An analysis of the relationship between organisational resilience and Local Educational Management Units' responses on education services delivery in Peru during the COVID-19 pandemic

Guiselle M. Romero-Lora, Juan C. Rivero-Isla and
Brenda E. Lopez-Chavez
*Department of Management Sciences, Pontifical Catholic University of Peru,
Lima, Peru*

Abstract

Purpose – During the COVID-19 pandemic, Local Educational Management Units (UGELs), the key government stakeholders in the provision of education services in Peru, implemented responsive interventions. This paper analyses the relationship between UGEL organisational resilience and their responses during this period.

Design/methodology/approach – A survey was conducted to measure UGEL management practices, with 251 valid responses from directors and managers. Based on organisational resilience theory, 67 questions were grouped into 13 factors and 3 components: (1) leadership and organisational culture, (2) preparation for change, and (3) networks building on the Organisational Resilience Index (ORI). These factors correlated with the number of interventions and the impact of those interventions implemented by UGELs.

Findings – The findings indicated that of all ORI components, leadership and organisational culture ranked the highest. Moreover, the ORI is positively associated with the number of interventions and the perceived impact produced by those interventions. Interestingly, it was found that when the gender variable is included in the correlation between the ORI and the number of interventions, women leading UGELs display a higher number of interventions than their male counterparts; and the coefficient increases even more when women lead a UGEL in a more challenging context (i.e., when the UGEL is located in a low-income area and operates under scarce resources).

Originality/value – This is the first study in Peru which analyses organisational resilience in the education sector, specifically about UGELs during the COVID-19 pandemic. It may help set priorities for institutional strengthening initiatives aimed at improving organisational resilience, which is particularly important in such uncertain and changing contexts.

Keywords Organisational resilience, COVID-19, Education services, Peru

Paper type Research paper

Introduction

Peru was one of the first Latin-American countries to adopt quarantine measures in response to the COVID-19 outbreak. In the education sector, the government promptly cancelled

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regular in-person classes in schools. The Ministry of Education approved a regulatory framework to implement online classes nationwide and established the "Yo aprendo en casa" (*I learn at home*) strategy to continue providing educational services (Ministry of Education, 2020a).

One of the key participants in providing education services is the Local Educational Management Units (UGELs). These units report to regional governments, monitor schools' performance, and provide technical assistance to schools. During the pandemic, some of these UGELs implemented responsive interventions to the crisis.

Based on the resilience literature, this study analyses UGEL organisational resilience and its response to the crisis. The research question is: What is the relationship between UGEL organisational resilience and its response to the COVID-19 outbreak? To answer this, an Organisational Resilience Index (ORI) was developed based on components and factors identified in the literature. The hypothesis was that UGELs organisational resilience is associated with their response capacity during the crisis.

The subsequent sections detail the institutional arrangements in the education sector, the actions taken by the government during the pandemic, a literature review on organisational resilience, the methodology, findings, and finally, the conclusion.

Educational policy and institutional design for service delivery in Peru

The education system in Peru has undergone significant changes in the last two decades in terms of stakeholders' responsibilities and roles at the national, regional, and local levels. According to the General Education Law 2003 (Peruvian Congress, 2003), the educational service is organised into basic and higher education. Basic education is for children from 3 to 11 years, is compulsory and, when provided by the government, is free.

The education system is decentralised. There are four key actors: i) the Ministry of Education (MINEDU), ii) the Regional Offices of Education (DREs) in the regions, iii) Local Educational Management Units (UGELs) in the provinces and districts, and iv) schools. The education service provision aims to highlight the role of the local actors: UGELs and schools, because they are the closest to the people.

MINEDU has the leading role in ensuring a national vision that integrates diversity (Ministry of Education, 2013) and preserves the unity of the educational system. Its main function is to set national policies and educational standards. Besides, MINEDU defines the technical-normative guidelines for educational service provision and supervises its compliance. It also leads intergovernmental and intersectoral coordination within the educational system.

The DREs are specialised units in the regional governments responsible for ensuring and supervising the provision of educational services in the regions and coordinating with UGELs. UGELs are responsible for supervising the provision of educational services and technical assistance to schools (Ministry of Education, 2015b).

