention becomes part of everyday activities. Previous studies accord in the understanding of the NPT's core constructs: Coherence (Co), Cognitive Participation (CP), Collective Action (CA), and Reflexive Monitoring (RM). However, researchers have provided various definitions of the constructs' specific uses. For example, Browne *et al.* (2014) modified the theoretical constructs to make them more relevant in understanding intervention. Morden *et al.* (2015) illustrated that the rigorous application of theoretical constructs may influence data collection, analysis, and findings. Accordingly, researchers have tended to use the theoretical constructs following the objectives of their study (May *et al.*, 2009).

Methodology

The current study satisfies policy implementation and emphasises the facets of the NPIs that occurred in the wake of the COVID-19 pandemic. The authors adopted NPT as an instrument with which to frame the study in order to clarify the organisational aspects and establish a theoretical link to the intervention. NPT is a mid-level theory established for understanding how interventions come to be entrenched into routine practices (May and Finch, 2009). The data collection methods supported the study's qualitative research design, research questions, purpose, and theoretical framework. The data were collected through policy document analysis and semi-structured interviews (n=17) from three hospitals in the Multan district of Punjab (Pakistan's most populous province).

Setting

The study was conducted in Pakistan. The authors selected one district (in the COVID-19 red zone at the time of data collection) in Punjab. After approaching all available government hospitals, three of them gave us positive responses for data collection from May 2021 to July 2021. As such, the data collection was spread over three case-specific sites: Nishtar Hospital, a tertiary care teaching hospital with a capacity of 1,800 beds; Multan DHQ Hospital, a primary and secondary healthcare hospital with a 350-bed capacity; and the Fatima Jinnah Women's Hospital, a specialised healthcare hospital with a 200-bed capacity.

Sampling strategy

For qualitative data collection, the authors adopted a mix of purposive and snowball sampling strategies. Moreover, the participants were made fully aware of their rights, the data collection mode, the purpose of the study, research objectives, and the reasons behind them having been identified as potential participants, as per the protocols of informed consent.

Sample size

The authors aimed for a medium-range sample size for interviews to support a qualitative study design guided by the data saturation for the qualitative dataset. The saturation point served as a guide, and was achieved when an interview session with a participant did not yield additional information and apprehension of the phenomenon of interest.

Secondary data collection

Secondary information was obtained from authentic sources. This involved collecting a comprehensive set of documents, such as public records (policy documents), personal documents, and physical evidence (training materials). The documents considered evidence for this involved those related to the notification of provincial technical committees and functional distribution of COVID district teams, including the study area's district management, health, and allied departments.

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Primary data collection
Instrumentation involves collecting primary data, and eliciting sound and rich descriptive information to address the core and subsequent research questions. The interview guide was initially adopted from the work of McNaughton *et al.* (2019), and amended by considering the current study's objectives, research questions, and literature review. In so doing, the authors developed themes that helped update, enrich, and amend the interview guide. The resultant interview questions and probes allowed us to explore the depth and breadth of the participants' experience. The study used three preliminary interviews from each study site and seventeen semi-structured interviews. Personal and individual invitations were sent to all participants, and maintained a degree of anonymity. The interview guide was pilot-tested; interviews were audio-recorded, transcribed, and analysed under framework analysis protocols. Themes were identified per the theoretical constructs, following the study objectives and theoretical support. NPT supported the coding, analysis, and reporting of the qualitative data obtained.

Thirty interviews were initially distributed, of which seventeen responses were received. The participants provided a cross-section of healthcare professionals from three study sites, thus representing a variety of experiences in healthcare settings. Details of the participants' demographics are given in Table 1.

Study limitations
The study's limitations relate to the sample, environment, and timings of the interviews. The interviews were conducted from May to July 2021, with fluctuating numbers of COVID-19 infections in Pakistan making some potential participants unwilling to be interviewed. The study was conducted in a complex environment in COVID wards with high infectious areas.

Data analysis and results
The research question was divided into two sub-questions. The first was addressed by analysing the secondary and primary sources. The policy actors involved in this case were the

CHARACTERISTICS	NCOC	HOSPITAL 1	HOSPITAL 2	HOSPITAL 3	TOTAL
Age Group					
21 years to 30 years	-	1/5	2/5	1/5	4/17
31 years to 40 years	-	4/5	3/5	4/5	11/17
Above 40 years	2/2	-	-	-	2/17
Gender					
Male	2/2	4/5	4/5	-	10/17
Female	-	1/5	1/5	5/5	7/17
Occupation					
Dy Medical Superintendents,	-	1	1	1	3
Doctor-Medical Officer,	-	1	1	-	2
Doctor-PG Registrar,	-	1	-	1	2
Member NCOC	1	-	-	-	1
Member PTC	1	-	-	-	1
Principal Medical Officer	-	-	1	-	1
Senior Medical Officer	-	1	-	1	2
Ward Registrar	-	1	1	1	3
Female Medical Officer	-	-	1	1	2
Source: Interview data by authors					

Table 1.
Demographics of the
interview participants

intervention actors (IAs) that actively interacted in implementing SD. Active interaction refers to the activities performed by the relevant officials in the wake of implementing SD within the framework of the COVID-19 Disease Prevention and Control policy. For the second sub-question, a qualitative inquiry was conducted on the data collected through interviews and analysed through the framework analysis approach. The authors adopted the seven-stage process of framework analysis of Gale *et al.* (2013) which illustrated the enhanced analysis in healthcare research, and satisfied the requirements of transparency and rigor in qualitative data analysis. These seven steps included transcribing the interview data, familiarising ourselves with the interview, making codes, developing the analytical framework, adopting the framework, listing data in the framework, and finally, the interpretation. The analytical framework and code book containing the listed data were thus developed.

