

Collaborative Governance, a Tool for Enhancing Compliance with COVID-19 Prevention Guidelines. A Study in Iranian Context

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Abstract

Background: Since the spread of COVID-19 disease around the world, several practitioners have sought to the ways that hasten control of the pandemic. There is a gap in contemplation of governance system's effect on compliance with prevention guidelines targeting decrease in the disease's consequences. This article is aimed to clear this gap.

Methods: A model of collaborative governance was chosen to examine the effect of governance elements, composing of starting condition, institutional design, facilitative leadership and collaborative process. The SEM method was applied using PLS software and the survey was held among 220 people all around Iran.

Results: Findings showed that collaborative process has a significant effect on compliance with prevention guidelines. Also, facilitative leadership and institutional design have positive impact on compliance variable.

Conclusion: Examining the effect of collaborative governance model on compliance with COVID-19 prevention guidelines is a novel idea, especially because it is held on Iran with its complex cultural conditions. Based on the results, it is strongly suggested that policy makers in Iran consider joint actions and collaborative measures in controlling the disease. The measure can also be useful in other countries or other upcoming pandemics with regards to their socio-cultural context.

Background

Since COVID-19 firstly reported in December 2019 in Wuhan, China, the world encountered the worst pandemic during the decades of early 21th century and late 20th century. In March 2020, WHO Director General announced the spread of COVID-19 as a global 'pandemic'. Several countries declared state of emergency which is lasting for months and is expected to be extended for an undefined time period. As there is no pharmaceutical intervention to preclude the dissemination of COVID-19, a lot of guidelines and measures have been applied to prevent the hastening spread of the virus, along them physical distancing measures and personal hygiene are centered (Liang et al. 2020). Hsiang et al. (2020) complied data on local, regional and national non-pharmaceutical interventions deployed across mainly involving countries, United States, China, Italy, France, Iran and South Korea and found that anti-contagion policies can significantly slow the growth rate of the virus.

It is clear that all these measures cannot reach their optimistic target in diminishing the virus spread except if they are held by almost all people facing the problem in a collaborative approach. For example, Pederson and Favero (2020) say 'Social distancing is an effective means of containing the spread of COVID-19, but only if we all participate'. So, in order to mobilize society for an effective response in public, there must be a clear communication and mutual trust (Weerd et al. 2011).

Collaboration is also an issue in a larger scale that inside country efforts. Fry et al. (2020) investigated international collaboration, particularly the degree of partnership between United States and China with other countries. Researching the ASEAN's response to COVID-19, Djalante et al. (2020) suggest that the strengths on future collaboration is depended on a more coherent, multi-sectoral and multi-stakeholders community approach.

While tackling with the pandemic, collaborative actions in any levels of governance receive a strong impact from voluntarily participation of society. In such a case, a background of successful partnership between families, neighborhood blocks and local agencies plays a vital role to enhance local authorities' capacity for quick inter-local collaboration and to repurpose resources between agencies and other communities (Prez and Ross 2020). But this collaboration cannot be occurred in the absence of a governance contextual base which sets up blaring and meaningful joint actions. Tang and An (2020) probed the governance matter in two countries with substantially different government systems, United States and China. They found that China's vertical mechanisms create incentives for local government officials to avoid disclosing crises and make a major problem of delay, while US's polycentric system with horizontal mechanisms allow local officials to be quick to sound alarms on emergency, but the system holistically may suffer from lack of collaboration across levels and units of government. The study of both systems shows that it is necessary to think about a broader governance theme. So, the idea of collaborative governance receives credit here.

However, there is a lack of a comprehensive research or survey which relates the collaboration in the form of the governance attitude to the quality, and even quantity of achievement in reaching the targets designed for interventions aimed at preventing COVID-19 virus spread and values its accountability on the case. This shortage exists despite the fact that collaborative governance is considered as a key institutional approach to solve worldwide public problems (Jung, Mazmanian, and Tang 2009). So, based on Ansell and Gash (2008) model of collaborative governance and consolidated by Pohl and Musil (2020) model for compliance to the prevention guidelines, this research presents a multi-dimensional model which measures the role of collaborative governance in COVID-19 prevention guidelines compliance. The model is applied in Iran, one of the countries which has heavily been influenced by the disease. According to Sharafi Farzad et al. (2020), COVID-19 has affected several indicators of better quality of life for many people around the country and will probably cause new social needs to be appeared. Yet, there is no research to link collaborative actions into Persian society's compatibility with the problem and potential possibility of enhancing national resilience through placing collaborative process and components. Though, investigating compliance with COVID-19 prevention guidelines impacted by collaborative governance can be a novel idea to fill the conceived gap in measuring collaborative governance's impact and its accountability to cope with COVID-19 disease. In additions, this research can peripherally and implicitly opens doors into new idea development in collaborative governance effectiveness and accountability on solving public issues as a general model.

