

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

Factors Affecting Artificial Intelligence and Management of Institutional Response to the Event of Coronavirus in Pakistan

Kalsoom B. Sumra¹, Mehtab Alam², Khairul Baharein Mohd Noor³, Shafei Moiz Hali⁴ and Hamza Iftikhar⁵*

ABSTRACT

With millions of people segregating around the globe, Coronavirus stands truly a global event. It ranges to the trajectories of states with miserable and wrecked health care systems. The transmission is aided by the wide-ranging response from the policy planning and state organizations. Experts are aware of the sternness and contamination of the infectious disease and its disastrous consequences that desire for inoculation of Artificial Intelligence (AI). The absence of an AI policy rejoinder may lead to increased fatalities for weathering the storm. Despite the wide range of responses, the up-to-date policy needs an organized way to track the inflexibility of state-run organizations' frameworks to attain the objectives of AI organizational policy response. The study's objectives include including key national institutions to understand perceptions and motivations to challenge the event of COVID-19 through common grounds of Artificial Intelligence. The data is obtained through an online survey from the foreign office, health care services, inter-coordination ministries,

ARTICLE INFO

Article history:

Received: 17 November 2021 Accepted: 27 May 2022 Published: 4 October 2022

DOI: https://doi.org/10.47836/pjssh.30.4.01

E-mail addresses:

kalsoom.sumra@comsats.edu.pk (Kalsoom B. Sumra) alammehtab56@gmail.com (Mehtab Alam)

khairulbaharein@cyberjaya.edu.my (Khairul Baharein Mohd Noor) shafeimohizhali@ndu.edu.pk (Shafei Moiz Hali) Hamza@graduate.utm.my (Hamza Iftikhar)

*Corresponding author

and science and technology ministry. The paper has unfolded the useless directions, impractical steps, uncertainty, ineffective communication, and social protection, which led to the rapid spread of infection. Refining each health indicator and reducing the progression of the pandemic through the AI archetype is conceivable only when officialdoms employ the AI-based approach.

Keywords: Coronavirus, management, organization, policy

¹Center for Policy Studies, COMSATS University, Islamabad 44000, Pakistan

²University of Cyberjaya, Cyberjaya, Selangor 63000, Malaysia

³Limkokwing University of Creative Technology, Cyberjaya 63000, Selangor, Malaysia

⁴Department of Government and Public Policy, National Defense University, Islamabad 44000, Pakistan

⁵Perdana Centre of Science, Technology and Innovation and Informatics, Universiti Technologi Malaysia, Kuala Lumpur 54000, Malaysia

INTRODUCTION

In December 2019, an infectious disease, Coronavirus, was caused by a new virus that shocked the world in a few minutes, days, and months. The disease led to respiratory symptoms of illness with trouble breathing (X. Wang et al., 2020). The intervention suggested by the social and medical scientists includes social distancing, cleanliness, washing hands, and minimum level of interaction of body parts with the face (Zhu et al., 2020). As an infected person or individual sneezes/coughs, it spreads the virus while contacting other human community members. Even the surface of the object with the infectious virus may spread for the individual to touch or interact with (Guan et al., 2020). The most qualified resolution against the virus is to reduce social meetings at the individual, official, or community level. It resulted in the imposition of 'lockdown' in most regions across the globe (Huang et al., 2020). It has become a preferred practice for people to remain distant.

The activation of the virus is a bigger challenge for communities worldwide. Those trying to respond under the prescribed direction failed to justify their intervention. The struggle for intervention is still in the process of development (Holshue et al., 2020). However, the important aspect as unfolded through this virus is the serious flaw in institutional capacity and policy response of the state-to-state organizations like foreign offices, health, and education (Perlman, 2020; D. Wang et al., 2020). Instead of blending this

phenomenon, a matter of geo-political or a tool of international politics, the global and state external affairs departments should have taken certain emergency measures. It reflects the non-serious attitude of leading powers and states like Italy, the United States, and the United Kingdom (Wu et al., 2020). At the same time, the infectious disease extended the need for effective organizational change and policy response, which seems nowhere in the recent crises.

The same is the case for developing countries where states like Pakistan are at high risk of not following precautionary measures. The Ministry of Foreign Affairs (MOFA) is the primary agency in tackling external affairs, and its response requires a comprehensive review (Chung et al., 2020). Institutional change, as underlined, is a pathdependent phenomenon that is a process of comprehending the policy according to the situation at hand (Phan et al., 2020; Sparrow, 2020). The 'Joint Humanitarian-COVID-19 Framework' approach is applied in the context of impending the issue of COVID-19. The staffs of MOFA in various categories like delegations, headquarters, and appointed officials at embassies of member states, are part of the process (World Health Organization, 2019). Further, inclusive coordination with international organizations like World Health Organization (WHO) and attached humanitarian agencies is the prerogative of Pakistan's foreign policy. The most important aspect of this framework is the inclusion of national counterparts (key national institutions) to understand each other's perceptions, objectives, and motivations for action through common ground (Dareini, 2020).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The specific tools are meant for individual and organizational change (Karabag, 2020). It is followed by a strategy where concepts and methods are implied to achieve objectives (Richards, 2019). Memes are a significant aspect of self-replication for fulfilling foundational change as it enhances the organization's health. The emergence of crises COVID-19 triggers institutional change for state-oriented organizations like MOFA.

Causal Layered Analysis

Management of the institutional response is reflected using layered causal analysis (CLA). The analysis tools used in this study are formulated by Inayatullah (1998) for application during issues of pandemics and disasters of similar nature. Scholars and authors have used the issue under pandemic conditions where the processes of communication among key stakeholders amalgamated to resolve the crisis of the pandemic at hand. In Figure 1, four phases and layers of the analysis are incorporated as the change occurs in institutional mechanisms to respond to the pandemic disaster (Farrow, 2019; Scheele et al., 2018). The edging of problems is interlinked with the indicators of analysis that include metaphor, worldview, system, and litany (Horne & Boland, 2020).

