

A glance at the COVID-19 epidemic control system in Taiwan: implications for organizational crisis management and leadership in black swan events

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Abstract

The COVID-19 pandemic caused substantial impacts and uncertainty in the world. For human resource leaders compelled into new roles in light of the pandemic, this paper used an exemplary case – Taiwan – to (1) discuss lessons and takeaways from the Taiwanese government's and organizations' response to the pandemic and (2) identify the structure of a pandemic control model and effective leadership behaviours at the national level that may be adopted in business settings to decrease the disruptive effects of a crisis. While efficient subsystems in organizational governance, policy, leadership, and culture are essential to combat a crisis, the evidence from Taiwan's case in these contexts highlights the importance of various infrastructures and communication pathways in crisis management. The study aims to advance the understanding of effective responses and leadership skills in times of crisis and contribute to human resource literature and policy development in business settings. Human resource professionals and leaders play an important role as change agents to reduce the disruptive effects of a black swan event and can benefit from this study to be prepared for future crises. Implications for international human resource interventions in crisis management and leadership and recommendations for future research are provided.

Keywords

COVID-19 pandemic • crisis leadership • black swan theory • Taiwan • governance • human resource development policies

The events of 11 September 2001, the Hurricane Katrina disaster in 2005, and the COVID-19 pandemic in 2020 called for effective crisis leadership in organizations. Many nations and organizations were not prepared for the impacts of coronavirus disease-19 (COVID-19) when it occurred in early 2020. The consequences of the unpredictable and highly disruptive event still require our attention. “Comparing COVID-19 to a *black swan theory* (BST) can be helpful in understanding how it is disrupting a system, previously so resistant to change, so drastically and completely” (Valeras, 2020, p. 222). In economics, a black swan is used as a metaphor to describe an unpredictable and undirected event that can have major disruptive effects or consequences on markets (Simianer & Reime, 2021). According to Taleb's (2007) BST, a black swan event is an outlier of regular expectation that arises due to an assumption as it could be explained and predicted and yet carries an extreme impact on related events with little or no reference model to work with. Examples of black swan events include but are not limited to, World War I, global heating, the rise of the Internet, the personal computer revolution, the 11 September attacks, and the coronavirus disease (COVID-19) pandemic (Devarajan et al., 2021; Morales & Andreosso-O'Callaghan, 2020; Simianer & Reime,

2021; Taleb, 2007; Valeras, 2020). As of 7 September 2022, the impact of the coronavirus disease had caused 6.51 million lives to be lost (606 million cases; 1.1 percent death rate) globally, including 1.04 million deaths (94.7 million cases; 1.1 percent death rate; 332.4 million population) in the United States and 10,115 deaths (5.5 million cases; 0.1 percent death rate; 23.89 million population) in Taiwan (Our World in Data, 2022). Taiwan outperformed in combating the pandemic compared to other countries. Its experiences with the 2003 severe acute respiratory syndrome (SARS) and 2009 haemagglutinin type 1 and neuraminidase type 1 (H1N1) outbreaks have prepared the nation to deal with the COVID-19 pandemic. Still the spread of the virus and the economic recession were not fully controlled. The business practices, social norms, and meaning of work were changed or reformed because of the pandemic. Given the difficulty in assessing and predicting adverse effects on business operations, many social science researchers deem COVID-19 as a black swan event (Bontrager et al., 2021; Hanine & Dinar, 2022; Sheng et al., 2021; Yarovaya et al., 2022). While others (Avishai, 2020; Drake, 2021) have argued that COVID-19 is not a black swan event due to its predictability (e.g., nonlinearity spread of the virus, the

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dangers of connectivity) and previous epidemics in human history (e.g., European smallpox epidemic in 1870-1875, Russia typhus epidemic in 1918-1922), Taiwan's COVID-19 experience may be used to study a black swan phenomenon. To support leadership and organizational development in a crisis, the concepts and features of this COVID-19 black swan phenomenon need to be investigated with scientific interpretations and facts. The disease has caused economic recession and increased unemployment claims globally. For 70 years, the United States' gross domestic product (GDP) had the largest single-quarter contraction and fell 8.9 percent in the second quarter of 2020 (Bureau of Economic Analysis, 2022). Such economic change has influenced human resource development (HRD) functions, as indicated in Swanson and Holton's (2009) three-legged stool: economic, system, and psychological. Country and organization leaders were surrounded by great levels of uncertainty and generally lacked abilities to respond to COVID-19 health threats promptly (Morales & Andreosso-O'Callaghan, 2020). Taiwan was praised for its quick and efficient response to the COVID-19 crisis (Pandey & Yu, 2022; Wang et al., 2020). With a population of nearly 24 million people on a total land area of close to 14,000 square miles, Taiwan had 451 cases and seven deaths during the global outbreak of coronavirus in 2020 (Farr & Gao, 2020). Outside the memberships of the United Nations (UN) and World Health Organization (WHO), Taiwan was the top performer in pandemic response with only a 0.3 per million population death rate until May 2021 without needing a lockdown (Manning, 2021). Foreigners residing in Taiwan reported positive experiences in terms of health care, living and workplace environment, and psychosocial effects during the pandemic (Pandey & Yu, 2022). The findings provided strong evidence of effective pandemic responses and leadership in Taiwan.