Literature Review

Compliance with COVID-19 Prevention Guidelines

From the early stages of development and spread of COVID-19, preventive measures and interventions were put in power in a large scale to slow the transmission of the virus in domestic and international level. The major measures are composed of personal hygiene guidelines and stay-at-home interventions. According to Kashyap et al. (2020), while no certain treatment has been founded for the disease, social distancing, hand hygiene and rational usage of personal protective equipment seems to be the most effective way to contain the virus. The reason for stay-at-home interventions is to limit the physical contact between people, which in turn limits the transmission of the virus (Bushman, Pelechrinis, and Labrinidis 2020). Similarly, hand hygiene both in the form of alcohol-based hand-rub and hand-washing with soap and water is considered a critical measure to control the virus spread (Jeans et al. 2018; Adhikari et al. 2020; Zhou et al. 2020).

The discussing measures, such as social distancing, have been applied to delay the spread of virus and flatten the epidemic curve (Chen et al. 2020) not to completely curb the spread. Considering stay-at-home guideline, Bushman, Pelechrinis, and Labrinidis (2020) suggest that this is not equal to the eradication of the virus but rather, limiting people's mobility will allow the health system for to effectively operate under its capacity, consequently minimize fatality.

In order to enforce the compliance with the guidelines, governments can exert rules and set penalties for those who are deliberately or mistakenly breach the regulations. But yet it seems aggressive and impractical. So, governments extremely rely on voluntary residents' compliance with the guidelines (Pederson and Favero. 2020), because measures targeting risk reduction can rarely be enforced by coercion, thus there should be persuasion about the importance of compliance and the public must understand what is required of them, particularly in democratic societies (Clark et al. 2020).

Several researches has been held to measure the level of compliance with COVID-19 non-pharmaceutical prevention guidelines. Rooij et al. (2020) assessed the factors which influence Americans to comply with stay at home and social distancing measures. They concluded that compliance is depended on two main processes: people's capacity and opportunity to break the rules along with their self-control, and also people's intrinsic motivations, moral support and social norms. There are some novel approaches to estimate physical distancing which use Global Positioning System (GPS), mobile data and the degree of public transport usage by observing traffic congestion (Sheikh et al. 2020).

Applying a model to evaluate the efficacy of sanitary emergency measures in Mexico, Acuna-Zegarra et al. (2020) assert that behavioral change is needed to be established in the population to work as a control mechanism for reducing contact rates. Giuliano and Rasul (2020) name social capital, trust in government and political beliefs as important drivers of compliance with guidelines by the real time data collected across variety of countries. All in all, higher political trust to the government is associated with a larger implementation of containment policy (Bargain and Aminjonov 2020). Plohl and Musil (2020) developed and tested a multivariate model to identify individual characteristic causing difference in

compliance with COVID-19 prevention guidelines from person to person. They suggest that risk perception and trust in science independently predict compliance with the guidelines.

On the whole, whether governmental interventions are politically and socially accepted or not in different countries with various governance disciplines, a degree of compliance with the guidelines and interventions is requisite by the people so that the novel coronavirus can be tackled. So, to design and apply a tool with the aim of compliance measurement seems a must for governments or non-governmental organizations which are dealing with the problem.

Relevance of Collaborative Governance

Whilst the world is going in the way of development, mankind faces evolution in tools, methods and attitudes toward how to work together in a multidimensional aspect. So, it became a value to maintain a collaborative point of view in formerly strict and rigid processes. Nevertheless, collaborative governance as a fundamentally modern governing procedure emerged initially in the field of public administration and management (Agranoff and McGuire 2003; Bingham 2008; Emerson, Nabatchi, and Balogh 2012), broadened in the domains of political science (Ansell and Gash 2008; Sorenson and Torfing 2011), planning (Innes and Boher 2003; Margerum 2011), health care systems (Agbodzakey, 2017), decision-making (Doberstein, 2015), and several other fields of studies (Koontz and Thomas 2006; Susskind, Camacho and Schenk 2010; Fischer 2012; Emerson and Nabatchi 2015; Chen and Lee, 2017).

There are several definitions for collaborative governance including Carlson's (2007) which argued the notion as the leaders' engagement with all the private or public sector players either functioning as for-profit or non-profit organizations and people as citizens to develop effective and long-standing solutions for public issues in a way that never could be dealt with by any player on its own. Formerly, Agranoff and McGuire (2003) had been defined collaborative governance as a process for operation in arrangements which are composed of multi-organizational disciplines to facilitate problem solving by extending to organizations' abilities to cope with the problems that could not easily be solved merely. It has also been considered by Emerson, Nabatchi and Balogh (2012) as a complex of structures and processes of managing and making decisions in the scope of public policy which embodies people in all levels of government, public and private spheres to deal with a public purpose that could not be otherwise accomplished. For the most part, Ansell and Gash (2008) definition seems to be more holistic: 'Collaborative governance is a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, deliberative and that aims to make or implement public policy or manage public programs'.