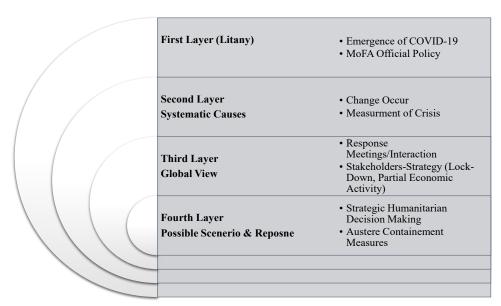


Figure 1. Government policy responses in the context of institutional change through causal layered model Source: Farrow (2019)

JOINT HUMANITARIAN COVID-19 DEVELOPMENT

Pakistan needs a traditional humanitarian response. The National Disaster Management Authority (NDMA), which provides services including the humanities and development programs, is assigned to key government units. Food is an intersecting issue, and altitude is one of the key indicators of COVID-19 monitoring in Figure 2 (Henökl & Webersik, 2014). The mandate to develop, plan and coordinate health policy within the government belongs to the Department of Nutrition of the Ministry of Health.

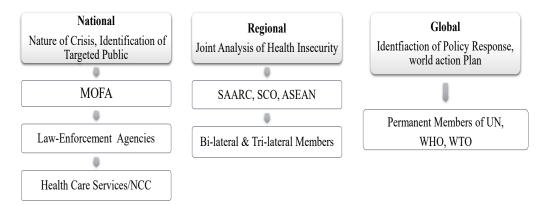


Figure 2. Joint Humanitarian COVID-19 Development Framework

Source: Henökl and Webersik (2014)

CONCEPTUAL FRAMEWORK

The institutional change is the key development in Coronavirus's recent challenge, which implies the actions considered for immediate purposes. Ministry of Foreign Affairs (MOFA) having standard interaction with world communities through the department concerned is eventful to crisis management of COVID-19 (Salehi et al., 2020). This cell is to facilitate the Pakistani diaspora abroad and update the system in measurements taken to combat the virus. However, the challenge of the global

pandemic is accelerating, and the demand for addressing the key institutional changes is in cooperation with the staff and senior management (Chen et al., 2020).

The culture, beliefs, values, and social norms may decrease the change process, but it needs to be understood effectively. The classification of institutional change is based on the small- and large-scale interventions. In Figure 3, the Causal Layered Analysis (Social Science Method) of the COVID-19 crisis reflects that policymakers are playing their part in decreasing the acceleration of

the virus (Farrow, 2019; Haigh, 2016; Osa & Hanatani, 2018; Richards, 2019).

The crisis reflects that organized nations are easily overcome because of the quality education departed to the people at lower and higher levels (Chohan, 2020). Despite the dreary response of the Pakistani nation, certain measures on behalf of the Ministry of Foreign Affairs are to be part of reducing the tension and fear in the citizen's minds. It proposes as follows:

H1: Faster Change in the institution substantially influences social and biotic crises.

Here it requires the training and updating of the staff of MOFA to be ready to interact/support patients and people of the Pakistani diaspora abroad (Khan et al., 2020). The information and necessary data must be passed to the concerned organizations dealing with the post-COVID-19 scenario, both socially and economically. A comprehensive framework and action plan should be prepared in line with the inclusive approach and input of key stakeholders like health services, law

enforcement agencies, and national food and security (Sohrabi et al., 2020). Hence the literature illustrates that:

H2: The response of government and intraorganizations illustrate major changes that require the upgradation of staff.

Border management remains the weak and confused area during the recently developed crisis of COVID-19, which needs to be reviewed comprehensively in consultation with the country's top management. Foreign travelers should be banned from entering a country, or they can be settled around borders in quarantines. The shared experience among the developing and developed states is the need of the hour. MOFA can facilitate the digital response by inviting nations to participate in a video international conference. The complete implementation of pre-cautionary directives considering the response to COVID-19 is significant (Eurosurveillance Editorial Team, 2020). It provides:

H3: The cross-border infectious movement of individuals from one country to another reflects weak management.

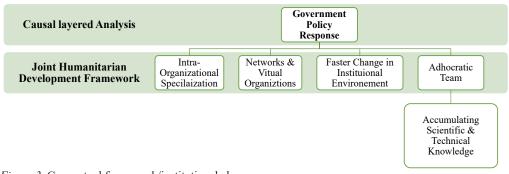


Figure 3. Conceptual framework/institutional change Source: Farrow (2019); Henökl and Webersik (2014)

GOVERNMENT POLICY RESPONSES

The response to the COVID-19 Coronavirus that affects much of Pakistan, particularly the liberated areas of the region, was described as short-lived, well-organized, and a small investment by the Prime Minister (Agensky, 2019). The government is paying little attention to building resilience to drought and high child malnutrition and mortality levels. Further, the virus started earlier and was a more appropriate time; the current situation has seen high levels of acute global famine. It is possible to do with lower levels of severe acute impacts of Coronavirus, and these are due to the scale-up of the integrated management of institutional change (Anderson, 2019).

Accumulating Scientific and Technical Knowledge

Organizational change refers to activities used to promote civic engagement, public service development, and public dialogue. Various attributes are significant in attaining knowledge through evaluation, a delegation of powers, up-gradation, monitoring, and training (Bastian et al., 2019; Salmi & Mattelmäki, 2021). Reviewing the available literature supports organizational change through knowledge management and information (Bastian et al., 2019). In addition, the organization of scientific media can measure service delivery performance, such as usability, interaction, and the ability to adapt to change.

Intra-Organizational Specialization

Intra-organizational specialization enhances cooperation and coordination among key stakeholders of the state. For example, those fighting and combating the virus COVID 19 must have increased interaction in meeting for a comprehensive response (Boodhna et al., 2019). Similarly, the norms and values pursue the conventions that are the basis for arranging healthy relationships among networks, corporate hierarchies, associations, and communications in the worst crisis setting (Buchanan & Badham, 2020).