The main processes performed by UGELs are as follows:

- Local educational planning and development;

- Supply management and human resources management;

- Infrastructure maintenance and investment management;

- Technical support and assistance to increase educational service quality; and

- Quality standard assessment of pedagogical and administrative performance in schools.

According to the UGEL 2020 database, there are 222 UGELs distributed in all 24 regions of Peru. One region has two or more provinces, and one province can cover two or more districts.

Depending on its scope of intervention, each UGEL, on average, serves between eight and nine districts of a province. However, the scope of UGELs can vary significantly: some span as many as 33 districts in a province, while others, in contrast, serve only one district. This indicates that a UGEL might cover entire provinces or merely single districts in certain cases.

Therefore, the educational sector governance involves active participation of national, regional, and local actors. Regional and local levels are responsible for adapting and customising education provisions due to the country's cultural, social, and economic diversities. In addition, its jurisdictions differ greatly in terms of socio-demographic characteristics and operating capacity. Thus, using these two variables, MINEDU classified UGELs by the typology as presented in Table 1.

The guidelines for decentralised educational management, approved by General Secretariat Resolution No. 938-2015-MINEDU (Ministry of Education, 2015a), point out that the decentralised management of education implies considering a progressive change from the sectoral approach to a territorial approach of public service delivery oriented to the citizen. This contributes to the improvement of students' learning and development in schools, reducing inequality gaps in education.

However, there is a widespread discussion about the problems of decentralised educational management in Peru. According to the Multisectoral and Intergovernmental Commission for the Strengthening of Decentralization (2018), the regulatory framework linked to decentralisation does not define the specific responsibilities of each level of government to guarantee an orderly and efficient provision of public services. In its final report, it states that there are overlaps and underlaps between various levels of government. Specifically, in the education sector, after analysing its key processes, it is concluded that there is tension between the exercise of authority by the national government and implementation of educational service at the local level. The tension occurs as the national level (MINEDU) exercises its authority without allowing discretion for UGELs. This means that even though it works under a chain-of-command model, there is not much margin for innovation at the local level.

Educational policy and institutional arrangements in the context of COVID-19
In response to the COVID-19 pandemic, the Peruvian government implemented measures to limit the spread of the virus across the country in mid-March 2020. These included rescheduling the start of classes in public schools and suspending classes in private educational institutions. Shortly after, the academic year commenced on April 6, adopting an online education approach with the implementation of the "I learn at home" (ILAH) strategy.

Type	Level of operational capacity	Level of territorial challenge	Number of UGEL
A	High	Low	36
BC	Average or limited	Low	16
D	High	Average	24
E	Average	Average	59
F	Limited	Average	23
GH	High or upper	High	40
I	Limited	High	22

Note: The typology of UGELs was prepared in 2015, when there were 220 UGELs registered to date in the Registry of decentralised educational management units. At the time of approval of the typology, 4 UGELs Type I were in the process of regularisation per the Technical Standard approved by Vice-ministerial Resolution No. 047-2015-MINEDU (Ministry of Education, 2015b).
Source: Adapted from Ministry of Education (2015a)

Table 1.
Typology of Local
Educational
Management Units

At the same time, the government announced the acquisition and distribution of technological devices (tablets) for students and teachers who needed them the most (Ministry of Education, 2020a).

In May 2020, through Ministerial Resolution No. 184-2020-MINEDU, the suspension of in-person educational service provision in all public and private schools was ordered, while the State of National Emergency was in force (Ministry of Education, 2020b). Likewise, in the same month, MINEDU implemented an online platform for schools during the year, due to the conditions of the crisis, which allowed more students to access public education. On the other hand, some regulatory instruments and pedagogical guidelines for online services or blended learning services in rural areas, were approved, among others.

