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

Aisha Rizwan
Institute of Administrative Sciences, University of the Punjab, Lahore, Pakistan
Shabana Naveed
Faculty of Management Sciences, University of Central Punjab, Lahore, Pakistan, and
Yaamina Salman
Institute of Administrative Sciences, University of the Punjab, Lahore, Pakistan

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).

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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About the authors
Aisha Rizwan is an Assistant Professor at the University of the Punjab, Lahore, Pakistan. She teaches various courses in Public Management, Marketing and research-oriented modules at BS, MPhil and Ph.D. levels. Her research interests are in public sector reforms, e-governance, collaborative governance, and Sustainable Development Goals (SDGs).

Shabana Naveed is an Associate Professor at the Faculty of Management Sciences, University of Central Punjab, Lahore, Pakistan. Her research interests include public management reforms, inter-organizational collaboration and governance networks.

Yaamina Salman is working as Professor and Director at Institute of Administrative Sciences, University of the Punjab, Lahore, Pakistan. Her research interests are public sector reforms and collaborative governance. Yaamina Salman is the corresponding author and can be contacted at: yaamina.ias@pu.edu.pk