Networks and Virtual Organization

The classifications of service quality for the effective services of virtual and network organizations are significant during times of crisis. The quality of a virtual organization is based on the available instruments and viable performance of accepting public services associated with changes. Over time, modifications in the virtual program installation provide a better outcome to maintain social distancing and relevant actions (Salmi & Mattelmaki, 2021). Management of measures leads to achieving effective results and meeting the demands of the public that influences them (Cameron & Green, 2019). More use of the networks intensified the redesigning of operations that can influence the concerned state operations in combating Coronavirus (Chung et al., 2020).

1456

Faster Change in Institutional Environment

The procedures in the organizational environment segments imply that faster change in the institution's environment may not bring immediate results. It is due to weak interactions among state departments where the government takes place in the presence of a design plan and an identity that determines the quality assessment of the various organizations (Farrow, 2019). Some studies provided empirical evidence for the institution's pivotal role during the occurrence of faster change in the atmosphere of organizations (Farah et al., 2019).

Adhocratic Team

The government response through the adhocratic team refers to the implication of a new tool in the current problem of Coronavirus (Steyaert et al., 2020). It implies the effectiveness of individuals in the organizations and their responsive role in allocated teams. Various options like the presentation of strategic, ideological, and stewardship components in the institutional teams affect the performance in times of health crisis (Grein et al., 2020). However, it is hard for us to straight degree the problems and remains consistent with an adhocratic team service-dominated response. At the same time, democracy is the provision of allowing team members to speak and remain open with each other (He et al., 2020). Inclusiveness is an indispensable part of response measures during organizational change.

METHODOLOGY

The Causal layered analysis and the Joint Humanitarian Development Framework presented in this article describe a situation where analysis is used as a methodological framework. It is a method developed by Inayatullah (1998), which many future investigators and practitioners later used to tackle the issues and challenges of problems similar to the pandemic. The fundamental supposition is the preparation of issues that regulate the systematic resolution of political decisions (Horne & Boland, 2020).

To this end, the future representatives are divided into four categories: prayer, judgment, worldly thinking, and metaphor. These layers represent a wide variety of situations. Litany, for example, presents a wide range of issues but is frequently overstated and cast off for dogmatic resolutions. The second classification emphasizes interpreting research on the relationship between multiple data and communication (Lurie et al., 2020). Although related to the university level of morphological analysis, it was related to the ideology of the world and the ideology of the world that support or challenge the elite. Likewise, metaphor is a field of myths in which we work with in-depth stories and composite archaeological images that give meaning to unrelated events. Finally, laws are intertwined, both in the short and long term.

Further, the Joint Humanitarian Development Framework is a humanitarian program that takes place in protracted emergencies like an emergency of viruses, where short-term humanitarian programming is inappropriate (Medinilla et al., 2019). In recognition of this health improvement, the United Nations Office for the Coordination of Humanitarian Affairs has established four principles: the study of urgent and long-term needs; Involvement of people in work and partner development with positive outcomes; Establish collaborations and interactions, comparisons and benefits (Tosi et al., 2019a).

It also includes funding methods to support common outcomes. Here, the organization is shifting its agenda from shortterm emergency response plans to a national policy model with a long-term funding window of three to five years (Minkkinen et al., 2019). The inclusion of programs helps to reduce the virus as a guaranteed goal. It focuses on an integrated programming model that promotes integration between sectors and long-term state and civil society structures. Finally, nexus aims to capture the coming years' human development and related experiences and to share examples of what works for the human purpose (Tosi et al., 2019b).

Survey Instrument

This article provides answers and tangible outcomes to achieve the goals of a good research tool (Leggett, 2017). It was advanced in dissimilar groups and supplementary collections. The first classification is preferred because of the inclusion of accumulated scientific and technological knowledge in the process of institutional change. Group B interviews

were conducted for answers to organizational characteristics. The answers to Group C questions were about real changes and rapid changes that close the dependence of two network channels and affect the organizational environment.

In addition, the adhocratic is called upon to find a role that can play in emergencies and organizational changes. The tool has several questions to determine, and the following metrics include query design-based construction. By determining the content of the research and reflecting on it in question, the meaningful content of the specialization is addressed in the unit with an acceptable level of validity and credibility for the main characters. It combines the flow of information from general issues to specific issues with identification.

Survey Questionnaire

Reinforced by Artino et al. (2014), the study used several questions on the Likert scale to answer one of the options. There was a choice from the most dissatisfied to the most dissatisfied respondents. The survey questionnaire (given in Appendix 1) included three main variables (rapid change, which the management agencies of certain agencies manage), along with other variables. Most respondents have experience of 25–50 years and 10–15 years of applicable organizational understanding. The participants are chosen based on their age, education, and experience in selected groups to learn responses to government policy. It is also analyzed to investigate the correlation of relief activities related to the research topic.

Sample Profile and Data Collection

The data collection methodology for this study includes questions about interorganizational specialization, both for network and virtual change, affecting the interconnection and rapid change in the organization environment (Nacoti et al., 2020). In addition, the advocacy team has been mentioned to play a role in crises and organizational change based on the nature of organizational change.

The purpose and questions were addressed in response to the crisis of the COVID-19 crisis. The main points of the data were determined according to the method of asking questions (Hall & Wall, 2019). It is planned with the contribution of investors, exchange agencies, and government responses.

Participants were selected to have information on organizational progress and management of branches (Aykroyd et al., 2019). The questions were divided into 245 respondents, to whom 180 multiple-choice answers were obtained. Table 3 indicates 50 from the Ministry of Foreign Affairs, 30 from the Joint Working Group, and 40 from the Ministry of National Health Services and Rights (Table 1). In addition, the sample change (30.30) about organizational change was secured from two social groups belonging to the COVID-19 support management system, and a question-andanswer session was conducted. Employees are non-confidential and do not disclose their identities. The National Intelligence Service also participated in the investigation.