The main effort of MINEDU to respond rapidly to the suspension of the educational service and start the 2020 school year was implementing the ILAH strategy. This distance education strategy proposed learning experiences to students at all levels and educational modalities of basic education in the country from their homes, implying the development of skills remotely accompanied by their teachers and their families. The ILAH strategy was freely accessible and free of charge and worked through different channels: the Internet, radio, and television. On the ILAH website, students could find and use educational resources, primarily videos and homework published weekly and scheduled daily. In addition, guidance was provided for families and teachers on this website. On television, the ILAH program was broadcast from Monday to Friday with educational content and differentiated schedules according to level and grade. Learning sessions from 15 to 30 minutes were broadcast on the radio, depending on the grade. These programs were produced exclusively by MINEDU, with no participation of regional or local actors as co-producers.

UGELs mainly oversaw communicating the school's strategy and resources and engaging schools, teachers, and parents to use them. They identified the existing conditions for implementing ILAH and designed alternative mechanisms for its access in areas without access to the Internet or television. For example, the UGEL Pichari Kimbiri in the region of Cusco, managed to increase access to ILAH through specific awareness activities for the community, as well as managing its dissemination in 11 radio stations in the area (Ministry of Education, 2020d).

Additionally, they oversaw guiding and providing technical assistance to teachers, school directors, and education staff on virtual education, as well as monitoring and reporting the progress and difficulties in the implementation of ILAH. For example, the UGEL Alto Amazonas – San Lorenzo in the region Loreto, managed to implement the Internet in the institutions of 64 rural educational networks, which allowed access to ILAH pedagogical resources and virtual technical assistance to managers and teachers (Ministry of Education, 2020d).

Even though it was estimated that a significant percentage of families accessed the content from ILAH in October 2020, and more than half have done so through the web, the telecommunications gap in the country indicated that households without a computer or the Internet could not access the platform, and therefore they had to opt for the other channels. In addition, it was most likely that students in rural areas were the most affected, as they could not access the online education service. Indeed, MINEDU, used the exercise of authority for assuring that regional and local actors comply with the regulatory instruments and guidelines, and left limited chances for innovation.

To avoid and tackle this, the UGEL implemented other strategies to share the training content of ILAH. As indicated in the guidelines for directors of DREs and UGELs within the framework of the measures adopted for the prevention and control of COVID-19 (Ministry of Education, 2020c), UGELs could identify geographic areas where it was not possible to implement the ILAH strategy and propose alternative or complementary strategies in those territories.

In short, after the declaration of a health emergency and the national state of emergency in response to the spread of COVID-19 in Peru, the education sector actors implemented multiple actions to implement the distance education service. However, effective distance learning through accessible and quality education for children and adolescents in the country did face challenges. Closing the access gap for students and teachers to information and communication technologies, the digital gaps, the implementation of intercultural and territorial approaches, and the diverse capabilities of UGEL staff and teachers, among others, presented serious problems.

According to the literature in the next section, organisational resilience is key to addressing crisis and uncertainty. Therefore, this study seeks to analyse the organisational resilience of UGELs, key stakeholders in the Peruvian education system, and their resilience in terms of its response to the COVID crisis.

Literature review on organisational resilience and its factors

From organisational theory, there are different perspectives to understanding organisational resilience. On the one hand, the literature indicates that resilience allows organisations to cope with crises and not interrupt their operational capacity (Barnett and Pratt, 2000; Vogus and Sutcliffe, 2007). On the other hand, it suggests that resilience inherently transforms and strengthens organisations, enabling them to overcome threats (Lengnick-Hall *et al.*, 2011). In this approach, resilience gives organisations a competitive advantage since it boosts their capacity for constant change (Parsons, 2007). Thus, more resilient organisations are better prepared to perform in contexts of uncertainty and achieve good results.

Likewise, other contributions argue that organisational resilience allows planning, responding, and recovering from threats and crises, and the recovery of environments where organisations operate, to the extent that by transforming their goods and services, they can restore the imbalance of the environment affected by a negative event (Lee *et al.*, 2013).