Policy actors
This section covers the first sub-question. The base document (The National Action Plan for COVID-19 Disease Prevention and Control) in Pakistan divided the policy actors into three groups to deal with the risk of contamination and community engagement. The influential group included political figures, media persons, and religious leaders. The functional group included the health sector, allied departments, and finally the public as end beneficiaries. The authors closely aligned these three groups with the Walt and Gilson's (1994) basic triangle policy model to identify relevant policy actors, including the political-administrative authorities, implementation agencies, and end beneficiaries. First, the political leadership, relevant ministries, the National Command and Operations Centre (NCOC) are defined as political-administrative authorities. Second, the District Health Authorities (DHA), hospital managers, government administrative bodies are the implementation agencies, and finally, the end beneficiaries include local individuals and members of civil society organisations.

The document analysis gave a brief list of the policy actors implementing SD in the local context. NPT-based studies on interventions are focused on healthcare professionals (Quinn *et al.*, 2016), patients, clinicians, health managers, and team coordinators (Franx *et al.*, 2012), as well as with professionals responsible for planning and implementation (Murray *et al.*, 2011). In order to be able to more broadly refer to these officials, the term 'intervention actors' (IAs) is used, which includes the policy actors responsible for implementation. Resultantly, the entire government machinery was involved in this research. The district health managers, hospital managers, district government officials, and medical and allied healthcare providers were involved in the implementation of SD. Table 2 lists the IAs in detail.

Policy Actors Active in the Implementation of Social Distancing		
Political administrative authorities	Members of NCOC/Provincial Technical Advisory Committee (PTAC)	Medical/public health experts providing technical, advisory, and managerial services to the core institutions managing COVID-19 policies, such as the NCOC/PTAC.
Implementation agencies	District machinery, Healthcare professionals	Healthcare professionals, such as CEOs of the district health authority and medical superintendents of hospitals, and some clinical experts, like senior registrars, post-graduate registrars, medical officers, psychologists, lab technologists, respiratory therapists, head nurses, and charge nurses.
Monitoring Bodies	Healthcare monitoring bodies	Medical/public health experts with experience in appraising government-led interventions.
Source: Thematic analysis by authors		

Table 2.
Policy Actors Active in the Implementation of Social Distancing

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Integrating Social Distancing (Description as Per Operating Mechanisms)
Making Sense of Social Distancing – Can policy actors make sense of SD as a new way in which to operate?

SD, as a fundamental NPI, was considered a vital measure for managing the pandemic. All the policy actors/IAs involved in its implementation considered it the right time to make sense of SD. Due to the novelty of the current pandemic, such policy institutions and state organisations as the WHO and NCOC provided guidelines to be followed by IAs. As some of the interviewees informed us:

> As this disease was new to the world and no guidelines were initially available, it was the first pandemic in the last hundred years after the Spanish flu in 1918. (DMS3, 10 years as a health manager)

> SD is mainly used for COVID prevention and to stop its spread. Suppose one person is a carrier, SD prevents its spread to another person. Most healthcare providers or workers are carriers, and it is very pertinent for them to follow SD. (SMO5, 12 years as a medical expert)

All of the interviewees believed that, initially, such interventions were the only available source to manage the pandemic by breaking its chain of contamination. At first, people were resistant to accepting SD and following its protocols. Indeed, some members of the population were even sceptical of the pandemic's existence. However, medical professionals were keen on observing SD protocols. Most medical professionals reported the difficulties in observing SD while treating patients. As one post-graduate registrar stated while sitting in the COVID ward:

> Initially, people took SD as a social stigma, but over time, people developed their conscience about SD and started accepting it partially. (PGR6, 5 years as a medical expert)

Another medical expert stated that:

> We always try to follow SD because if we do not, how can we make examples for others to follow? (MO7, 3 years as a medical expert)

Another participant added:

> We, as medical professionals, cannot easily follow SD. With personal protective equipment, it is challenging to perform eight hours of duty and long calls. (MO7, 3 years as a medical expert)

Actors' Investment in Social Distancing – Are the policy actors engaged with SD?

While the various IAs were involved in implementing SD with specific roles, this level of engagement differed. One expert explained that the government had made significant investments to enrol all the relevant actors in implementing SD and illustrated that:

> Historically, we have faced a lot of other diseases, like chickenpox and polio. We are also striving with this disease. We are hopeful that one day we will completely curb its effects, and no more training would be required as the government has already delivered enough training materials and sessions. (DMS8, 9 years as health manager)

However, the analysis of the duty roaster revealed that the enrolment allowed the medical experts from various functional units/hospital wards to perform long calls and shift duties within designated COVID-19 wards.

As one medical expert noted:

> The new ward registrars did not receive any specific training. Every ward administrator sends a post-graduate registrar for COVID duties. So, the issue is with the duty roaster. They should specify a team and train them to work in such an environment. (SMO10, 11 years as a medical expert)

IAs are playing a positive role in implementing SD, as evidenced by one participant:

It is a learning process; we need to be aware of people repeatedly through different mediums. (DMS13, 11 years as health manager)

The government has invested every available resource involving local governments, security agencies, health and allied departments, and district machinery to implement NPIs (including SD). One participant explained that government schools and their staff could also be used:

The main point is education and training; specifically, it is required in underdeveloped areas. The government schools and their teams could be used for this assignment. (MO7, 3 years as a medical expert)

Many medical experts reported that their profession allowed them to more comprehensively understand the need for SD. Accordingly, they both follow SD and advise others to do so. However, they noted that following SD for long periods of time was challenging. A medical expert explained that:

The environment is now challenging to work with other colleagues, but it's manageable. (DMS13, 11 years as health manager)

Adaptation of Social Distancing – What do the policy actors need to implement SD?
All of the participants or IAs appeared to play their due and constructive roles in enacting SD. The IAs were clear about their roles and responsibilities for implementing SD as per the operating mechanisms (interactional workability, relational integration, skill-set workability, and contextual integration). The practices of the IAs followed the required protocols and frequencies. It is worth mentioning that the skills necessary to perform the intervention practices and heighten the public's awareness of them were upgraded with time and resulted in a considerable change in the adoption of intervention among the IAs. Some of the interviewees illustrated that:

The response varied; the whole community was not receptive initially. Somewhere people observed, but the majority did not give it the value it required. (SMO10, 11 years as a medical expert)