The emergence of collaboration was a must in newly expectations risen out of traditional arrangements of governing systems and governments' shortfalls. Jung, Mazmanian and Tang (2009) pictured collaboration as a bridge that connects classically divided public, private and non-profit sectors. Robertson and Choi (2012) considered collaborative governance as a deliberative process which can add value to collective decision making through consensus and mutual learning. Collaborative governance, then, may span several, even all stages of the public policy process and encompass all the activities form

formulation and implementation to evaluation phase. So, it is crystal clear that the method will be helpful, only if it is applied during the stages and phases of the process. However it might face some difficulties while implementing from theory into practice. Waardenburg et al. (2019) investigated paradoxical challenges of collaborative governance and found that a 'both/and' mindset rather than an 'either/or' approach can quench these challenges. Emerson and Nabatchi (2015) believe that collaborative governance usually needs time to be occurred and several autonomous actors to put it into practice. Top-down bureaucratic governance's shortcomings are somewhat related to a confined role of stakeholders in decision making and policy implementation (Agbodzakey 2017). Therefore, increase in citizen's participation will improve the regulations' efficacy and lead to higher levels of positive outcomes in areas with clear boundaries between public and private and bolster the democratic legitimacy of governance process (Fung 2015). Focusing on empowerment, Strazelecka and Wicks (2015) studied the community participation in a range of mechanisms which start as simple manipulation of public and continue forward to reach a meaningful community involvement. Collaboration has also been considered as a common rallying cry for decision making on environment and natural resources which can bring together a range of stakeholders to address complexity and uncertainty in systems (Baired et al. 2018a). Cairney, Heikkila, and Wood (2019) discussed the ideas of multi-level governance as a distribution of power between governmental and non-governmental actors horizontally and between several levels of government vertically, and polycentric governance as the possibility of coordination of various overlapping centers of semi-autonomous authorities.

Ansell and Gash (2008) proposed a model which is composed of four broad variables to measure results out of collaborative governance: starting conditions, institutional design, facilitative leadership and collaborative process. It is clear that each process starts to work under a preliminary conditions. As for collaboration to occur, initial conditions are power and resource asymmetries among stakeholders to preclude problems in collaborative governance caused out of imbalances (Warner 2006), incentives for voluntary participation in the process (Brown 2002), and a positive prehistory of cooperation (Margerum 2002). Ansell and Gash (2008) used institutional design to refer to the basic protocol and rules for collaboration which are vital to legitimize the collaborative process. It is in line with North's (1989) definition of institutions which characterize the notion in 'rules, enforcement characteristics of rules, and norms of behavior that structure repeated human interaction'. Leadership is the focusing point of an organization or a system that can bring together all the stakeholders and parties and inspire them to work in a collaborative manner. Thus, the leaders' facilitative role of rests on his or her ability involve stakeholders in participatory process by guiding and assisting the actors (Van Maasakkers, Duijn, and Kastens 2014).

Collaborative governance model maintains an opportunity to tackle with human health problems and diseases. Agbodzakey (2017) employed formerly introduced collaborative governance model to ascertain its application in HIV/AIDS treatment and confirmed that participation of target populations, service providers, non-elected community leaders and other relevant stakeholders in the process of decision making enables problem solving in a collective work attitude. The involvement of various sectors by their stakeholders in making collective decisions are claimed to foster robust solutions to the HIV/AIDS

problem (Agbodzakey and Taylor 2019). This is in line with Scott and Thomas's (2016) argument about the umbrella role of collaborative governance which intakes myriad structures and processes and shapes a collective action amongst independent organizations to bring about a set of tools for solving public problems.

For the most part, collaborative governance can be considered at most as a solution to several standoffs which are brought up by monopolistic view of governing roles, or at least a facilitating tool which hastens the problem-solving processes even in crisis time.