Based on the above, resilience is characterised using notions such as recovery (Hale and Heijer, 2006), robustness (Tierney, 2003), absorption (Berkes, 2007), survival, and prosperity (Vogus and Sutcliffe, 2007; Seville, 2009), and organisational transformation (Lengnick-Hall *et al.*, 2011). Thus, whether scholars refer to survival, system adaptation, shock absorption, robustness, ability to bounce back from adversity, or to transform and innovate, organisational resilience is always approached as positive and desirable (Lee *et al.*, 2013).

However, the study of the drivers of organisational resilience is relatively recent, and even more so is the impact of resilience on organisations' responses (Barasa *et al.*, 2018). On this subject, Lee *et al.* (2013) identified drivers of organisational resilience encompassing management practices and the use of resources to ensure planning, response, recovery, and transformation of organisations.

These encompass the capacity to be aware of what is happening in the context and understanding what this means now and, in the future (Endsley *et al.*, 2003), a strategic and behavioural readiness to respond to early warning signals in the internal and external environment of the organisation, before they transcend (Lee *et al.*, 2013), the management and mobilisation of the organisation's resources to ensure its ability to operate during business-as-usual, as well as during a crisis (Lee *et al.*, 2013; Vogus and Sutcliffe, 2007), the collaboration between organisations to expand resources and equip themselves with the capacity to learn and respond (Moore and Westley, 2011; Walker *et al.*, 2014); amongst many others.

To sum up, several factors contribute to organisational resilience. They have been used by researchers and practitioners either to assess the level of organisational resilience as a whole or to identify the most influential factors. This research has adapted a survey designed by Resilient Organizations in New Zealand (Resilient Organizations, 2017) to examine the UGEL level of resilience during COVID-19.

Research methodology

This study assesses the relationship between the ORI and UGEL response. Data collection was carried out through a self-administered questionnaire in October 2020. This tool was adapted from the organisational resilience measurement questionnaire (Resilient Organizations, 2017). The survey was validated by two civil servant experts from the Ministry of Education. Four pilot tests were conducted before data collection with the heads of UGELs to test the understanding and clarity of the questions.

The survey consisted of questions regarding management practices in UGELs mainly using Likert scales (ranging from 1 "Strongly disagree" to 8 "Strongly agree"), based on the organisational resilience theory.

Organisational resilience was measured by developing an ORI based on 67 questions (items) grouped under three components: (1) Leadership and organisational culture, (2) Preparation for change, and (3) Networks building; and these were grouped under 13 sub-components: Situational awareness, Leadership, Team commitment, Decision-making, Innovation and creativity, Networks and collaboration, Information and knowledge management, Minimisation of silos and coordination, Internal resources, Unity of purpose, Proactive posture, Planning, and Participation in exercises.

The authors analysed the reliability of the survey using Cronbach's Alpha coefficient for both the initial three components and the last thirteen sub-components. Additionally, to estimate the index of organisational resilience of UGELs, first, a simple average of the values for each sub-component was used, then again averaged to obtain it for the three components. Finally, the index comprises the simple average of these three components.

The study population comprises UGEL staff who are directors (heads of UGELs) and managers (heads of pedagogical management, institutional management, and administration offices). The number of officials who fulfil this criterion is more than 800, and the total number of UGEL is 222. If grouped by gender, 69 percent are led by men and 31 percent are led by women (Ministry of Education, 2021). The data were collected after the five Zoom capacity-building sessions held by the Ministry of Education on October 24 and 25, 2020. From a total of 354 respondents, after a verification process, 251 valid cases were obtained. From this sample, 81 respondents were UGEL directors (51 males and 30 females, representing 63 percent and 37 percent respectively).

Moreover, the sample reached 148 out of 222 UGELs. The 148 UGELs covered 128 out of 196 provinces. Considering the size of the territory or the population of certain provinces, some UGELs encompass a smaller area than a whole province. For instance, large cities such as Lima have seven UGELs within one province.

Organisational responses are assessed based on the number of interventions carried out by UGELs (first variable). The number of possible interventions can range from 0 to a maximum of 8. The second variable is the perceived impact of the intervention, which is gathered using a scale with the possible answers: High, medium, or low impact. These variables are used as dependent variables.