Table 1
The procedure of data collection and sample

The procedure of data collection	Sample
Survey	Officers from Foreign Office
	Inter-departmental Coordination
	Ministry of National Health and Regulation Services
	Welfare organizations of Relief and Execution

Statistical Analysis and Measurement

The following analysis tools provide accurate and compelling results based on the answers and goals to analyze the data and get results. It includes the frequency of each variable, Pearson's correlation matrix, and Cronbach's alpha reliability analysis. The procedure for analyzing the government's

policy response to the fight against the coronary virus is based on the original data. Following the information gathered from the questionnaire, the content, story, and discourse are analyzed by interpretation. The SPSS software is used to perform the analysis (William & Wagner, 2019). In addition, the data is also analyzed through

news data. Observation means exploring the relationship between these differences and predicting the occurrence of differences (Bhatia, 2019).

Ethical Consideration

Ethical consideration is a moral tool that strives for the management of areas where the conduct of an individual is assessed based on the participants' responses. For this reason, various stakeholders are aligned with the process and management of codes that work on the participant to convince them to respond helpfully. The information of the participants is in line with the maintenance, and following the privacy rules provided a clear understanding of the respondents' intentions to overcome the crisis (Ndlela, 2019). Informed convincing for the participant is connected to the inclusion of stakeholders that participated through the researcher to respond to the query on the crisis of pandemic and organizational response (Biswakarma, 2021). A proper channel method is used in approaching the concerned participant to meet the procedural justice of organizational change (Zankl, 2014). The organization is approached for the facilitation, and questions divided according to variables are shared with the concerned individual to respond to the queries of the study. A consistent flow of information between the respondent and researcher maintains a viable position of neutrality in the study. Similarly, there is strict follow-up regarding strategy use in research by negating the potential bias and evaluation of the results.

RESULTS AND INTERPRETATION

Respondent Characteristics and Profile

The results and interpretation (Table 2) reflect that participant is involved in this research with 30 females and 150 males that strike for the percentage of 22.22 and 77.77. The age ratio is determined from 45–75, where the division of categories follows the total population costing 60% of the total participant. Providing to this, the professionals and people relevant to the understanding of managing the organizations relate to experience from 4–6 years with a 50% response rate. The experience of the remaining respondents is connected and compared to specific years from 4-12 years are included to strengthen research outcomes. It shows that people have increased knowledge, and age is significant for managing the organizational alter in the policy response to the crisis of COVID-19 in Pakistan.

Table 2

Profile of demography

Features	Frequency N=200	Percentage %
Male	150	77.77
Female	50	22.22

Table 2 (Continue)

Features	Frequency N=200	Percentage %	
Age			
30-35	75	37.5	
35-40	50	25	
40-50	75	37.5	
Distribution			
MOFA	50	27.77	
Inter-Departmental Coordination	30	16.66	
Health Services and Regulations	40	22.2	
Officials of Welfare Organization	30	16.66	
Relief Organization	30	16.66	
Total	180	100%	

Cronbach's Alpha Reliability Test

For the reliability of research, Cronbach Alpha is directed to authorize the ideas contributive to this research. In their research, Bonett and Wright (2015) viewed that Cronbach alpha is the most widely used measure for reliability in the organizational and social sciences. With a confidence interval of population reliability, there is a restrictive assumption that multiple measurements have certain covariance and variance (Read et al., 2021). The reliability and validity of the study model

are reinforced by the detail of the reliability test performed by sociologists. It should be better than 0.7. Table 3 for each variable and number of matters covers values greater than 0.7. It goes up to 0.8, which confirms the reliability and validity of the model.

The constructs as measured in the reflect the reliability against each item. For example, emotional contagion 0.810 is more reliable than the remaining variables. Other cognition, both affective and effective, contributes to image development as a significant tool to attract their attention.

Table 3
Reliability test

Variables	Number of Items	Cronbach's Alpha
Accumulating	6	0.701
Knowledge	7	0.788
Intra-Organizational	5	0.810
Spec	6	0.731
Networks and Virtual	7	0.751
Department		
Faster Change		
Adhocratic Team		

Pearson Correlation and Descriptive Analysis

Zhou et al. (2016) reflect Pearson correlation as an effective tool for analyzing data and systems of interpretation in the research. Pearson's correlation is applied (Table 4) to know the relationships between variables where emotional understanding is positively correlated with all experiments/constructions aimed at a softer image (Förster et al., 2018). However, organizational change is negative because structure and organization of ideology are negatively associated with expertise related to crisis management. A similar relationship between specializations within an organization indicates gradual development.

The same is true for those differences that affect networks and virtual planning roles that require major change. Other structures or variables remain positive for organizational change, such as democratic teams. H1 and H2 are some relationships and statements, while H3 has strong support.

The knowledge is positively associated with policy response regarding combating the crisis as the value contains 0.0421. Similarly, intra-organizational specialization remains positive in reflecting the state policy response with a value of 0.2304. However, faster change seems negative -0.0641 because less attention is given to the overall organizational change and effective management. The perception developed in the mind of tourists is through the changing environment of facilities, behavior, and responsible role of concerned institutions. The adhocratic team management and the nature of response are interlinked and connected as the value shown in Table 4 is 0.0684. This positive association entails that effective policy response is the ultimate reflection of the state to consider these measures.