Research Methodology

This paper presents an applied research that investigates the impact of collaborative governance's variables on the degree in which the guidelines for COVID-19 prevention is complied with. To examine the subject, a quantitative method is applied, using a questionnaire to gather the respondents' answers on both collaborative governance variables as independent variables and 'compliance with COVID-19 prevention guidelines' as dependent one along with socio-demographic questions. Participants of the survey were recruited from all over the country of Iran without any precondition except being at least 18 years old. A sample of 220 people attended the survey and responded to the questions. Of course, the minimum needed samples was calculated using G-Power software considering the conceptual model of the research and the number was equal to 119, but as we had a very big population, we went more than that to increase the generalizability of the results. Data collection is done in a period of one month in June 2020. They were 98 (44.5%) male and 122 (55.5%) females. The major groups of participants were 96 (43.6%) between 36 and 45, 91 (41.4%) between 26 and 35. Others were 7 (3.2%) aged 18–25, 24 (10.9%) aged 46–60, and 2 (0.9%) aged more than 60 years old. The participants were relatively high educated. Most of them had master's degree (55.9%), followed by bachelor's degree (23.2%), and Doctorate degree (16.8%). 27 (12.3%) respondents assert that they are at a very high risk of being in contact with the virus, 59 (26.8%) at high risk and 86 (39.1%) at medium risk. Based on data, COVID-19 has changed the work processes of 49 of respondents (22.3%) very critically. For 39 (31.4%) respondents this impact was high and for 66 (30%) at medium level. 23 (10.5%) of participants claim that their views are considered very highly whilst making decision about how to change the work processes, 68 (30.9%) feel highly engaged in change decisions and 66 (30%) believe their opinions are considered at medium level.

To investigate the role of collaborative governance in people's inclination toward complying with the COVID-19 prevention guidelines, a research model is presented based on Ansell and Gash's (2008) collaborative governance model supplemented by Plohl and Musil (2020) work on modeling compliance with COVID-19 prevention guidelines. The illustrated model in Fig. 1 is composed of three independent variables (starting conditions, institutional design and facilitative leadership) and one dependent variable, which is compliance with the prevention guidelines. One other variable (collaborative process) plays the mediator role between independent variables and dependent variable.

Variables on collaborative governance model are measured using a questionnaire developed based on collaborative governance model by Ansell and Gash (2008), exerting some modifications to be easily perceived in Persian language. It was composed of 22 questions. To measure compliance with COVID-19 prevention guidelines, some parts of a constructed material by Plohl and Musil (2020) are used, wherein 8 out of 11 preventive behaviors suggested by them were realized adequately related to the matter. Therefore, in this research we considered 8 guidelines as our base for measuring the compliance with COVID-19 prevention. All Constructs are measured with Likert scale.

In order to hold the research, four hypotheses are proposed as below:

Hypothesis 1

Collaborative process has a positive impact on compliance with COVID-19 prevention guidelines.

Hypothesis 2

Starting conditions have positive impact on compliance with COVID-19 prevention guidelines through collaborative process.

Hypothesis 3

Institutional design has positive impact on compliance with COVID-19 prevention guidelines through collaborative process.

Hypothesis 4

Facilitative leadership has positive impact on compliance with COVID-19 prevention guidelines through collaborative process.

In order to test above hypotheses, we have used structural equations modeling and smartPLS software. The outputs of the SEM analysis are shared in below section.

Results

As shared earlier, in this research SEM method is applied. In this section the result of SEM analysis and hypotheses testing are shared.

Figure 2 shows the measurement model of our research. During the initial analysis to have a better model characteristic, we dropped 1 item from facilitative leadership and 2 items from prevention guidelines due to their low loading.

We measured the construct reliability and validity, on next step and below, in Table 1, the result is shared.

Table 1
Construct reliability and validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Collaborative Process	0.827	0.841	0.877	0.59
Compliance with Covid-19 Prevention Guidelines	0.751	0.745	0.793	0.396
Facilitative Leadership	0.872	0.872	0.922	0.797
Institutional Design	0.863	0.865	0.902	0.649
Starting Conditions	0.851	0.857	0.89	0.574

As it can be seen from the Table 1, all five constructs have Cronbach's alpha value of higher than 0.7 and are in acceptable range. On the other hand, to have a good convergent validity, we need to have CR values higher than 0.7, which it is also fulfilled for our data. Another criterion for convergent validity is to have AVE value of higher than 0.5 in which four of our constructs fulfill this criterion. We neglected this value for compliance variable as the number of items in this construct was reduced to six items and removing more items to reach to a better AVE would influence the content of our research construct and we already had an accepted range for CR as mentioned before. Also, for Rho_A criterion, we can see that all values are higher than 0.7 and in acceptable range.

On the other hand, as it is shown in Table 2, we can see that the discriminant validity is also in an approved situation. Therefore, overall, we can see enough validity and reliability in our model.

Table 2
Discriminant validity

	C P	Compliance Covid-19 P G	F L	I D	S C
Collaborative Process	0.768				
Compliance with Covid-19 PG	0.225	0.629			
Facilitative Leadership	0.707	0.164		0.893	
Institutional Design	0.768	0.147		0.791	0.856
Starting Conditions	0.714	0.103		0.767	0.849

In order to get sure about discriminant validity, we also tested HTMT as shown in Table 3. As all values are less than 0.9, we conclude that there is an acceptable discriminant validity for our constructs.