First, a linear OLS regression is set to estimate the association of the ORI with the number of interventions. The model follows this equation 1:

$$NI_i = \alpha + \beta Index_i + \gamma'Z + \epsilon_i$$

Where NI_i is the UGEL number of interventions. $Index_i$ is the ORI value for UGELs. Z is a vector of control variables that consists of the age, gender, and job level of the respondent, along with the type of UGEL. Finally, ϵ_i is the error term. The job-level variable takes the value of 1 when the respondent is the UGEL director and 0 otherwise. Additionally, UGELs are categorised into seven types according to the Ministry of Education based on the geographical challenges and operational capability (Table 1).

To analyse the correlation between the ORI and the probability of high, medium, or low impact, the authors conducted a second model which consists of an ordered logit estimation of the following equation:

$$Impact_i = f(Index, Z)$$

The ordered logit estimation is done considering that the values of the *Impact_i* variable ranged from: (1) high impact, (2) medium impact, to (3) low impact. As a result of this final regression, the estimated conditional probabilities for each impact are calculated concerning the ORI value. In contrast to the first regression, an OLS estimation cannot be carried out as the dependent variable is not numerical.

Results and findings

Descriptive analysis

The ORI sample average is 6.06, ranging from 0.0 to 8.0. When analysed by its three components: "leadership and organisational culture", "networks building" and "preparation for change", the highest value corresponds to "leadership and organisational culture", at 6.37. When grouped by the 13 sub-components, the authors found that the highest values correspond to the "situation awareness" factor, at 6.74. The lowest values correspond to "internal resources". This means that during the pandemic, civil servants from UGELs highlighted the ability to grasp what is happening as a key factor. Yet, resources were not sufficient to overcome the challenges.

Regarding the COVID-19 response, reorganization for remote work was developed by UGELs in 94 percent of all cases; followed by the implementation of social-emotional support strategies. In contrast, the provision of technological tools for students; and engagement of volunteers to cover accessibility gaps were the less frequent interventions, at 23 percent, and 18 percent respectively. Most of the respondents agreed to exhibit many management practices which were on average five types of interventions of eight possible actions.

Regarding the perception of the impact of UGEL interventions, 48.8 percent of all the respondents valued as high the impact of their intervention, and only 4.8 percent of them mentioned that their impact was low. Interestingly, when estimating ORI for each category, those who valued as high their impact, also display a higher resilience index (Table 2).

Inferential analysis

Table 3 shows the result of the estimation of equation 1; after controlling for gender, age, and job level of the respondent and types of UGELs, a significant coefficient of 0.310 is obtained for the index. This can be interpreted as a positive and significant association between the number of interventions conducted by UGELs and ORI. In particular, an increase of one point on the index, leaving the rest constant, is associated with an increase of 0.310 in the number of interventions.

This assessment found that a UGEL led or managed by a woman is associated significantly with an increase of 0.453 over the number of interventions. Age is also

Level of perceived impact	N	%	ORI average	St. Dev.
Low impact	12	4.8	5.68	1.43
Medium impact	121	48.8	5.76	1.18
High impact	115	46.4	6.41	0.87
N	248	100.0	6.06	1.11
Source: By authors				

Table 2.
Level of perceived
impact and
organisational
resilience index
average

Variables	Coeff.	St. error	T - stat	p-value
ORI	0.310	0.094	3.29	0.001
Woman	0.453	0.227	1.99	0.047
Age	0.061	0.014	4.34	0.000
BC Type	-0.026	0.417	-0.06	0.95
D Type	-0.366	0.406	-0.9	0.367
E Type	0.176	0.324	0.54	0.588
F Type	0.473	0.413	1.15	0.253
GH Type	0.227	0.335	0.68	0.499
I Type	0.592	0.393	1.51	0.133
Director	0.116	0.232	0.5	0.617
Constant	-0.315	0.892	-0.35	0.725
N	251			
F	4.35			
p-value	0.00			
R^2	0.1534			
Source: By authors				

Table 3.
Regression between the number of interventions developed by UGELs and the organisational resilience index

associated positively and significantly with the number of interventions, although its coefficient is lower, at 0.061.