Fruitful implementation of the intervention depends upon the actor's commitment to the adaptation of the intervention, specifically the administering staff. In implementing this intervention, relevant policy actors were clear about their roles. Moreover, they performed specific assignments, like those of the NCOC, which enacted policy decisions and forwarded its decisions to other actors for implementation.
As one of the interviewees explained:

The decisions were made by the NCOC and forwarded for implementation. The success story behind this was that the decisions were trickled down from one place to the other. (DMS13, 11 years as health manager)

All the actors involved in the implementation process were aware of their role in the process and the engagement of other supportive institutions. One of the interviewees demonstrated that:

Civil administration with security forces was with us right from the beginning. (MO17, 2 years as a medical expert)

Appraising Social Distancing – Are there evaluation mechanisms? Are the policy actors aware of the changes required?
All of the actors interviewed evaluated SD as valuable and understood its integration. The healthcare providers made constructive deviations in their lifestyles, and consistently tried to follow SD and advise others to do the same. However, some believed that:

If you want to adopt SD, we have to create social space. (WR14, 8 years as a medical expert)

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There is a precise appraisal mechanism; local governments, district machinery, and security agencies observe its implementation and provide daily reports to the NCOC for data analysis. One participant explained:

> The government formed task forces, and WHO surveillance teams were working on this. They used to survey and analyse their reports, and gave feedback to government policymaking institutions. The NCOC published different reports for public awareness, and other allied departments played their due role. (DMS03, 10 years as health manager)

Discussion

COVID-19 has affected millions of people around the globe. Mandatory NPIs (Suzuki *et al.*, 2021) – and, specifically, SD measures – amplified the likelihood of people staying in their homes (Engle *et al.*, 2020), thereby ultimately reducing the disease's burden. Alimohamadi *et al.*'s (2020) empirical study in Iran employed the segmented regression model and interrupted time series analysis, and demonstrated the positive relation of SD in managing the pandemic. However, the findings of our study offer insights into the policy implementation being entrenched into actual practice. The authors stretched the application of theory within the novel case of COVID-19 and explored the IAs active role in the implementation.

Most of our participants recognised SD's differences to usual work practices as well as the difficulties to its adoption due to the nature of their work. Accordingly, the government of Pakistan introduced some specialised, managerial, and skill-based training for the IAs, which helped them understand, implement, and integrate SD into their professional lives (to some extent at least). Nevertheless, it has not been easy for them to fully observe SD because of their direct contact with patients. Anthony (2021) illustrated that healthcare providers need to follow SD. In healthcare organisations, people learn through training, development, and knowledge dissemination (Noe *et al.*, 2014; Nembhard and Tucker, 2011; and Tsai *et al.*, 2015) demonstrated that the effective use of organisational management practices can improve outcomes in healthcare organisations. Although government initiatives have helped IAs to create a shared understanding, the nature of their job has been the foremost hurdle to observing SD, ultimately resulting in a low degree of coherence.

The authors observed that several IAs have been involved in implementing SD with different levels of engagement. The government has involved all of its resources, and designed a higher-level cabinet committee to oversee COVID-19 matters and a specialised operations centre (the NCOC) for policymaking. The NCOC launched data-driven policies, and coordinated with provinces and districts for their implementation. However, provincial autonomy was a major barrier to NCOC operations. In a study in Brazil, Martins-Filho *et al.* (2020) observed that restrictions concerned decentralised manners. The government has combined such bodies as the district machinery, local governments, security agencies, and allied and health departments to fight the pandemic. Scientists and persuasive civilizations have often cautioned about the menaces of evolving infections and the threat of global pandemics. Nations typically depend on health systems for combatting pandemics, developing vaccines, public health reporting, and health decisions. However, addressing the implications of the COVID-19 pandemic on societies entails more than just the actions of healthcare professionals – it calls for the participation of national and international policy institutions, and government benches. Accordingly, the notions of teamwork and leadership are critical to the success of healthcare organisations (Weaver *et al.*, 2014), such as in the case of the COVID-19 pandemic. The concept of motivation is also vital for policy intervention (Michie *et al.*, 2011). In our case, the working of various departments as one team represents not only a high level of motivation, but also of actor participation.

Involved policy actors play a constructive role in implementing SD. IAs are fully aware of their role – in no small part due to the NCOC's advice on the implementation of their evidence-based policies. Hirschhorn *et al.* (2020) observed that evidence-based policies could be effective in the case of COVID-19. Implementing NCOC directions at the regional level has policy issues, such as initiating COVID-19 treatment wards in tertiary care hospitals and increasing the number of cases. Leerapan *et al.* (2021) observed that the policies in Thailand initially and unintentionally helped spread the disease around the country and resulted in low adherence to SD, leading the Thai government to organise task forces for the strict implementation of SD. A study conducted on determinants of SD by Moraes (2020) found a positive correlation between forced SD and the number of cases. Battiston and Gamba (2021), in an Italian study, positively associated the strict implementation of SD measures with the reduction in the pandemic's spread. Falah Hasan (2021), in a study on Arab countries, associated the implementation of SD with economic support. Instead of being a developing country with meagre financial and human resources, the Pakistani government provided every available resource for implementing SD, resulting in a high degree of collective action.

IAs have adopted the changes to their lifestyles led by SD implementation. The majority have welcomed the opportunity to expand their roles from clinical management to data analysis, policy implementation, and coordination tasks. Their enhancement of their skillsets through specialised training and orientation programmes has created a new role for clinical professionals, and expanded the role of infection control studies. The government used all the required resources to develop evaluation mechanisms, such as enrolled security agencies, district management, regulatory bodies, and such international organisations as the WHO. Moraes (2020) observed that people adhere to the obligatory rules of SD rather than respond to the pandemic's severity, which ultimately enabled IAs to make necessary changes in their lifestyles and behaviour. As behavioural change is crucial for improving policy outcomes (West *et al.*, 2020), the participants explained that SD acceptance takes time, which consequently represents a high degree of reflexive monitoring, as per the theoretical constructs.