Bajaj et al. (2021) studied the case of the COVID-19 pandemic and identified the effect of cross-cultural differences in different stages of the crisis on sense-making, decision-making, sense-giving, and meaning-making. Jackson (2020) argued that: It would seem that an international organisation such as the WHO, and its handling of this crisis situation is ripe for study by cross-cultural management scholars, in terms of its organisation and decision-making processes, its discourse around the pandemic, and its ability to work cross-culturally, as well as its cultural intelligence (p. 120).

There is a need to study the impact of the pandemic on human society, organizations, work, and employees across different nations.

Purposes and significances of this paper

Countries around the globe responded to the spread of COVID-19 differently, either through hard lockdowns or

quarantine and social distancing, as well as human resource policies that support employee well-being and employment relations (Edvardsson & Durst, 2021). The COVID-19 crisis has caused instability, uncertainty, complexity, and ambiguity with negative effects on human capital management and development (Hanine & Dinar, 2022). Through multivariate research methods, Walsh et al. (2024) identified evidence of business leaders in micro and small organizations prioritizing learning and development opportunities for organizational effectiveness and sustainable leadership during uncertainty caused by the pandemic. Walsh et al. (2024) further concluded that networking, partnerships, and relationship-building to promote resilience are critical to embedding resilience-building into development opportunities. Hutchins and Wang (2008) stressed the importance of HRD's roles (as an organizational problem solver, change agent, meaning maker, and developer of human capital) in organizational crisis management by identifying, designing, and implementing interventions in the areas of training, career development, and organization development. In the same vein, Reio Jr. (2020) urged human resource professionals to work on defeating the uncertainty and fear of the unknown caused by the COVID-19 pandemic and finding effective ways to adapt to the new workplace. Lessons from the pandemic may be used to create collective wisdom and develop key qualities and skills to combat future crises (Balasubramanian & Fernandes, 2022). Therefore, this paper aims to discuss lessons from how the Taiwanese government and organizations responded to the pandemic and identify the structure of a COVID-19 epidemic control model and major factors in crisis leadership from an organizational and human resource perspective.

The expected outcomes of this paper are to (1) identify effective responses and leadership styles in times of crisis and (2) contribute to human resource literature and policy development. Human resource professionals and managers play an important role as change agents to reduce the disruptive effects of a black swan event and turn the challenges of a crisis into opportunities. They may benefit from this study to prepare for future crises.

Theoretical framework of crisis management and leadership

Effective crisis leaders should understand the cause, consequences, cautionary measures for prevention, and coping mechanisms for responding, known as the 4Cs of crisis management, and demonstrate their competencies in creating organizational capabilities, decision-making, sustaining an effective organizational culture, communication, managing multiple constituencies, and developing human

capital during a crisis (Bolman & Deal, 1997; Coombs, 1999; Pearson & Clair, 1998). During the five phases of a crisis - signal detection, preparation and prevention, damage control and containment, business recovery, and reflection and learning, leaders are expected to inform the possibility of a crisis, avert crises in an organization, minimize the influences of crises in the organization, implement strategic plans to ensure business operations, and inspect lessons and learn from the crisis (Wooten & James, 2008). To offer an inclusive framework of crisis management and leadership behaviours, Boin et al. (2013) proposed ten executive tasks:

1. Creating conditions that facilitate early recognition.
2. Creating, facilitating, and rehearsing a sense-making method.
3. Making critical decisions after some form of due process.
4. Monitoring and assessing formations of perpendicular and parallel coordination.
5. Monitoring the critical systems and their interrelations.
6. Offering a clear interpretation of the crisis and plan to lead the community out of it.
7. Ensuring timely and correcting information for public distribution.
8. Presenting transparent and constructive actions before and during the crisis.
9. Allowing for reflection on the action, tolerating negative feedback, and recording crisis management procedures to facilitate learning.
10. Engaging in crisis preparations.