Table 3
HTMT

	C P	Compliance with Covid-19 P G		F L	I D	S R
Collaborative Process						
Compliance with Covid-19 P G		0.224				
Facilitative Leadership	0.812	0.155				
Institutional Design	0.891	0.174		0.812		
Starting Conditions	0.825	0.159		0.883	0.889	

Now we move to structural model analysis and the PLS result is shared in Fig. 3.

Table 4 shows the path coefficient of direct relationships in our model.

Table 4
Path coefficient

	(O)	(M)	(STDEV)	T Stat	P Value
Collaborative Process -> Compliance with Covid-19 P G	0.233	0.261	0.056	4.159	0
Facilitative Leadership -> Collaborative Process	0.215	0.216	0.076	2.817	0.005
Institutional Design -> Collaborative Process	0.442	0.434	0.118	3.745	0
Starting Conditions -> Collaborative Process	0.166	0.176	0.097	1.712	0.087

According to Table 4, all path coefficients are significant except for the link between 'starting conditions' and 'collaborative process'.

On next step, we need to calculate the indirect effect of the independent variables to dependent variable. As it is shown in Table 5, we can see that again only the link between 'starting conditions' and 'compliance with COVID-19 preventive guidelines' is not significant and other two indirect correlations are significant.

Table 5
Indirect effects

	(O)	(M)	(STDEV)	T Stat	P Value
Facilitative Leadership -> Collaborative process -> Compliance with COVID-19	0.05	0.056	0.023	2.134	0.033
Institutional Design -> Collaborative process -> Compliance with COVID-19	0.103	0.114	0.041	2.521	0.012
Starting Condition -> Collaborative process -> Compliance with COVID-19	0.039	0.046	0.028	1.406	0.16

Again, we can see that the path from 'starting condition' to Compliance variable through the mediator is not significant while other two correlations show a significant result.

Discussion

Considering direct effects, it is clear that collaborative process has a significant impact on compliance with prevention guidelines. This can be attributed to the nature and essence of the collaboration which is aimed at synergic actions to reach enhanced results, so needs to receive more commitment in dues and defined orders. To clarify the point, people who perceive higher level of collaboration in a joint action or process, which can be tackling with a pandemic, are more sensitive to deviations from well-organized cooperative missions and less inclined to violate regulations governing the process. Therefore, more level of measured collaborative process is significantly related to higher degree of compliance.

However, collaborative process itself is impacted by institutional design and facilitative leadership. As for institutional design, it must be considered as a structure which embodies rules and norms to maintain repeated action of people in contributing the process, here known as collaborative process aimed at enhancing compliance with prevention guidelines of COVID-19 disease. So, the more fortified institutions, the more collaborative process. It is in line with several other research which have suggested the constructive effect of the institutions on some other variables (Guidi, Engerman, and Youssef 2019; d'Agostino and Scarlato 2019; Hassan et al. 2020; Khatun and Saadat 2020). Results also implies that although Iran is initially proposed as a developing country, institutions as the critical element of sustainable development are playing a key role. It can be promising for the development process of the country on the whole.

Facilitative leadership's significant impact on collaborative process and compliance with prevention guidelines rests mainly on the need for being led by a figure who works as the facilitator, inspires all bodies and invites them to keep on being compliant in order to reach the final results. This is also in line with the results of researches studied the role of leadership in different disciplines (Hu 2019; Guerrero et al. 2020; Svendson, Seljeseth, and Ernes 2020). The leader, here, can be an institution which leads the collaborative process of dealing with COVID-19 disease and controlling the pandemic. Thus, the significant path coefficient measured by the model on both institutional design and facilitative leadership

can be once turned up correlated whether being tested under a research then. Another substantial base that justifies the significant impact of leadership on collaborative process is that the discussing process is a kind of managerial sequence, since the broad distribution of the virus expands the need for an organized, led, and controlled comprehensive action plan. Nevertheless, leadership as one of the basic components of management process (Northouse 2018) gives credit here.

Starting conditions, on the other side, indicates no significant effect neither on collaborative process, nor on compliance with COVID-19 prevention guidelines. It is hard to certainly comment on the result, but it can be characterized as contextual shortages pushing forward the collaboration process. Since there is not a remarkable experience of structured collaborative action on the subject of encountering a pandemic on the country, participants have not a clear perception on the conditions that may exist or not. It means that although institutions show a good foundation for achievement and leadership signals a considerable role, the conditions that are the base point to start the process are not concentrated, but sporadic and widespread. Anyway, how the process is done without the prerequisite conditions may be argued based on the critical situation it implies. Since negligence on doing the process and complying with the prevention guidelines could lead to irrecoverable consequences like death, people and the organizations do not care the lack in starting conditions, continue regarding compliance with COVID-19 prevention guidelines to preserve their lives.