Understanding the intervention implementation can explain the actions of existing policy actors in terms of SD and its integration in the local context. The analysis resulted in a mixed-models policy implementation approach. The practices succeeding the intervention decorum and the mix of notions lead to the responsible implementation of SD to manage the pandemic. These notions include:

a) Centralised decision making: creating a national-level committee within the upper legislative house, the NCOC, provincial support systems, and COVID district teams.

b) Capacity development: training and development for IAs and the general public.

c) Innovative policy instruments: using data-driven policymaking from the NCOC.

d) Inter-departmental coordination and rigid enforcement: enhanced inter-departmental coordination by involving various departments and rigid enforcement through security agencies.

e) Resource utilisation: using every available resource, including human and financial.

Conclusion
This study validates the utility of exploring policy implementation for developing a framework for applying WHO guidelines for low-or-middle-income countries. Through analysing the application of a rich theoretical design, the authors emphasise the need to explore the actors' work in implementing complex interventions, such as implementing SD as an NPI. Moreover, we also observed a wide range of policy actors active in implementation.

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Following NPT, SD implementation has weak coherence and cognitive participation of IAs in terms of its integration. We observed strong collective action of the IAs towards integrating SD and more robust reflexive monitoring. Therefore, lower levels of coherence and cognitive participation, and higher levels of collective action and reflexive monitoring lead to the integration of SD in the local context. However, this could be improved through stronger coherence and cognitive participation, as well as the enhancement of certain policy and coordination issues. While the Pakistani government adopted WHO policies, it did not do so blindly. Rather, it prepared its own plans and guidelines for implementing NPIs. Accordingly, we observed a mixed-models policy implementation approach.

The IAs, including the healthcare providers, district machinery, and staff from other allied departments, were active in implementing SD in the local context. The phenomenon of SD integrates with the local context through the mixed-model's policy implementation framework. After the intervention implementation in the wake of process normalisation, the healthcare providers partially implemented SD in their professional lives. The chief roles of all IAs have thus become more responsive. Therefore, it could be concluded that integrating SD through a mix-models policy implementation approach in the local context leads policy actors to partially implement SD, thereby resulting in the partial support of SD integration within the professional lives of healthcare workers.

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An analysis of policies, challenges and outcomes in Pakistan through co-creation of COVID-19 responses

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Abstract

Purpose – Based on the service eco-systems perspective, this paper evaluates the strategies and actions adopted by the Government of Pakistan to handle the COVID-19 crisis with the involvement of multiple actors including public, private, third-sector organizations and civil society.

Design/methodology/approach – The paper is based on an in-depth analysis of secondary sources including research articles, policy documents, policy briefs, governmental reports, third party evaluations/ reports and media publications.

Findings – A multi-stakeholder approach was evident during the pandemic with an effort to better manage the crisis which has exerted immense social, cultural, economic and political impacts on the lives of the citizens. Collaborative efforts among stakeholders (government, private and third sector) were witnessed, resulting in a coherent response. The successful management of COVID-19 in Pakistan is attributed to multiple factors including the formation of a specialized public organization which effectively and proactively took data-driven informed decisions and aggregated the efforts of the federal and provincial governments for a timely response.

Originality/value – This paper gives insights for policymakers to create a sustainable post-pandemic socio-economic environment by building resilient structures across the government while promoting cooperation and collaboration. It suggests strategies for policymakers responsible for providing sustainable societal solutions to combat the social, economic and administrative challenges under the pandemic. As Pakistan has managed and contained the pandemic in a relatively efficient way, it is hoped that this paper can provide a learning experience for other countries with similar national contexts.

Keywords COVID-19, Co-creation, Policies, Pakistan

Paper type Research paper

Introduction

Initially detected in China, the Coronavirus quickly spread to over 213 nations around the world, turning into a global pandemic (Mohan and Nambiar, 2020). More than 1.6 million deaths were reported as of December 17, 2020, with more than 74 million persons sick globally (*The New York Times, 2020*). Global trade, stock markets, and supply chains were severely affected because of the rapid spread of COVID-19 (Shafi *et al.*, 2020; Pak *et al.*, 2020). Resultantly, many countries experienced a drastic decline in their economies in the initial phase of the pandemic (Wheelock, 2020; Beirne *et al.*, 2021).

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The COVID-19 pandemic caused unprecedented challenges in many countries, in terms of immediate response to counter the spread and its effects on societies and global resilience (Sohil *et al.*, 2021), and intense adverse impacts at community, societal and individual levels (Panneer *et al.*, 2021). Moreover, COVID-19 was expected to increase poverty, creating societal inequalities, and thereby severely affecting vulnerable groups (UNDP, 2020). Although the pandemic had affected almost all regions and every country (Erokhin and Gao, 2020), developing countries, especially outward-oriented countries were the hardest hit because of a disturbing global value chain (Workie *et al.*, 2020). Whereas developed countries could practice rigorous lockdowns and reduced economic activity, it was hard to prolong the lockdown in developing countries due to the high poverty rate. Bargain and Aminjonov (2020) found that the degree of work mobility reduction was significantly driven by the intensity of poverty. Hence, higher poverty rates translated into a faster spread of the disease because of work mobility. Moreover, the lack of digital infrastructure in developing countries induced greater challenges for employees and students to work or study from their homes (Beirne *et al.*, 2021).

Pakistan, being a developing nation, having an already constrained economy and limited financial resources, was compelled to immediately respond to the pandemic-induced socio-economic problems mostly affecting its vulnerable population. As a result of the COVID-19 outbreak, the overall economic growth in Pakistan declined to a level of -0.47 per cent in the year 2019-20. However, to reverse the downward economic trend, the government intervened by introducing an economic stimulus package and effectively adopted various policies and strategies to reduce the adverse impacts of COVID-19. The most prominent strategy was smart lockdown which reduced the adverse impacts on the underprivileged population. Moreover, by developing an extensive database and involving multiple stakeholders, the government successfully reduced the number of COVID-19 cases (Naz, 2020). Indeed, the government of Pakistan was able to achieve positive results due to its effective and timely decisions, policies and strategies.