Effective crisis leadership can lower employees' stress and anxiety and enhance their productivity and commitment. Yet, there is no one best leadership approach or style for a crisis like the COVID-19 pandemic. Transformational leadership (required time to build consensus), transactional leadership (bound by rules and regulations), charismatic leadership (focused on individual needs and attention), directive leadership (lack of focus on organizational flexibility and innovative action), and cognitive leadership (lack of focus on empathy and interpersonal skills) may not be appropriate approaches in crisis management (Balasubramanian & Fernandes, 2022). Given the changing nature of the outbreak, a combination of multiple leadership competencies and styles is needed for a crisis with various stages (Balasubramanian & Fernandes, 2022). Based on a human resource management perspective, Hilmi and Febriansyah (2021) concluded that a situational leadership model, that uses supportive and directive behaviours and constant communication, is vital in times of crisis such as the COVID-19 outbreak. Balasubramanian and Fernandes (2022) advocated the applicability of situational leadership, which holds no single leadership style but adapts appropriate behaviours as the situation requires when

managing the beginning, ongoing, and future phases of a crisis. Leaders' ability to adopt and demonstrate different leadership styles that match the followers' level of readiness is crucial to handling a crisis (Balasubramanian & Fernandes, 2022). As Seghal et al. (2021) stated, leaders should consider a follower-centered approach to lead a crisis and understand employees' perceptions of leadership characteristics to increase their productivity and competitiveness. The follower-centred situational leadership seems to have the highest probability of success in crisis management.

In a recent Harvard Business Review article, Zenger and Folkman (2020) discussed whether women are better leaders during a crisis and how workers tend to seek leaders who hold the traits of honesty, integrity, clarity, sensitivity, empathy, and dedication, which women are more likely to display compared to men. Katrín Jakobsdóttir (the prime minister of Iceland), Angela Merkel (the chancellor of Germany), Mette Frederiksen (the prime minister of Denmark), Sanna Mirella Marin (the prime minister of Finland), Jacinda Ardern (the prime minister of New Zealand), Erna Solberg (the prime minister of Norway), and Tsai Ing-wen (the president of Taiwan) are all exemplary female leaders who had placed a strong focus on families, children, and social solidity in combating the COVID-19 crisis (Bear & Agner, 2021; Hassan & O'Grady, 2020; McLean, 2020). Specific traits they have include practicality, kindness, resilience, collective common sense, and humility (Champoux-Paillé & Croteau, 2020). Based on the low numbers of confirmed cases and deaths, these female country leaders have proven their abilities to manage and control the spread of the coronavirus. Garikipati and Kambhampati (2021) also stated that female country leaders tended to respond to the COVID-19 crisis more quickly and decisively with a more democratic and participative leadership style and an empathetic and interpersonal communication style than male country leaders. Literature has identified gender differences in leadership in which women are more caring and relationship-oriented leaders while men are more forceful and task-oriented leaders (Eichenauer et al., 2022). Women are rising as stronger leaders in the disrupted early 2020s and setting a new normal for crisis leadership as the pandemic continues. Yet, Champoux-Paillé & Croteau (2020) raised a thought-provoking question – whether the success of these female leaders is based on societies that are more open to female representation in positions of power. Based on the World Economic Forum's Global Gender Gap Report 2020 and an American consultant firm McKinsey's *Delivering through Diversity*, Champoux-Paillé, & Croteau (2020) indicated that more democratic societies and gender-balanced businesses are better managed and outperformed financially. It is reasonable to state that diversity and inclusion are two critical drivers to combat the COVID-19 crisis. Successful crisis management requires effective leaders at all

levels. They need a skill set to handle a global pandemic and support the public to make and implement tough decisions with confidence and conviction (McLean, 2020).

“COVID-19 offers a unique spotlight on the effectiveness of national leadership in crises” (Garikipati & Kambhampati, 2021, p. 401) in managing work-from-home employees and job changes, ensuring the safety and health of workers, motivating essential workers, and planning for workforce reduction strategically. Based on responses from 1053 employees and 290 managers during the Danish national lockdown in 2020, Kirchner et al. (2021) discovered the importance of organizational support and considering distance workers’ and managers’ well-being (due to reduced social interaction) and performance (due to new work tasks). They further concluded the need for managers to develop new leadership capabilities and adopt new ways of working during the pandemic. In the U.S., Aagaard and Earnest (2021) suggested ethical decision-making and effective communication for a connected leadership team and community are two critical approaches to living with COVID-19 in the new normal. Different countries have different priorities in responding to the pandemic based on their national/local culture, governance, and leadership.