All the elaborated discussions above are similarly governing whilst considering the effects of three dependent variables, i.e. institutional design, facilitative leadership and starting condition, on compliance with COVID-19 prevention guidelines via mediator variable, collaborative process. That rests on the integrity of the collaborative governance model which entails a comprehensive body of collaboration. This body assures that every single variable works as a component of a whole and can be considered to cause any result in isolation. All the discussion again upholds the fact that collaboration is a collective process.

Conclusion

Since COVID-19 crisis is showing its hard face in Iran, it is crystal clear that some modifications on prevention policies are necessary to curb spread of the virus. Based on the results, it is strongly suggested that policy makers in Iran consider joint actions and collaborative measures in controlling the disease. The efforts would rather embrace all the process of disease control. It can be enacted by employing action teams composing of all involving people and bodies in micro level among cities, districts and neighborhoods, whilst receiving suggestions from several sources in subsidiary levels who have role in tackling with the virus to make more applicable policies in macro level.

The very specific Iranian culture may have effects on the way people work together and comply with the prevention guidelines. Based on Hofstede's cross-cultural model (Hofstede et al. 2010), it can be interpreted that Iranian culture is very flexible on the individualism-collectivism bipolar. They are mainly inclined to do their jobs individually and experience private space, but during a large-scale problem they can change

their mood to collect and act together. It is a very clear hint for all the managers to lever this special attribute when necessary. Results also can be described by another dimension of Hofstede's model, Uncertainty avoidance. The role of facilitative leadership and institutional design can lower uncertainty level. The decrease gives more importance while a society is passing a fragile situation. Since the virus has put the country in a critical situation and the society prefers less ambiguity, maintaining a strong leadership attitude upheld by institutions is an effective way to increase citizens' approach into collaboration and finally enhances the level of prevention guideline regard. In the end, it must be mentioned that all the suggestions above can be applicable through societies with partly similar cultural characteristics.

The idea of applying collaborative governance model to measure the effect of a governance system on complying with COVID-19 prevention guidelines was not the only novel idea in current research, but also a distinct effort which clarified utilization of this governance model and the potential capability of wide-range application of collaborative process to dominate several problems of decision-making and implementation in micro and macro levels among organizations or governments is among the novelties of the current study. Also performing this study in a developing country context, has two main benefits. First, to provide some ideas on this unique research idea to be expanded by future researchers, and second, it opens policy makers' mind to more diverse views which can influence their practice and save some human lives during the pandemic or future similar crisis.

Limitations And Recommendations For Further Research

This study is limited by the location. It expands the survey inside the border of Iran- one of the most attacked country by the novel coronavirus. Thus, it cannot be generalized as a holistic theory and analysis which serves various situations. Since the spread of the virus is going on and there are several other countries which tolerate a great injury by the virus, it is strongly recommended that further researches be held to examine the model on other countries in a comparative point of view. Additionally, the contextual culture and development phase in Iran might have had something to do with the results. So, probably the results of further surveys may differ from discussed in this study based on the role of leadership, the diversity of institutions dealing with the COVID-19 disease, and intensively due to difference in starting condition among different cultures and societies. As mentioned, it is also recommended that the co-relationship between institutional design and facilitative leadership be tested while the collaborative governance model is working to achieve an outcome.

Abbreviations

ASEAN

Association of Southeast Asian Nations

SEM

Structural Equation Modeling

HTMT

Declarations

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

All the process was managed in collaboration of all authors. It can partly be declared that JA had major contribution on gathering data and writing the manuscript, FSF had a key role on performing the data analysis, and YS contributed mainly on interpreting the results and discussions in addition to reviewing and finalizing the manuscript.