Additionally, the results can be evaluated by combining the coefficients. Statistically significant associations of the variables were found as follows: i) if UGEL is Type F, ii) if UGEL is Type I, iii) if there is a woman manager in the UGEL, iv) if the UGEL director is a woman, v) if a woman leads a Type F UGEL, and vi) if Type I UGEL is led by a woman. Table 4 shows the linear combination of an increase of one point on the index with these features. First, it was found that when the ORI increases in one point in UGEL Type F, there is a 0.784 increase in the number of interventions. Likewise, one point increase in the ORI in UGEL Type I is associated with a 0.902 increase in the number of interventions. Moreover, when there is a woman manager, one point increase in the ORI results in a higher number of interventions, at 0.763. Also, when a woman is the UGEL director, the coefficient increases to 0.880. Finally, when a woman is a director in a UGEL Type F the coefficient increases to 1.353; likewise, if a UGEL Type I is led by a woman, the coefficient increases even more up to 1.472 the number of interventions.

These findings are consistent with contemporary literature that remarks successful experiences of women leaders in the context of the COVID-19 crisis. Indeed, studies showed

Linear coefficient with Organisational resilience index	Coeff.	St. error	T statistics	p-value
BC Type	0.284	0.414	0.690	0.494
D Type	-0.056	0.417	-0.140	0.893
E Type	0.486	0.326	1.490	0.137
F Type	0.784	0.418	1.870	0.062
GH Type	0.537	0.335	1.600	0.110
I Type	0.902	0.398	2.270	0.024
Woman	0.763	0.252	3.030	0.003
Director	0.427	0.237	1.800	0.074
If UGEL has a woman director	0.880	0.309	2.850	0.005
If Type F UGEL is led by a woman	1.353	0.519	2.610	0.010
If Type I UGEL is led by a woman	1.472	0.517	2.850	0.005
Source: By authors				

Table 4.
Linear combination with control variables of UGELs

that female leadership displayed different features such as effective early alert responses, transparent and evidence-based decision making, good practices of knowledge sharing, and vulnerable population targeted protection measures (Funk, 2020), as well as effective quarantine measures that led to lesser deaths during the pandemic (Sergent and Stajkovic, 2020).

The second model uses the ordered perception of the intervention impact within an Ordered Logit regression framework. Indeed, a probability of occurrence is estimated using ORI as a variable of interest and the aforementioned control variables. The initially estimated coefficients do not represent a marginal "effect" or association as on the first regression but an odds ratio. These coefficients are later transformed into marginal effects.

The first plots indicate a positive association between the probability of occurrence of a higher impact and the ORI value. In contrast, the probability of occurrence of a lower impact is negatively associated with ORI (Figure 1).

If an index value of 6 is considered, this represents a point close to the sample average, and an estimated probability of achieving a high impact of around 40 percent is obtained. Similarly, the probability of occurrence of a medium impact at this value is close to 40 percent. This indicates that, on average, there is a split possibility of having a high or a medium impact perception. Yet, these probabilities diverge when the index goes to each extreme. A value of 8 on the index is associated with a high impact with a higher probability, while the contrary happens with a value of 1. The general trends are maintained along the estimated probabilities for each of the three components of the ORI.
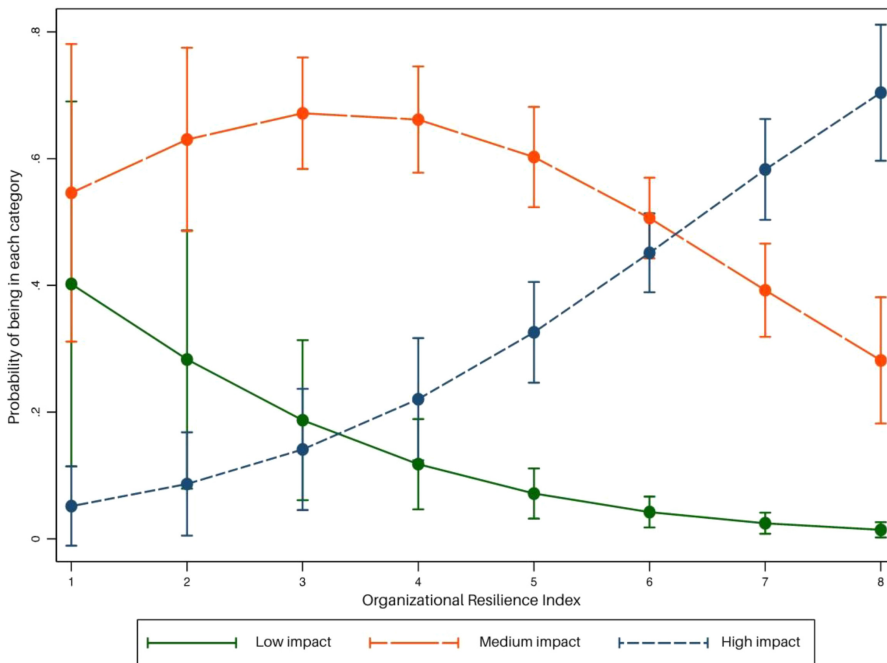