Taiwanese COVID-19 epidemic control model

Based on data from the Taiwanese largest agri-food e-commerce platform, Chang and Meyerhoefer (2020) indicated that COVID-19 increased the demand for online food shopping services. Taiwan’s successful pandemic response was highlighted by the United States Department of State at the WHO’s World Health Assembly (Fincher, 2020). The Taiwanese COVID-19 epidemic control system contains several subsystems to form an epidemic control model and a joint effort of the general public and the central and local governments (Hsiao et al., 2022). As in business settings, organizational effectiveness depends on various supporting systems such as governance, structure, policies, human capital, and culture. The subsystems of Taiwan’s epidemic control system can be categorized as follows.

Protection: Face mask policy, supply, and distribution

Taiwan’s successful pandemic response was based on a strong public health infrastructure, a flexible pandemic plan, and the widespread use of face masks (Manning, 2021). When the worldwide outbreak of the COVID-19 pandemic started in December 2019, people in Taiwan voluntarily wore face masks to protect their health and slow the spread of COVID-19. Face mask-wearing has been a cultural behaviour

in Taiwan because of air pollution and previous epidemics. People co-operatively practiced frequent handwashing and environmental cleaning and sanitizing, as well as avoiding social gatherings. To promote public safety, the Taiwanese government restricted the export of face masks, set a pricing policy with a purchase limit on face masks, and, most importantly, gave supply priority to the frontline health workers and other essential workers for disease control and prevention (Hsiao et al., 2022). These actions demonstrate strong leadership characteristics in *culture building*, *equal access*, and *safety assurance* to the public with *flexibility*.

Control: Border control and quarantine

Since the restriction on direct flights from Taiwan to China was lifted in 2008, Taiwan has grown its trade and tourism with mainland China. As increased numbers of Taiwan-based organizations operate factories in mainland China, more Taiwanese people resided in China’s major cities such as Shanghai. When the pandemic started in 2020, the Taiwanese government immediately suspended flights from China to Taiwan. Fourteen-day individual home (or anti-epidemic hotel) quarantine and seven-day self-health management (known as *14+7 days*) and COVID-19 testing were mandated when entering Taiwan. Each entrant was required to schedule and take an anti-epidemic taxi from the airport to the individual home (or the pre-reserved anti-epidemic hotel) for quarantine. After a year of successful control and prevention of the spread of coronavirus, the government gradually opened the border and changed the quarantine requirement from *14+7 days* to *10+7 days*, then *3+4 days* (Hsiao et al., 2022). All returning citizens, residents, or transit passengers at Taiwanese airports must present a COVID-19 reverse transcription polymerase chain reaction (RT-PCR) test report within 48 hours before boarding and fill out the Quarantine System for Entry (QSE) with reserved anti-epidemic hotel/home information for tracking. Those who failed to comply with the regulations would be fined NT\$10,000 (equal to US\$325.88) to NT\$150,000 (equal to US\$4,888.14). The Taiwanese government offered subsidies to the citizens for anti-epidemic hotels and taxis for quarantine. Additionally, a triple-stimulus programme was launched to revive Taiwan’s post-outbreak economy. Each citizen received NT\$5,000 (equal to US\$162.93) in vouchers. The consumer voucher scheme contributed to the growth of Taiwan’s GDP by 0.53 percent (Kang, 2021). The social cost concern of the quarantine implementations was addressed by flexible manpower and tens of thousands of volunteers to provide food and check the conditions and needs of people who were quarantined (Huang, 2020). The Taiwanese government exhibited its sympathy and tenacity in

decision-making and efforts to revitalize the economy. In this context, *agility, compassion, care, and courage* are important leadership characteristics to respond to and manage the pandemic for continuous organizational performance improvement. In addition, literature has confirmed the importance of leadership in leading successful results of volunteering during the pandemic; however, research on how the leadership of volunteers can be effective for the community in crisis responses is limited (Walsh & Johnson, 2023).