The literature on the COVID-19 pandemic is dominated by the challenges and issues associated with the disease, whereas less attention has been paid to the success stories of countries which were able to handle the pandemic through their untiring efforts and effective strategies. Reporting such strategies is highly useful to draw important implications for handling pandemics. Addressing this critical domain, this paper presents the success story of Pakistan in handling the COVID-19 crisis by analyzing its policies and strategies. In particular, this study encapsulates the role of various stakeholders in fighting against the pandemic in Pakistan and analyzes the government's strategy to involve the private sector, non-profit sector as well as the general public for this purpose. Indeed, the government of Pakistan was able to co-create public value through the involvement of citizens and various sectors. The study explains this phenomenon based on the service eco-system perspective, whereby the COVID-19 response was co-created in the country involving multiple stakeholders. The paper has drawn on secondary data including published articles, government reports, websites and policy documents.

Impact of COVID-19 on Pakistan's economy and society

Pakistan faced terrible economic and social consequences of the COVID-19 pandemic in the form of millions of layoffs in different sectors of the economy. This occurred in an aftermath of partial or complete countrywide lockdowns (Yousaf *et al.*, 2020). There was a decline in the GDP and an increase in unemployment due to deceleration in the services and manufacturing sectors. The pandemic further exacerbated the situation of the vulnerable population of the country, which was already under financial stress (UNDP, 2020). It was expected that 44 per cent of the marginalized population would need immediate financial

relief (Government of Pakistan 2020, 2021b). The multidimensional vulnerability index estimated that 56.6 per cent of the population had become vulnerable after the pandemic erupted. The vulnerable population in Pakistan includes women, and children as well as home-based and piece rate workers and marginalized groups including transgenders, persons with disabilities, refugees etc. Pakistan's stock market experienced a dip of an average of 1500 points daily as a result of the lockdown policy of the government to mitigate and curtail the spread during the outbreak of the first wave in mid of March 2020 (Government of Pakistan, 2020, 2021a). Billions of rupees invested in different shares were reduced by one-third and in some cases half of the value.

Social distancing was being encouraged at the government level to limit public activity; mandatory shutdowns were enforced in various affected regions of the country. This curtailed the profitability of organizations and household incomes (Raza *et al.*, 2020). Fear of losing jobs, reduced income packages, insecure financial situation and food insecurity were some of the primary challenges that the citizens encountered due to the outbreak of coronavirus. The overall growth in services, manufacturing and agriculture sectors were affected due to the countrywide lockdowns. Resultantly, there was an increase in poverty and food insecurity.

Pakistan also suffered from a shortage of health sector resources. Since most of the health financial resources were diverted to respond to the needs of COVID-19 response, the healthcare provision of non-COVID-related illnesses was drastically affected. Lockdowns and travel limitations further exacerbated the risk of disrupting the supply chain causing a shortage of life-saving vaccines and disruption of routine immunization amongst children.

Research methodology
The study is based on secondary sources of data which include research articles, policy documents, governmental reports, and media publications to evaluate the strategies adopted by the government to handle the pandemic in Pakistan. This comprehensive review of the secondary data was conducted by systematically searching through Google Scholar, Web of Science, PubMed, and the official websites of the Government of Pakistan, partner international organizations and newspapers. The analytical framework to understand Pakistan's COVID-19 response draws on five key contributions by Forrest (2003), Kapucu *et al.* (2009), Vargo *et al.* (2008), Vargo and Akaka (2012) and Osborne *et al.* (2016).

Analytical framework to understand Pakistan's COVID-19 response
The response of Pakistan to handle the COVID-19 pandemic can be explained in light of public service logic (PSL) that emphasizes value co-creation through a collaboration of multiple stakeholders. PSL goes beyond a particular public-sector organization to promote the service system as a whole, involving a variety of stakeholders (Osborne *et al.*, 2016). In light of the service ecosystem perspective, the aggregate response takes place through resource integration and inter-sectoral collaboration. It resonates with the collaborative public management literature (Kapucu *et al.*, 2009) and network governance perspective (Forrest, 2003; Naveed and Azhar, 2021) that emphasize the critical role of social systems and multiple stakeholders in collaboration. The concept of value co-creation enunciates the idea that value is created through interaction and mutually favourable relationships, within and among service systems, as they integrate and apply resources for and with each other. This view falls in line with the service ecosystem (Vargo and Akaka, 2012; Vargo *et al.*, 2008), which emphasizes that not only organizations and users but also many types of connected organizations and stakeholders integrate and share their resources and co-create value. Resource integration is increasingly recognized as occurring in service ecosystems

(Vargo and Akaka, 2012; Vargo *et al.*, 2008), encompassing not only organizations and users but also many types of connected organizations and stakeholders who co-create value.

Co-creation in Pakistan: an integrated response

COVID-19 response was co-created through the integrated efforts of multiple stakeholders in decisions making as well as in various strategies and actions. In this effort, NCOC served as a nerve centre to synergize and articulate a unified national effort against COVID-19, and to implement the decisions. Through this platform, various stakeholders were involved to take evidence-based timely decisions. A National Action Plan (NAP) for COVID-19 was notified by the government in collaboration with provincial and institutional stakeholders to efficiently and promptly respond to the outbreak. It also aimed to prioritize financial spending (budgetary allocation) and make investments at the local and international levels to prepare for emergencies (Government of Pakistan, 2020).

When the health system of Pakistan was under threat of being overwhelmed by the COVID-19 crisis, it induced partnerships across the public and private sectors and also across the federal-provincial governments to cater to the increasing health needs of citizens. The federal-provincial process of procurement was assisted by digitalized data-sharing of covid cases and hospital capacity across both public and private facilities (Zaidi, 2020). Along with the public sector health practitioners, many private sector personnel were equally engaged in responding to the coronavirus. In this effort, the digital real-time data played a major role in enabling the authorities to take evidence-based decisions.