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Figures

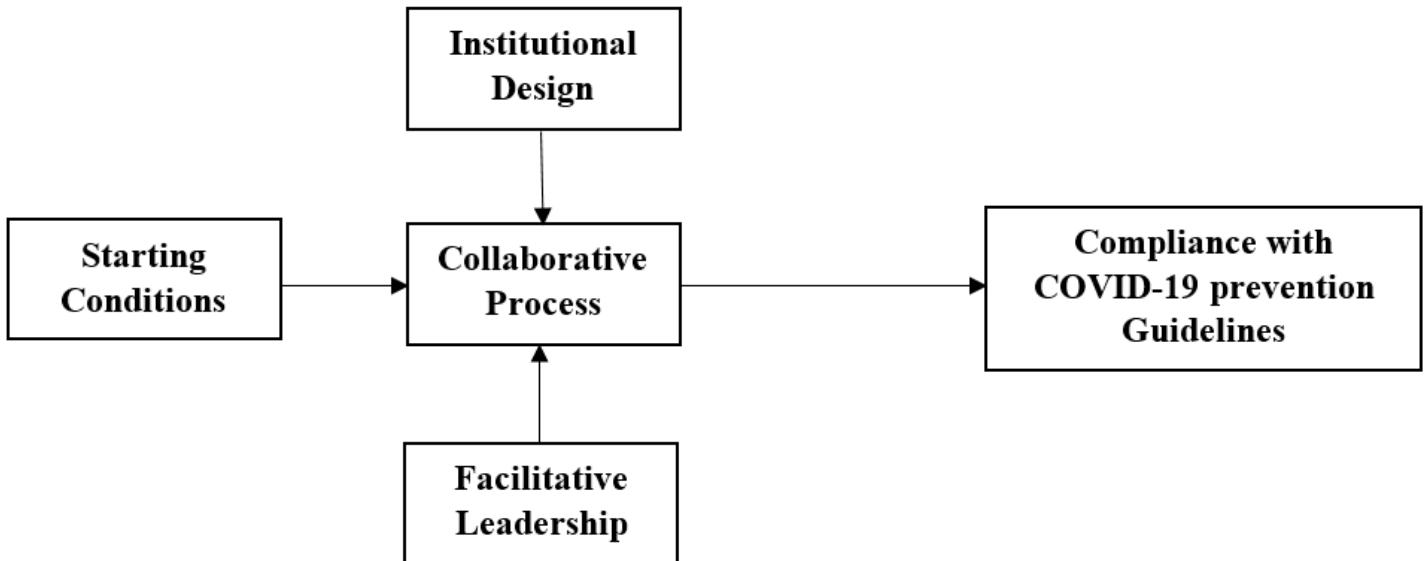


Figure 1

Research Model