Support system infrastructure: Health insurance programme and healthcare facilities

Before the COVID-19 outbreak, the country's national health insurance programme, epidemic-designated hospitals and healthcare facilities, a command centre (Taiwan Centers for Disease Control [CDC], an agency of the Ministry of Health and Welfare of the Republic of China), and epidemic standard operation procedures had already been developed and were functioning. In 2004, the National Health Command Center (NHCC) was established under the CDC to prepare for, respond to, and recover from public health emergencies and disasters. Based on lessons learned from the 2003 SARS epidemic, the Taiwanese government immediately (as early as January 2020) responded to the COVID-19 pandemic by establishing the Central Epidemic Command Center (CECC), associated with CDC to streamline leadership, integrate resources, coordinate personnel, and offer advice and guidelines to combat the pandemic. The CECC led all COVID-19-related matters by conducting prompt prevention strategies (e.g., vigorous border control at the beginning, stringent entry quarantine, sufficient medical supply, and public health education) and rigorous contact tracing through

advanced information and communication technology infrastructure (Chang, 2020). Once travellers entered Taiwanese airports, they were required to take an RT-PCR test (see Figure 1) and provide a Taiwan telephone number (on-site purchase was available at the airport for those who did not have a Taiwan telephone number) and Line (a freeware app for instant communications on electronic devices) quick response (QR) code on the QSE for the government and officials to trace and communicate. The initiatives allowed the government to assist residents and answer their questions immediately. Contact tracing of (potentially) infected people through telecommunications devices successfully prevented the spread of COVID-19 and supported the data-driven decision-making of the government. In addition to the digital communication channels, comprehensive crisis management plans, sensible public health interventions, and timely national health system adjustments are critical (Manning, 2021). Clinics and medical centres in Taiwan were obliged to report COVID-19-confirmed cases to the CECC and transfer the patients to designated hospitals for treatment and quarantine (Hsiao et al., 2022). In that respect, *the decisiveness* in taking action and *consultation* in supporting and guiding people through the crisis are essential leadership traits.

Governance: Democracy and resilience

During the pandemic, the Taiwanese government played an authoritative leading role in decision-making and offered resources to organizations and citizens. Transparency and accountability were ensured for public support and collaboration. Resilience in the national policies, people's involvement in monitoring governance accountability, and the media's role as watchdogs are influential factors in fighting the



Figure 1. Mandated RT-PCR Testing on Arrival at the Taiwanese Airport, Temperature Screening at the Taipei Mass Rapid Transit, and Face-Mask Culture.

crisis (Soon, 2021). The National Health Insurance database, stockpile systems, immigration database, Taiwan National Infectious Disease Statistics System, QR code scanning, online reporting of travel history and health symptoms, and media surveillance were integrated for data analysis and decision-making (Duff-Brown, 2020). Transparency, accountability, and collaboration with the public advanced Taiwan's COVID-19 epidemic control system (Pandey & Yu, 2022). The way the political parties partnered to manage the outbreak and stop public panic is worth mentioning (Duff-Brown, 2020). Taiwan, a democratic country, was able to fight the COVID-19 outbreak while maintaining fundamental freedoms and civil liberties (Soon, 2021). In combating a global and national crisis, transparent government and strong public healthcare infrastructure are critical in government-business-civilian collaboration.

Moreover, national communication strategies (e.g., CDC's daily news conferences, a toll-free hotline for citizens to report suspicious symptoms) and multiplatform response systems (e.g., cellphone text message, social media platforms, civic tech community 'g0v' [also known as gov-zero]) were implemented to answer public questions, share real-time updates, and develop people's trust. Smart technology allows the government to monitor the situation and plan anti-COVID-19 strategies. The CECC announced, and encouraged the public to download, the Optimized Taiwan Social Distancing (台灣社交距離) app for individual preventive measures, epidemiological investigations, and individual potential risk discovery. The app would immediately notify individuals who were potential contacts of a confirmed COVID-19 case. The government agencies also offered additional initiatives in educating public health awareness including mandatory use of face masks, community-based enforcement of social distancing, and hand hygiene procedures (Dai et al., 2021).

All these leading efforts from the government contributed to Taiwan's effectiveness of COVID-19 prevention and control. Within this framework, *democracy* and *resilience* appear to be the other effective crisis leadership traits. The importance of greater workplace democracy should not be overlooked during a crisis.