Table 4

Pearson correlation analysis

Description	Mean	S. D	1	2	3	4	5	6
Govt Policy Response	4.27	1.53	1					
Accumulating Knowledge	3.40	1.32	0.033	1				
Intra- Organizational Spec	3.31	1.64	0.042	0.039	1			
Networks and Virtual Deptt	5.32	1.09	0.040	0.230	0.041	1		
Faster Change	4.01	1.41	0.079	-0.064	0.321	0.040	1	
Adhocratic Team	3.71	1.83	0.0393	0.079	0.064	0.068	0.079	1

DISCUSSION

To investigate the interrelationship between government and the organization like MOFA, the organizational change and perceived value influence both teams and the state. While reusing purpose, this research advances a CLA and Joint Humanitarian Approach model to reflect the -management facility, excellence, and continuous use of administration in re-joining the crisis of COVID-19 (Reddy et al., 2019). This approach aims to deliver these tactics and participate in some management facility that evaluates the representation in the setting of organizational alteration. Using data collected from a survey from different stateowned enterprises, the users responded to direct-controlled services and the response of the major population in Pakistan (Reeves et al., 2020). During the research, it is verified that the determinative structure of government and concerned stakeholders can be influenced by organizational change and various tests proposed concepts for effective policy responses. The structural equation and the following observations are significant in overcoming the crisis of COVID-19.

Further, the research also examines the constructs of government and valuable indicators like intra-organizational specialization, adhocracy teams, faster change networks, and virtual administrations. The most important is the accumulation of knowledge. Managing the quality of information or knowledge and acceptance is a key factor in response to the important workplace. The first part of the series

shows the technical performance of the government service, offering only a small part of the flight frequency of only about 0.1. Advances in technology are essential because they can solve inaccessibility, system insecurity, and insecurity. However, most of the portals opened by the Pakistani government are functioning normally. As a result, technology-savvy citizens tend to adopt system-quality and reliable operations to meet their needs through government subsidies and money.

Similarly, the assessment of government policy response depends more on the services available in these organizations. It should indicate that these services will be given more attention to get a higher state response. Second, the importance of continuous organizational interaction to use it is supported in this study. Common perceptions of the benefits of a state are well predicted and well defined by performance, democracy, and inclusion. Other items that promoted effectiveness during organizational change account for more than 50% of the variance concerning state responsibility. In the interim, management schemes with high service quality are operative in tempting residents to continue harmless from the epidemic. Their services and health care improvements are the efficiency and convenience for institutional change.

POLICY IMPLICATIONS

For the policy implications, the outcomes of this study have at least two inferences: the development of service quality during the time of organizational change (Richards, 2019). The second is the perception and reliance on how management schemes endorse competence, fairness, and allinclusiveness. Other implications are to improve nationals' trust over the management politicians and calculate inventors who must take comprehensive actions to recover the health care of the common individual in Pakistan. Further, the organizational quality along the dimensions of the system that include the intra-organizational specialization, faster change, accumulation of knowledge, and the adhocratic team provides a greater source of state response to the crisis of COVID-19. The implications of this study suggest that technical features such as technology inclusiveness and virtual programming among key state units can make accessibility and reliability easy for the actions. There are positive and negative effects on the health of the common person where one can predict that organizational change if managed properly, can resist such destructing effects. Service distinctiveness and organizational change management are significant in explaining the desires and obligations of situations that influence organizational performance.

LIMITATIONS AND FUTURE RESEARCH

The study reflects a significant future contribution to achieving institutional change directions and results. These public sector administrations are significant panel sets for re-joining public services and accessing crises. In light of this, future

research can be protracted for these participants, and their aims for reuse can be examined while different models are involved or developed.

In addition to this other channel, the government can effectively use it for interactions with the public. The provision of diversified and personalized public services during organizational change can be a new trend for the Pakistani government. Another possibility would be for a future study to investigate the continued use behavior of citizens during this emerging crisis.

The goal would be to challenge the descriptive control and pertinence of the intangible archetype in developing management response and disaster of well-being. A significant course for future research is the growth of examination substances while seeing this case through the adapted rules and tentative process. These steps pertained to effective management in situations of overhauling change.

ACKNOWLEDGEMENT

All the authors contributed to the work equally to get it completed. These scholars have participated: Dr. Kalsoom, B. Sumra. Assistant Professor, Center for Policy Studies, COMSATS University, Islamabad, Pakistan; Dr. Khairul Baharein Mohd Noor, Deputy Vice-Chancellor (Academic), Limkokwing University of Creative Technology, Cyberjaya Selangor Malaysia; Mr. Mehtab Alam, Ph.D. Scholar, University of Cyberjaya, Selangor, Malaysia; Dr. Shafei Moiz Hali, Assistant Professor, Department of GPP, National Defense University,

Islamabad, Pakistan; and Mr. Hamza Iftikhar Ph.D. Scholar, Perdana Centre of Science, Technology and Innovation and Informatics, Universiti Technologi Malaysia, Kuala Lumpur, Malaysia.

REFERENCES

- Agensky, J. C. (2019). Religion, governance, and the 'peace-humanitarian-development nexus' in South Sudan. In C. de Coning, & M. Peter (Eds.), United Nations peace operations in a changing global order (pp. 277-295). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-99106-1 14
- Anderson, D. L. (2019). Organization development: The process of leading organizational change. SAGE Publications.
- Artino, A. R., Jr, La Rochelle, J. S., Dezee, K. J., & Gehlbach, H. (2014). Developing questionnaires for educational research: AMEE Guide No. 87. *Medical Teacher*, 36(6), 463-474. https://doi.org/10.3109/0142159X.2014.889814
- Aykroyd, R., Leiva, V., & Ruggeri, F. (2019). Recent developments of control charts and identification of big data sources and future trends of current research. *Technological Forecasting and Social Change*, 144, 221-232. https://doi.org/10.1016/j. techfore.2019.01.005
- Bastian, E., Munaretto, C., Myers, N. R., Baxter, C. L., Fishman, J., Westervelt, J. D., & Burkhalter, J. A. (2019). Application of the FICUS data dataconflation model to a theoretical humanitarian crisis analytical framework (No. ERDC/CERLTR-19-1). Engineer Research and Development Center Champaign United States.
- Bhatia, P. (2019). Data mining and data warehousing: Principles and practical techniques.