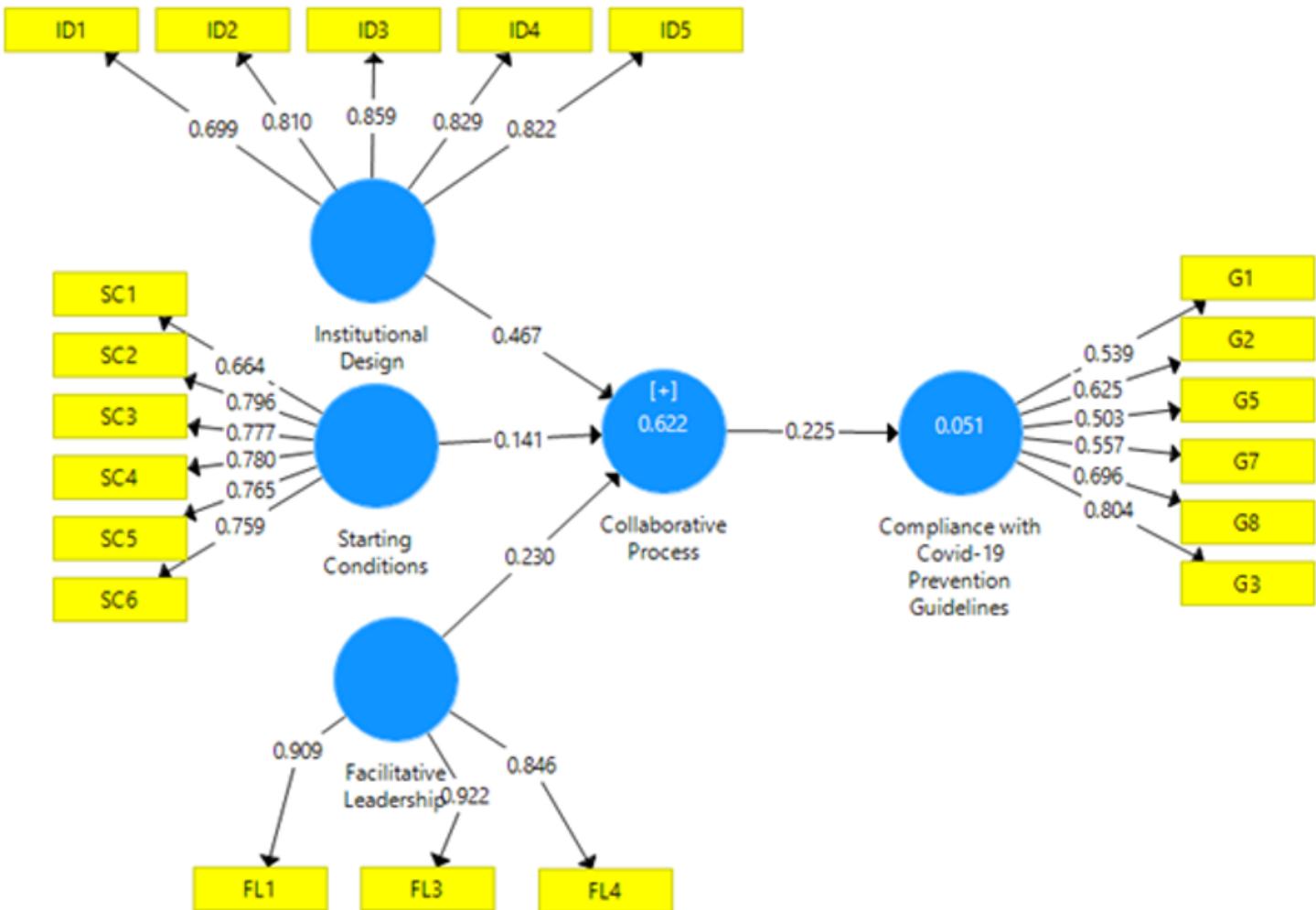


Figure 2

Measurement model

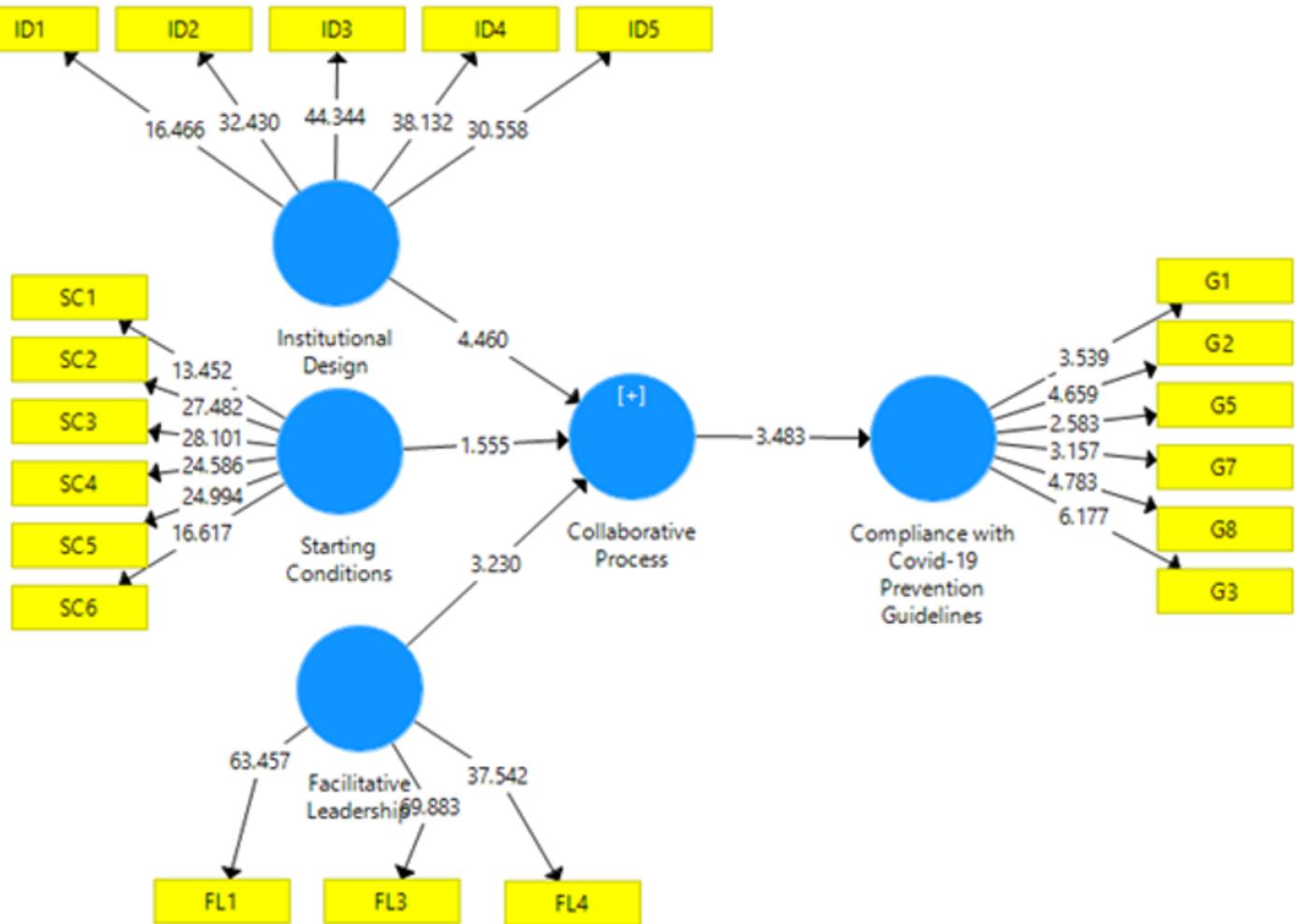


Figure 3

Structural model