Coordination: Government-business-civilian collaboration

In 2020, the Taiwanese government, business co-operatives, and private sector (e.g., pharmacies, convenience stores, and private healthcare delivery system) were interdependent and worked collaboratively to import, manufacture, and distribute face masks to stop the spread of coronavirus when there were limited N95 masks (Siedlok et al., 2021). Until

2021, less than one percent of Taiwanese had one dose of vaccination due to extremely limited availability of vaccines. At the same time, Taiwan had over one thousand sudden cases of infections (Tan, 2021). In response to the situation, Taiwan Semiconductor Manufacturing Company (TSMC) and Hon Hai Precision Industry Co., Ltd. (HHPI) spent about \$350 million to purchase ten million doses of German COVID-19 vaccine from Shanghai Fosun Pharmaceutical Group in China (CNBC, 2021). The TSMC and HHPI donated the vaccines to the Taiwan CDC, so within just a few months, the nation once again successfully defeated a pandemic (Soon, 2021). On 18 February 2022, Costco announced the closure of its Neihu branch in Taipei, Taiwan for disinfection after receiving a note of a confirmed infected case from the Taiwanese government (Focus Taiwan CNA English News, 2022). The government-business collaboration phenomenon is the same as Nassim Taleb's concept of *separation of powers* which can be adapted to fight a large-scale crisis like the COVID-19 outbreak (Avishai, 2020). The relatively low infection and death numbers in the first two years of the global pandemic proved the effectiveness of Taiwan's COVID-19 epidemic control system and collective efforts from the government, business, and civic engagement (Hsiao et al., 2022; Huang, 2020). It is important to note that Taiwanese organizations are generally committed to business ethics and social responsibilities. Given this, constructs of *collaboration*, *empowerment*, and *social conscience* are essential leadership traits in crisis management.

Taiwan is deeply influenced by Confucian philosophy which holds strong values of self-cultivation, social harmony, collectivism, ethics, hierarchy, and virtuous behaviour. Such national cultural values may influence Taiwanese civil behaviours when responding to the pandemic. Based on the identified cultural factors, subsystems, traits, and actions, Figure 2 illustrates the Taiwanese COVID-19 epidemic control system discussed above. While efficient subsystems in organizational governance, structure, policies, and culture are essential to combat a crisis, the evidence in these contexts from Taiwan's case highlights the importance of effective leadership and management skills at the national and organizational levels in a crisis control model.

Based on the 4Cs, five phases of crisis management, and the Taiwanese COVID-19 Epidemic Control System, essential crisis leadership skills may include the following:

1. Signal detection phase (causes and consequences):
 - Playing an authoritative leading role in decision-making and resource management.
 - Being decisive and prompt in taking initiative with ethics, social responsibilities (national and organizational), culture, values, and behaviours in mind.
2. Preparation and prevention phase (cautionary measures for prevention):

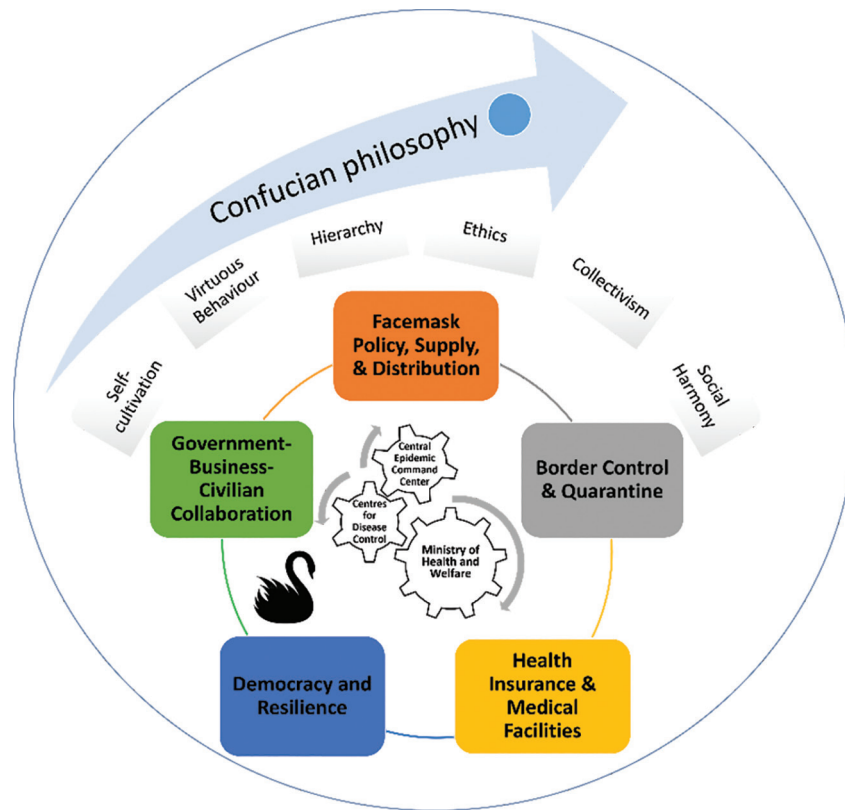


Figure 2. Taiwanese COVID-19 Epidemic Control Model.