 Cambridge University Press. https://doi.org/10.1017/9781108635592
- Biswakarma, J., Rushworth, D., Srivastava, G., Singh, G., Kang, K., Das, S., Anantharaman,

- S. B., Aeppli, M., Popp, A. L., & Bhuyan, D. J. (2021). Organizational level responses to the COVID-19 outbreak: Challenges, strategies and framework for academic institutions. *Frontiers in Communication*, *6*, 573-585. https://doi.org/10.3389/fcomm.2021.573585
- Bonett, D. G., & Wright, T. A. (2015). Cronbach's Alpha Reliability: Interval estimation, hypothesis testing, and sample size planning. *Journal of Organizational Behavior*, 36(1), 3-15. https://doi.org/10.1002/job.1960
- Boodhna, A., Sissons, C., & Fullwood-Thomas, J. (2019). A systems thinking approach for energy markets in fragile places. *Nature Energy, 4*, 997-999. https://doi.org/10.1038/s41560-019-0519-7
- Buchanan, D., & Badham, R. (2020). *Power, politics, and organizational change*. SAGE Publications Limited.
- Cameron, E., & Green, M. (2019). Making sense of change management: A complete guide to the models, tools, and techniques of organizational change. Kogan Page Publishers.
- Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y., Xia, J., Yu, T., Zhang, X., & Zhang, L. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study. *The Lancet*, 395(10223), 507-513. https://doi.org/10.1016/S0140-6736(20)30211-7
- Chohan, U. W. (2020). Forecasting the economic impact of Coronavirus on developing countries:

 Case of Pakistan (No. EC016UC). Center for Aerospace and Security Studies Pakistan.
- Chung, M., Bernheim, A., Mei, X., Zhang, N., Huang, M., Zeng, X., & Jacobi, A. (2020). CT imaging features of 2019 novel coronavirus (2019nCoV). *Radiology*, 295(1), 202-207. https://doi. org/10.1148/radiol.2020200230

- Dareini, A. (2020). Coronavirus: An ethical question in the US-Iran showdown. Al Jazeera Centre for Studies. https://studies.aljazeera.net/en/reports/ coronavirus-ethical-question-us-iran-showdown
- Eurosurveillance Editorial Team. (2020). Note from the editors: World Health Organization declares novel coronavirus (2019-nCoV) sixth public health emergency of international concern. *EuroSurveillance*, 25(5), 200131e. https://doi.org/10.2807/1560-7917.ES.2020.25.5.200131e
- Farah, M. A., Hasan, M. A., & Gichuki, J. (2019). Developing a common results framework for nutrition in Somalia. *Nutrition Exchange*, (11), 20-21.
- Farrow, E. (2019). To augment human capacity— Artificial intelligence evolution through causal layered analysis. *Futures*, *108*, 61-71. https:// doi.org/10.1016/j.futures.2019.02.022
- Förster, M., Weiser, C., & Maur, A. (2018). How feedback provided by voluntary electronic quizzes affects learning outcomes of university students in large classes. *Computers & Education*, 121, 100-114. https://doi.org/10.1016/j.compedu.2018.02.012
- Grein, J., Ohmagari, N., Shin, D., Diaz, G., Asperges,
 E., Castagna, A., Feldt, T., Green, G., Green, M.
 L., Lescure, F. X., Nicastri, E., Oda, R., Yo, K.,
 Quiros-Roldan, E., Studemeister, A., Redinski,
 J., Ahmed, S., Bernett, J., Chelliah, D.,
 & Flanigan, T. (2020). Compassionate use of remdesivir for patients with severe Covid-19.
 The New England Journal of Medicine,
 382(24), 2327-2336. https://doi.org/10.1056/
 NEJMoa2007016
- Guan, W. J., Ni, Z. Y., Hu, Y., Liang, W., Ou, C. Q., He, Y. W., Liu, L., Shan, H., Lei, C., Hui, D., Du, B., Li, L., Zeng, G., Yuen, K. Y., Chen, R., Tang, C., Wang, T., Chen, P., Xiang, J., ... & Zhong, N. (2020). Clinical characteristics of coronavirus disease 2019 in China. New England Journal of Medicine, 382(18), 1708-1720. https://doi. org/10.1056/NEJMoa2002032

- Haigh, M. (2016). Fostering deeper critical inquiry with causal layered analysis. *Journal of Geography in Higher Education*, 40(2), 164-181. https://doi.org/10.1080/03098265.2016.1141185
- Hall, E., & Wall, K. (2019). Research methods for understanding professional learning. Bloomsbury Publishing London.
- He, F., Deng, Y., & Li, W. (2020). Coronavirus disease 2019: What we know? *Journal of Medical Virology*, 92(7), 719-725. https://doi. org/10.1002/jmv.25766
- Henökl, T., & Webersik, C. (2014). The impact of institutional change on foreign policy-making: The case of the EU horn of Africa strategy. *European Foreign Affairs Review*, 19(4), 519-537. https://doi.org/10.54648/EERR2014041
- Holshue, M. L, DeBolt, C., Lindquist, S., Lofy, K. H., Wiesman, J., Bruce, H., Spitters, C., Ericson, K., Wilkerson, S., Tural, A., Diaz, G., Cohn, A., Fox, L., Patel, A., Gerber, S. I., Kim. L., Tong, S., Lu, X., Lindstrom S., & Pillai, S. K. (2020). First case of 2019 novel coronavirus in the United States. *The New England Journal of Medicine, 382*(10), 929-936. https://doi.org/10.1056/NEJMoa2001191
- Horne, S., & Boland, S. (2020). Understanding medical civil-military relationships within the humanitarian-development-peace 'triple nexus': A typology to enable effective discourse. *BMJ Military Health*, 001382. https://doi.org/10.1136/ jramc-2019-001382
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu,
 Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng,
 Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X.,
 Yin, W., Li, H., Liu, M., & Cao, B. (2020).
 Clinical features of patients infected with 2019
 novel coronavirus in Wuhan, China. *Lancet*,
 395(10223), 497-506. https://doi.org/10.1016/
 S0140-6736(20)30183-5
- Inayatullah, S. (1998). Causal layered analysis: Poststructuralism as method. *Futures*, *30*(8),