ECC is another example of co-creation whereby various stakeholders (including federal and provincial governments, private banks, NADRA and NGOs) participated in the rapid delivery of relief packages to vulnerable groups. In particular, the support of NADRA played a great role in the integration purpose. National Database and Registration Authority (NADRA) is a public agency under the Interior Secretary of Pakistan responsible to regulate government databases and statistically managing the sensitive registration database of citizens of Pakistan. The support and human resources of NADRA enabled inter-governmental and inter-sectoral coordination for the allocation of relief funds. The third sector played a significant role in the provision of critical commodities and in raising funds for vulnerable groups. These joint efforts resulted in the successful provision of social protection during the covid-19 pandemic.

Another successful strategy of the Government of Pakistan was a smart lockdown. During the pandemic, a country-wide lockdown was practised globally and was highly recommended to create social distancing. However, Pakistan could not afford a country-wide lockdown due to a high number of daily-wage earners and vulnerable populations. The smart lockdown strategy of Pakistan proved quite successful for the economic survival of the country. Through this strategy, only hot spots were locked down enabling economic activity to be continued in other areas. With the focused and devoted efforts towards hot spots, the disease was also curtailed a lot. It was enabled due to the creation of a central data repository and consolidated reporting system at the federal and provincial levels with an ability to provide district-level estimates to take evidence-based decisions (Bhutta *et al.*, 2021).

Government, private and the third sector: a collaborative response

The health crisis caused by COVID-19 created the necessity for the government in Pakistan to actively respond to the needs of society. The Government adopted drastic measures to reduce the spread of the virus, which included the formation of the National Coordination Committee for COVID-19 and engaging the National Disaster Management Authority (NDMA). These public authorities engaged all stakeholders to create a national consensus and provide relevant policies, policy instruments and strategies.

Likewise, the implementation of the policies was based on inter-sectoral actions and collaborative efforts of all three primary stakeholders of the society: the government sector, private sector and civil society. Major strategies of the government included COVID testing, vaccination and treatment, complete and smart lockdown, financial relief packages, social protection programs, tele-schooling, and tiger force actions. The involvement of multiple stakeholders was prominent in all these strategies.

Creation of NCC and NCOC for coordination and evidence-based decisions
National Coordinating Council (NCC) and National Command and Operation Center (NCOC) were established to monitor the response to the pandemic. NCC was headed by the Prime Minister and had representatives from all key ministries. NCOC served as the implementation arm of NCC. It aimed to investigate, harmonize and prioritize national action plans (Rehan *et al.*, 2021). Evidence-based decisions after an exchange of data and dialogue were held regularly by various stakeholders working on the platform of NCOC to take timely decisions.

NCOC had provincial representation and relevant stakeholders which included Ministries of Finance, Interior, Planning, Foreign Affairs, Health, Pakistan Army, NDMA, National Institute of Health, etc. The Ministry of Foreign affairs played its part in coordinating support and assistance coming from the international community. NCOC was delegated for reviewing COVID situations continuously and to take day-to-day important decisions regarding operations of various policy sectors, like education, health, businesses, retail, travel services, etc. (Nishtar, 2020). Once cases of COVID-19 reduced tremendously in 2021, this entity was initially merged into an existing authority by transitioning its functions to a Centre for Communicable Diseases (CDC) created within the National Institute of Health (NIH) to play the role of NCOC. Later on, in early April 2022, the current government regime revived and restored NCOC after the first case of the Omicron sub-variant was reported (Bhatti, 2022; Khan, 2022; Yousafzai, 2022).

Integrated efforts toward COVID vaccination, testing and treatment
A public-private partnership between private labs/hospitals and public entities was formed to conduct COVID testing. This partnership provided additional testing facility and at subsidized rates all over the country. COVID-19 laboratory testing capacity was enhanced from under 100 tests/day to more than 79749/day as of 30 June 2021 all through the four provinces of the country (Government of Pakistan, 2021b). In response to COVID-19, the Government of Pakistan relied on disaster management legislation, rather than public health legislation (Hillier *et al.*, 2020). The response was executed through the disaster risk management (DRM) systems and structures established through the National Disaster Management (NDM) Act of 2010. NDMA was assigned the task of responding to COVID–19 as a central body for the provision of health services. The government involved the private sector Aga Khan University (AKU) to conduct a seroprevalence survey on the COVID-19 pandemic. The results of this survey showed that the ratio of asymptomatic cases in Pakistan was much more than in developed countries (Nawaz *et al.*, 2020).

The government provided the facility of getting tested for COVID free of cost and kept control of coronavirus testing costs in privately run laboratories. It also built a temporary hospital of 250 beds within 40 days for COVID-19 patients (Ullah *et al.*, 2021b). The federal and provincial health departments conducted extensive capacity-building training for doctors, nurses and para-medical staff on COVID-19 management.

The third sector also played its role in the provision of healthcare facilities. Edhi Foundation supported the government in executing COVID-19-induced relief measures in remote areas of Pakistan. The foundation imported coronavirus testing kits for the government and charity hospitals in the country's far-flung areas, in addition to distributing supplies among indigent families. With its nationwide ambulance service of 1500 ambulances, it assisted the government

in its struggle against coronavirus by transporting suspected corona cases to hospitals and quarantine centers across Pakistan (Latif, 2020).

Collaborative efforts towards social protection of vulnerable population-EEC

In April 2020 after the imposition of a nationwide lockdown, the Government launched the Ehsaas Emergency Cash (EEC) Programme, which was the primary social protection response to COVID-19. Ehsaas is the biggest programme ever launched in Pakistan to uplift marginalized people. It was housed under the Poverty Alleviation and Social Safety Division, Government of Pakistan. EEC cash payment endeavour was supported by several government agencies, including district and provincial administrations, security apparatuses, and private sector actors, including banking partners.

Under this scheme, a total of PKR 203 billion (£0.9 billion) was allocated to support 16.9 million poverty-ridden and vulnerable families (Lone *et al.*, 2021). The EEC programme made payments to the beneficiaries using the biometric verification system (BVS) engaging two commercial banks that were selected through a process of competitive bidding. The Ehsaas program was based on the principles of tapping multi-sectoral collaboration for resolutions warranting joint federal-provincial leadership; and mainstreaming the role of the private sector to nurture a context-induced innovative environment and generate employment opportunities and stimulate sources of income (Nishtar, 2020).