- Building communication technology and support system infrastructures (such as health insurance and health care services).
 - Establishing a safety culture and updating policies to prepare an organization for a crisis.
 - Forming a comprehensive plan and establishing subsystems to support the new culture and policies.
 - Offering information, supplies, and resources to create a safe working environment and protect employees.
3. Damage control and containment phase (coping mechanisms for responding):
 - Acting rapidly to keep control.
 - Being accountable and resilient.
 - Being transparent through various communication pathways with an open mindset for feedback.
 - Making and implementing difficult decisions with compassion, updated/accurate information, and efforts to revitalize the organization's climate.
 4. Business recovery phase:
 - Creating a greater workplace democracy.
 - Employing and co-operating with government initiatives and policies.
 - Empowering and collaborating with employees.
 5. Reflection and learning phase:
 - Maintaining a diverse and inclusive (DI) workplace with equality assurance.
 - Taking action on feedback and lessons from the crisis.
 - Evaluating and revising the communication technology and support system infrastructures as needed.

Implications for crisis management and leadership in organizations

Theoretical Implications

The pandemic caused chaos, uncertainty, fast-change health guidance and requirements, supply chain interruption, new job categories (e.g., essential vs. non-essential workers), job changes (e.g., remote work, lay-offs, and reduced hours), concerns about financial wellness, emotional burden (e.g., anxiety, vulnerability), and issues on physical wellbeing (e.g., Zoom fatigue). International human resource researchers and practitioners need to be mindful of the threatening effects of a crisis (such as a disease outbreak) on organizational sustainability and ultimate survival and facilitate the engagement of stakeholders in systematic and strategic

planning (Hutchins & Wang, 2008). During the pandemic, there was (1) a need for prompt and decisive responses and communication channels, (2) issues with work-life balance and quality of life for remote workers, (3) physical and psychological issues for remote workers, and (4) changes in labour markets or employment relations. Although Bontrager et al. (2021) confirmed that flexible work arrangements could promote work-life balance and decrease employee turnover rate, Zhong et al. (2021) argued that flexible working arrangements, as well as telecommuting and poor digital infrastructure, could cause employee burnout, negative emotions, and work inefficiency during the epidemic. Based on the social cognitive career and motivation theory, workforce sustainability, personal and environmental stress, and career decisions during the pandemic are significantly related (Santos, 2021). Yet, leaders were still challenged to differentiate employees' contributions and offer career development opportunities during the crisis (Zhong et al., 2021).

Moreover, the crisis has renewed the meaning of work, changed the role of human resource professionals, and amplified its influence in organizations (Harbert, 2021). Utilizing industry labour reports, Bennett and McWhorter (2021) identified the importance of (1) employees' rapid shift to remote work, (2) working collectively together apart, and (3) building key skills while under pre- and post-pandemic conditions. Health and safety measures, dynamic crisis training, organizational support, sustainable human resource management, and social responsibility initiatives should be enhanced during a crisis (Edvardsson & Durst, 2021). Well-trained and experienced teams of officials equipped with the skills and abilities to identify the crisis and initiate emergency management structures are crucial (Wang et al., 2020). Given this, HRD professionals play a significant role in providing COVID-19 advice and support and shaping organizational responses to the pandemic (Branicki et al., 2022). This study identified and discussed critical elements of crisis leadership in black swan events to facilitate future experimental research on developing a crisis leadership theory that integrates the HRD perspective.