- 815-829. http://dx.doi.org/10.1016/S0016-3287(98)00086-X
- Karabag, S. F. (2020). An unprecedented global crisis! The global, regional, national, political, economic and commercial impact of the coronavirus pandemic. *Journal of Applied Economics and Business Research*, 10(1), 1-6.
- Khan, N., Fahad, S., Naushad, M., & Muhammad, A. (2020). Explanation of Corona Virus control novel by warm and humid seasons in the world. SSRN Electronic Journal. http://dx.doi. org/10.2139/ssrn.3561155
- Leggett, N. (2017). Early childhood creativity: Challenging educators in their role to intentionally develop creative thinking in children. *Early Childhood Education Journal*, 45(6), 845-853. https://doi.org/10.1007/s10643-016-0836-4
- Lurie, N., Saville, M., Hatchett, R., & Halton, J. (2020). Developing Covid-19 vaccines at pandemic speed. New England Journal of Medicine, 382(21), 1969-1973. http://dx.doi.org/ 10.1056/NEJMp2005630
- Medinilla, A., Shiferaw, L. T., & Veron, P. (2019). Think local. Governance, humanitarian aid, development, and peace building in Somalia (No. 246). European Centre for Development Policy Management Maastricht, the Netherlands. http://www.ecdpm.org/dp246
- Minkkinen, M., Heinonen, S., & Parkkinen, M. (2019). Drilling and blasting to learn scenario construction: Experimenting with causal layered analysis as a disruption of scenario work. World Futures Review, 11(2), 110-121. https://doi. org/10.1177/1946756718774940
- Nacoti, M., Ciocca, A., Giupponi, A., Brambillasca,
 P., Lussana, F., Pisano, M., Goisis, G., Bonacina,
 D., Fazzi, F., Naspro, R., Longhi, L., Cereda,
 M., & Montaguti, C. (2020). At the epicenter of
 the Covid-19 pandemic and humanitarian crises
 in Italy: Changing perspectives on preparation

- and mitigation. *NEJM Catalyst Innovations in Care Delivery*, *1*(2), 1-6. https://doi.org/10.1056/CAT.20.0080
- Ndlela, M. N. (2019). A stakeholder approach to risk management. In *Crisis communication a stakeholder approach* (pp 53-75). Palgrave Pivot. https://doi.org/10.1007/978-3-319-97256-5 4
- Osa, Y., & Hanatani, A. (2018). Introduction: Addressing the humanitarian-development nexus since the Cold War. In *Crisis management beyond the humanitarian-development nexus* (pp. 3-14). Routledge.
- Perlman, S. (2020). Another decade, another Coronavirus. *New England Journal of Medicine*, 382(8), 760-762. https://doi.org/10.1056/NEJMe2001126
- Phan, L. T., Nguyen, T.V., Luong, Q. C., Nguyen, T. V., Nguyen, H. T., Le, H. Q., Nguyen, T. T., Cao, T. M., & Pham, Q. D. (2020). Importation and human-to-human transmission of a Novel Coronavirus in Vietnam. *New England Journal* of Medicine, 382(9) 872-874. https://doi. org/10.1056/NEJMc2001272
- Read, J. M., Bridgen, J. R., Cummings, D. A., Ho, A., & Jewell, C. P. (2021). Novel Coronavirus 2019-nCoV: Early estimation of epidemiological parameters and epidemic predictions. *Philosophical Transactions of the Royal Society B*, 376(1829), 2020-0265. https://doi.org/10.1098/rstb.2020.0265
- Reddy, T., Giabbanelli, P. J., & Mago, V. K. (2019). The artificial facilitator: Guiding participants in developing causal maps using voice-activated technologies. In D. Schmorrow & C. Fidopiastis (Eds.), *Augmented cognition* (Vol. 11580, pp. 111-129). Springer. https://doi.org/10.1007/978-3-030-22419-6 9
- Reeves, M., Lang, N., & Carlsson-Szlezak, P. (2020, February 27). Lead your business through the coronavirus crisis. *Harvard Business Review*. https://hbr.org/2020/02/lead-your-business-through-the-coronavirus-crisis

- Richards, M. (2019). Analogue futures games and causal layered analysis. In T. Petri, A. Hanna-Kaisa, M. Matti, P. Sari, S. Katriina, & A. Anne (Eds.), *Coolest student papers at Finland Futures Research Centre 2017-2018* (pp. 124-134). Finland Futures Research Centre, University of Turku. https://www.utu.fi/sites/default/files/public%3A//media/file/eBook 3-2019 2.pdf
- Salehi, S., Abedi, A., Balakrishnan, S., & Gholamrezanezhad, A. (2020). Coronavirus disease 2019 (COVID-19): A systematic review of imaging findings in 919 patients. *American Journal of Roentgenology*, 215(1), 87-93. https://doi.org/10.2214/AJR.20.23034
- Salmi, A., & Mattelmäki, T. (2021). From within and in-between–co-designing organizational change. *CoDesign*, *17*(1), 101-118. https://doi.org/10.1080/15710882.2019.1581817
- Scheele, R., Kearney, N. M., Kurniawan, J. H., & Schweizer, V. J. (2018). What scenarios are you missing? Post structuralism for deconstructing and reconstructing organizational futures. In H. Krämer & M. Wenzel (Eds.), How organizations manage the future (pp. 153-172). Palgrave Macmillan Cham. https://doi.org/10.1007/978-3-319-74506-0_8
- Sohrabi, C., Alsafi, Z., O'Neill, N., Khan, M., Kerwan, A., Al-Jabir, A., Iosifidis, C., & Agha, R. (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal* of Surgery, 26, 71-76 https://doi.org/10.1016/j. ijsu.2020.02.034
- Sparrow, A. (2020). How China's Coronavirus is spreading—And how to stop it. Foreign Policy. https://foreignpolicy.com/2020/01/26/2019-ncov-china-epidemic-pandemic-the-wuhan-coronavirus-a-tentative-clinical-profile/
- Steyaert, C., & Kuismin, A., (2020, June 4-5). Exploring organizational space as a process [Paper presentation]. Space, Place