With the collaboration of Federal and Provincial governments, various financial relief measures were adopted. The Federal Government announced a fiscal incentive of PKR 1.2 trillion, which included payment of tax refunds to exporters, subsidized credits and payroll loans to stimulate the economy (Naz, 2020) and the provincial governments formulated various fiscal policies and adopted measures to address the grievances of their respective provinces (UNDP, 2020). Some of these relief packages included allocating PKR 50 billion to provide food items at subsidized rates to poverty-ridden citizens from Utilities Stores; reducing the prices of all petroleum products: and facilitating the marginalized population by allowing them to pay electricity and gas bills in instalments for three months; augment public hospitals' capacity to deal with the pandemic; tax refunds to exporters; and increasing targets for wheat procurement to introduce a cash stimulus to the rural economy (UNDP, 2020).

Moreover, the third sector played a critical role in raising funds and provision of social protection to vulnerable groups. Many third-sector organizations engaged in relief efforts while supporting the role of public organizations. Al-Khidmat Foundation initiated a countrywide chain of charity hospitals that handled coronavirus cases and was also engaged in distributing rations and other preventive accessories, in low-income areas (Latif, 2020). Many welfare-oriented local organizations raised funds to support daily wage workers. These organizations claimed to have comprehensive data on needy families which allowed them to distribute rations and other necessities effectively. Saylani Welfare launched a mobile phone application and telephone service, where poor households could register themselves to get supplies and other necessary items. Moreover, various trusts and religious associations provided medical assistance to the staff of government-installed quarantine centers (Latif, 2020).

Smart lockdown strategy

Instead of a nationwide lockdown, the Government adopted a smart lockdown strategy considering the high number of vulnerable groups. Under this scheme, only those specific areas which were identified as COVID hot spots were isolated and restricted to activities (Rasheed *et al.*, 2021). Furthermore, studies revealed that since a limited number of cities in Pakistan contracted widespread herd immunity and not the whole country, therefore, the Government did not practice a complete lockdown (Khalid and Ali, 2020). Various government agencies, businesses, individuals and communities got mobilized to practice the strategy of smart

lockdown. Private sector telecommunication companies also worked towards keeping the country virtually connected serving the purpose of informing stakeholders and enabling economic activity to continue virtually. Moreover, geotagging of the severity of COVID-19 was also conducted with cellular technology, which was also used to conduct web-based surveys to collect self-assessed data on COVID symptoms (Qureshi, 2021).

Online teaching and tele-schooling
The Federal Government played a coordinating and monitoring role in generating online platforms for providing educational opportunities for all children (Seyfert and Ahmad, 2020). In April 2020, the central government, in collaboration with the Ministry of Information and Broadcasting, launched "Teleschool", a channel telecasted by Pakistan Television Corporation (PTV), a state-owned broadcasting network during the pandemic period to secure sustained learning for primary-level students. This initiative of the government was supported by more than 300 private sector companies and individuals, who donated their content (UNESCO and UNICEF, 2021). Private media houses and TV channels also supported the government in disseminating information to the citizens to control COVID-19 (Nawaz *et al.*, 2020).

Civil society engagement in social awareness programs -Tiger Force
A tiger force comprised of more than 900,000 young community volunteers was constituted by the government to assist government agencies to conduct health awareness campaigns across the country and in reaching out to those households which got financially crippled as a result of business shutdowns in the different parts of the country (Gabol, 2020). They aimed to distribute food and other important supplies to them (Ali *et al.*, 2020). The Tiger Force Programme has proven to be an effective new initiative of the Federal Government. The universities also initiated an awareness campaign about the safety measures for the COVID-19 pandemic through their FM radio services. They also introduced an online free service to deal with psychological disorders and stress caused by COVID-19. The local masses also contributed to this cause by distributing food and surgical masks to the needy and poor citizens (Meo *et al.*, 2021). Religious scholars in Pakistan who can exert influence on its community members also played a significant role throughout the pandemic to make people adhere to COVID-related instructions and policies (UNESCO and UNICEF, 2021).

Policy implementation challenges
The primary challenge met by the policymakers was how to optimally utilize the already scarce resources to meet the mutual goals of different stakeholders engaged in managing the health and economic crises and to create a recovered sustainable environment. The real challenge was not just to ensure the involvement of multiple actors to combat COVID, but for the government to play the role of a coordinator and to avoid duplication of governmental and non-governmental efforts (Qureshi, 2021).

The lack of understanding of the masses in Pakistan about COVID-19 acted as a major obstacle to implementing preventive measures and strategies suggested by WHO. Therefore, the culture of denial regarding the prevalence of COVID-19 was an important challenge in the execution of public health precautionary measures (Zakar *et al.*, 2021).

Lack of digital readiness in the country also posed challenges to service delivery during the pandemic. The public and private EdTech space in Pakistan faced the challenges of connectivity and access. Moreover, COVID-19 has also elicited the need for collaborative efforts to take place between the Government and the private Education Technology (EdTech) sector to be able to realize technological outcomes (UNESCO and UNICEF, 2021).

COVID-19 outcomes and current situation

The Government of Pakistan (2022) has reported a decline in COVID-19 cases per day from an average of 6000 recorded at its peak to 693 now. Various reasons for the flattening of the COVID-19 escalation curve in the first wave were unveiled, particularly the smart lockdown, among many others, proved to be immensely effective in containing the COVID-19 spread. This lesson can be learnt by other countries for an efficient recovery (Meo *et al.*, 2021). When compared with most developed nations, which were equipped with state-of-the-art healthcare systems and facilities for testing, Pakistan was able to curtail the rising number of COVID cases with its smart lockdown strategy. Moreover, this strategy enabled the economic revival of the country as well since economic activities were not completely curtailed.

In April 2022, when the first case of Omicron sub-variant was reported, the current government regime revived and restored the NCOC. Currently, 103 private labs are providing COVID-19 RT-PCR services having a capacity of 37,585 tests per day (Government of Pakistan, 2021a, b). The economy of Pakistan in the fiscal year 2021 achieved a growth of 3.94 per cent which was not only higher than the previous two fiscal years; 2019 and 2020 but it also exceeded its target of 2.1 per cent for the year 2021. Therefore, it may be claimed that despite all the financial constraints, the government of Pakistan with its timely and appropriate response strategies was able to revive economically (Government of Pakistan, 2021b) and flatten the escalating virus curve (Ahmad *et al.*, 2021).