Figure 1.
Relation between ORI and probability of levels of impact of response actions

Source: By authors

Conclusion

This paper analyses the relationship between UGEL organisational resilience and their COVID-19 response. First, it was found that UGELs ranked well in the Organizational Resilience Index (ORI) with an average score of 6.06 on a scale ranging from 0.0 to 8.0. Second, of all components of ORI, "leadership and organisational culture" had the highest average. Third, a higher level of organisational resilience led to more interventions or actions by UGELs in the context of the COVID crisis. Furthermore, when the gender variable is included in the correlation between the ORI and the number of interventions, it was found that having a female UGEL manager or director is associated positively with the increase in the number of interventions implemented by UGELs in the context of the crisis. This is especially relevant for UGELs characterized by limited operational capacity and high territorial challenges (Type I), where having a woman director increased by 1.472 in the number of interventions. Additionally, the higher the ORI, the higher the perceived impact produced by UGEL interventions.

These findings call for more focused institutional strengthening initiatives related to leadership and organisational culture in public organisations, as they have greater influence on organisational resilience. Decision-makers at the Ministry of Education and the regional governments in charge of the UGEL should prioritise the development of the leadership capability of the directors and heads of the UGEL, as well as other members with this capability, to enhance the resilience of these organisations. Courses, workshops, and executive training should also be provided.

Moreover, based on the findings regarding the influence of women directors in the UGELs' response to the crisis, more in-depth studies of female leadership from a gender perspective are recommended. Specifically, the particularities, and the influence on the response capacity of organisations facing crises and adverse events could be explored.

Finally, the article highlights the importance and potential of further studies to explore the organisational resilience drivers of those UGELs which MINEDU classified as having a high level of territorial challenge and a limited operational capacity. It is worthwhile to analyse the challenges of achieving equity within UGELs or how organisational resilience could be associated with the roles of regional and national authorities within the education sector.

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About the authors
Guiselle M. Romero-Lora is an Associate Professor of the Department of Management Sciences at Pontifical Catholic University, Peru (PUCP), Director of the Master program in Government and Public Policy and coordinator of the Research Group INNGOV. She is also a PhD student at FLACSO, Ecuador, and holds a Master of Public Policy and Management from the University of Manchester, UK. Guiselle M. Romero-Lora is the corresponding author and can be contacted at: gmromerol@pucp.edu.pe

Juan C. Rivero-Isla holds a Master's in Public Administration from UCL and a Master's in Development and Population Studies from LSE. He works as a Policy Director at the National Council for the Integration of Persons with Disabilities – CONADIS, is a Professor at the Department of Management Sciences at PUCP and is a member of the Research Group INNGOV.

Brenda E. Lopez-Chavez holds a Bachelor's degree in Public Management at Pontifical Catholic University, Peru (PUCP). She works as a consultant for the Ministry of Labour and Employment Promotion and a Teaching Assistant in Organizational Studies at the Department of Management Sciences at PUCP, and is a member of the Research Group INNGOV.