- and Organizational Change 2020 Workshop, Aalto University, Otaniemi, Espoo, Finland. https://opsy.unisg.ch/-/media/dateien/instituteundcenters/opsy/2020_02cfp-place-space-workshop-2020.pdf
- Tosi, L., Paché, G., & Fulconis, F. (2019a). Humanitarian action: A strategic perspective of developmentalism. *IUP Journal of Business Strategy*, 16(3), 45-65.
- Tosi, L., Paché, G., & Fulconis, F. (2019b, August 9-10). Six shades of strategizing: The humanitarian action in perspective [Paper presentation]. 5th ICSSEF'2019 - International Conference on Social Sciences, Economics and Finance, Montréal, Canada.
- Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., Wang, B., Xiang, H., Cheng, Z., Xiong, Y., Zhao, Y., Li, Y., Wang, X., & Peng, Z. (2020). Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. *JAMA*, 323(11), 1061-1069. https://doi.org/10.1001/jama.2020.1585
- Wang, X., Zhou, Q., He, Y., Liu, L., Ma, X., Wei, X., Jiang, N., Liang, L., Zheng, Y., Ma, L., Xu, Y., Yang, D., Zhang, J., Yang, B., Jiang, N., Deng, T., Zhai, B., Gao, Y., Liu, W., ... & Gao, Z. (2020). Nosocomial outbreak of COVID-19 pneumonia in Wuhan, China. *The European Respiratory Journal*, 55(6), 2000544. https://doi.org/10.1183/13993003.00544-2020
- William, E., & Wagner, III. (2019). *Using IBM®* SPSS® statistics for research methods and social science statistics (7th ed.). California State University.
- World Health Organization. (2019). *IHR monitoring* and evaluation framework: Guidance document for joint external evaluation in special context countries (No. WHO/WHE/CPI/2019.12). World Health Organization. https://apps.who.int/iris/handle/10665/329970

- Wu, F., Zhao, S., Yu, B., Chen, Y., Wang, W., Song, Z. G., Hu, Y., Tao, Z., Tian, J., Pei, Y., Yuan, M., Zhang, Y., Dai, F., Liu, Y., Wang, Q., Zheng, J., Xu, L., Holmes, E., & Zhang, Z. Y. (2020). A new coronavirus associated with human respiratory disease in China. *Nature*, 579(7798), 265-269. https://doi.org/10.1038/s41586-020-2008-3
- Zankl, W. (2014). *The International Data Privacy Principles*. Berkman Center for Internet & Society, Harvard University. https://www.ecenter.eu/static/files/international%20data%20 privacy%20rules.pdf
- Zhou, Y., Zhang, Q., & Singh, V. P. (2016). An adaptive multilevel correlation analysis: A new algorithm and case study. *Hydrological Sciences Journal*, *61*(15), 2718-2728. https://doi.org/10.1080/02626667.2016.1170941
- Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., Zhao, X., Huang, B., Shi, W., Lu, R., Niu, P., Zhan, X., Ma, X., Wang, D., Xu, W., Wu, Z., Gao, G. F., & Tan, W. (2020). A novel coronavirus from patients with pneumonia in China, 2019. New England Journal of Medicine, 382, 727-733. https://doi.org/10.1056/ NEJMoa2001017

Kalsoom B. Sumra, Mehtab Alam, Khairul Baharein Mohd Noor, Shafei Moiz Hali and Hamza Iftikhar

APPENDIX

Appendix 1

C		
survev	question	naire

Name				
Organization				
Gender	Male		Female	
Age	15-25	25-40	40-55	55-60

Intra-Organizational Specialization

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Do you consider intra-organization as a promotional step in improving departmental coordination?					
Did you expect the positive results of specialization among federal and provincial sectors fighting for COIVD-19?					
What do you observe from your experience that organizational change influences the perception of the common individual in Pakistan?					
Is there any Impact of improved coordination for policy response in virus combat operation?					
Organizational cooperation significantly influences the communication					

Networks & Virtual Department

How the networks of virtual departments are the reflection of positive policy response			
The improved institutional structure can sustain the original policy of the state?			
Do you agree that effective communication can improve the security and health of citizens?			
The standardized measures and health services can reduce the cases of viruses in Pakistan			
How is organizational change a comprehensive process in tackling the COVID-19 crisis?			

Accumulating Knowledge

Is the implementation of effective policy through a scientific approach good or bad?			
Effective organizational cooperation can influence the easy communication			
The learned guide can present a good picture during a time of change			
Communication can be facilitated by the support of security organizations and healthcare			
Patients can easily access facilities of their choice			

Kalsoom B. Sumra, Mehtab Alam, Khairul Baharein Mohd Noor, Shafei Moiz Hali and Hamza Iftikhar

Faster Change

Faster change in Pakistan can promote organizational capacity			
The organizational environment is directly connected with improved and secure public services			
Departmental coordination and communication can enhance training and change			
The media can be effective in presenting Pakistani measures for a common person			
Organizational change is the realm of Pakistani officials to tackle any crisis			

Adhocratic Team

There are environmental impacts of team building for effective policy response		 	
The cooperation of key departments supports positive organizational change			
Does safe and secure health care have an optimistic perception for the people of Pakistan?			
The procedure of organizations can facilitate international issues like Coronavirus			
The active communication by the foreign office is supportive in tackling the crisis of the Pakistani diaspora abroad			