Practical implications

In times of crisis, HRD's new role involves offering timely support in everything to employees, developing new (or updating) policies with consistency and clarity, ensuring empathy and equitable processes when implementing new policies or layoffs, and helping the organization to build and maintain its social capital (Brower, 2020). The professionals should comply with updated public health and workplace safety regulations and consider the impact of cultural differences on family and

work values, so the employees would feel safe and secure returning to work. The new human resource tasks in working with remote workers and arranging virtual meetings require advanced technology, communication, and engagement skills for effective collaboration. The Taiwan case also reminds us that crisis response plans and procedures should acknowledge spontaneous voluntary action and integrate volunteers into the response effort (Twigg & Mosel, 2017). To promote the DI workplace during a crisis, HRD professionals could foster civil discourse, bring diverse voices to the decision-making processes, and ensure equal opportunities among employees (Brower, 2020). They could then determine what systems and procedures worked and what needed to be worked on during the crisis to build the organization's competitive advantages. Due to lingering COVID-19 challenges, the new normal has reformed and will continually transform human resource roles and job functions. In this respect, HRD professionals are organizational, functional, and learning leaders (Bennett & McWhorter, 2021).

Based on Taiwan's pandemic crisis control model, effective HRD practices to combat challenges caused by crises are proposed as follows.

- Working with top management to build a robust organizational crisis management strategic plan.
- Developing a crisis communication strategic plan.
- Keeping up and complying with updated government policies and guidelines.
- Engaging all employees in nurturing a safety culture to promote a collaborative and safe workplace.
- Involving diverse employees in developing/revising work-from-home (including quarantine/epidemic prevention leaves) and family-care-related policies.
- Setting up divided workplaces to ensure a safe organizational operation.
- Arranging secondary decision-makers and key technical staff.
- Developing/updating the succession planning to build a talent pipeline.
- Developing a supply chain management plan and including multiple substitute suppliers.
- Setting up consultation programmes regarding employee benefits.
- Setting up training programmes for job enrichment and job rotation.
- Setting up training programmes for work-life balance, financial wellness, and mental and physical health.
- Setting up training programmes to advance managers' and supervisors' crisis leadership skills.
- Being culturally sensitive when providing emotional and health resources.

In a discussion on virtual HRD professionals' role in the crisis and the post-pandemic world, Bennett and McWhorter (2021) highlighted the importance of embracing the growing roles and renewing HRD programmes that incorporate advanced technology, data analytics, and human needs in responding to various environmental challenges caused by the pandemic and a new technological era (also known as the fourth industrial revolution). There must be continued efforts to understand the cultural dimensions of institutional, policy-based, and behavioural responses to crises such as COVID-19.

Conclusions and recommendations

This paper used a case study—Taiwan—to identify the structure of a COVID-19 pandemic control model and major factors in crisis leadership from an organizational and HRD perspective that may be adopted to reduce the disruptive effects of a black swan event. Essential crisis leadership skills and employee-centred situational leadership were identified and discussed to support leaders and HRD professionals leading through a crisis and coping with the new normal. To navigate through a disaster, the professionals also need to make sure a safety culture is created in the organization, a crisis management team is formed, the top management supports employee-centred situational leadership, and the communication technology and support system infrastructures are available to facilitate virtual work and online training programmes.

Recommendations for future research

The COVID-19 pandemic has caused substantial impacts and a lot of uncertainty in the world. In August 2022, only four countries—Turkmenistan, Tokelau, Saint Helena, and the Democratic People's Republic of Korea (North Korea)—had no coronavirus case confirmed and reported (World Health Organization, 2022). No case can capture the range and a complete concept of COVID-19 pandemic impacts. According to Our World in Data (2022), as of 7 September 2022, New Zealand (1.75 million cases; 1,939 deaths; 0.1 percent death rate; population 5.12 million), Iceland (205,000 cases; 213 deaths; 0.1 percent death rate; population 376,248), and Denmark (3.28 million cases; 5,960 deaths; 0.2 percent death rate; population 5.83 million) have a comparable outcome of combating the pandemic on the death rate with Taiwan (5.5 million cases; 10,115 deaths; 0.1 percent death rate; population 23.89 million). Because these countries are all led by female leaders during the pandemic, future researchers are encouraged to investigate and compare these countries' COVID-19 epidemic control models, leadership practices, and HRD interventions with the case of Taiwan. A compare and

contrast study on countries led by women versus countries led by men is also recommended to confirm whether gender plays a role in leading the pandemic effectively. Additionally, data-driven narratives in the pandemic context should shed light on some of the distinct experiences of the COVID-19 outbreak.

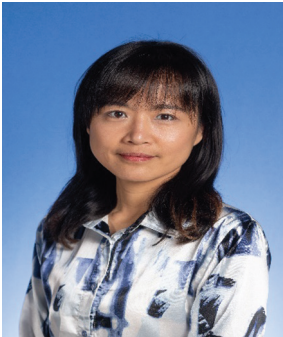
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