The EEC programme covered approximately half of the country's population (Nishtar, 2020). According to The World Bank, Pakistan achieved an increase of 36.54 per cent in the coverage of cash transfers after COVID-19, from 18.14 per cent in 2017 to 54.69 per cent in 2020 which was higher than the international average increase of 14 per cent (Lone *et al.*, 2021). The EEC program reached 14.8 million families which were 72 per cent of the eligible population and approximately 47 per cent of the country's total population. This social protection response strategy has been recognized on national and international platforms for its effective and timely execution (Lone *et al.*, 2021).

Conclusion

Evidence from Pakistan suggests that the involvement of multiple stakeholders and inter-sectoral collaboration played a major role in the management of the pandemic. The available evidence on pandemic management was discussed in light of the service ecosystem perspective whereby multiple stakeholders integrated their resources to co-create COVID-19 responses in the country. Since, the impact of the COVID-19 pandemic is multifaceted, influencing various spheres of societal life, it required a multi-stakeholder approach to control it effectively and alleviate its impact (Ramkissoon, 2020). It resonates with the idea of Fontanarosa and Bauchner (2020) who highlighted that pandemics can be managed effectively through inter-organizational participation and central coordination of the societal actors led by the public sector. Likewise, Kapucu *et al.* (2009) contend that service delivery and participation may improve with multi-stakeholder collaboration at all societal levels. Given the complexity and wickedness of the COVID-19 pandemic, the collaboration and engagement of multiple stakeholders are critically required to generate an effective response. However, having strong linkages among all governmental and non-governmental actors is a requisite for effective multi-stakeholder participation (Osborne *et al.*, 2016).

Coordination, engagement, and consultation between all stakeholders are highly significant to effectively respond to the health crisis. A mechanism of consensus should prevail between all the partners to prioritize and then implement policies drafted between all the stakeholders (state and non-state actors). Coordination of policy activities can be achieved by developing meaningful communication between the stakeholders of the society. Engaging all stakeholders of the society and creating a consensus amongst them to effectively control

and recover from a crisis is the key to successful recovery. Developing holistic and inclusive strategies is the way to create awareness and change the perceptions of citizens about the disease. This arduous task demands all stakeholders, to play their part in removing misconceptions about COVID-19 and also in highlighting and promoting the need to adopt preventive measures (Zakar *et al.*, 2021).

One of the major challenges faced by developing countries was inadequate financial and health infrastructure facilities available to society. In lieu of a compromised health, social and economic infrastructure, the challenge was to plan and prioritize policy response alternatives to control COVID-19 (Ayadi *et al.*, 2020). The current exposure of the government with its COVID-19-led social response strategies has given the government the conviction to be more responsive, data-driven and speculative in developing and executing safety programs in future. It has been learnt that new modes of coordination across multiple stakeholders having a sense of accountability amongst all state and non-state actors is probable to consider new horizons of policy making in future circumstances as well (Nishtar, 2020).

One of the major challenges in COVID management was the misconception prevailing amongst a large segment of the population who denied the existence of the virus and elicited-non-preventive behaviour. Another related obstacle was the myth about the effects of the vaccine. Public hesitancy regarding the vaccine created the need to communicate the risks associated with the disease and convince those in denial to get vaccinated. It is extremely significant for public health experts and social scientists to work together to understand the contextual sociocultural factors which shape attitudes and elicit behaviours linked with the spread of a pandemic.

Pakistan should aim at developing a resilient economy by continuously reevaluating the strategies adopted and training for pandemic crises should be introduced in health settings (Habib and Abbas, 2021). Institutes should prepare plans of action for future predicaments. Considering the shortage of ICU beds and critical care specialists during the covid period there is a dire need to build new hospitals and form isolation centres and testing laboratories to warrant the successful management of health emergencies in future (Nawaz *et al.*, 2020).

With an increasing reliance on IT and e-government platforms, it is imperative to revamp the National Digital Pakistan Policy to enhance social and economic growth by creating a knowledge-based economy for a sustainable future. The digital policy should aim at reducing regional digital disparities and the divide that currently hampers access to health and education services in the remote and underprivileged regions of the country.

Technology-aided COVID response strategies in Pakistan resulted in geographically-extended timely cash disbursement to those in need. This implies and proposes digitalization of service delivery for an efficient and effective policy response in future. However, reliance on digital platforms may exclude some vulnerable households residing in remote communities with no digital access. Therefore, a database of remote and disadvantaged communities should be built. School children and employees of both public and private sectors should be made digitally literate to enhance digital skills and social inclusion particularly effective to respond to emergencies. Performance of Internet technology and e-governance escalation during the COVID-19 pandemic has helped to combat COVID19-related impacts in Pakistan (Ullah *et al.*, 2021a).

Various developing countries including Pakistan should aim at improving their health infrastructure to respond to future pandemics and health emergencies resiliently. Some suggested measures include: forming a legal basis to declare health emergencies; and having vertical collaboration between federal and provincial governments while addressing prevailing health situations, both local and global regularly. A robust and real-time digital national disease surveillance system and a resourceful rapid response team for data collection and management are essential. Media campaigns should communicate risks associated with pandemics and epidemics while engaging community members. The content should be developed to address queries regarding virus-related concerns in collaboration with other non-state partners engaged in pandemic management (Government of Pakistan, 2021b).

There is no one universal panacea to respond to COVID-19, but multi-stakeholder participation is an approach that, if adopted, can present relevant strategies to combat COVID-19. To be able to address such an unexpected crisis, different countries should embrace measures which are conducive and culturally acceptable to effectively deal with these unprecedented viral disease outbreaks (Panneer *et al.*, 2021). In a country like Pakistan having a diverse population, the effective implementation of policies warrants the participation of its community, to ensure their cultural and contextual efficacy and relevance.

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