Emerging proposal for public management to address health emergencies and the importance of artificial intelligence (Propuesta incipiente de gestión pública para afrontar emergencias sanitarias e importancia de la Inteligencia artificial)

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Within the The Covid-19 pandemic is being considered for its impact on the economy and health at a global level, revealing the vulnerability of systems. Artificial intelligence (AI) will be able to provide solutions to stop, prevent and mitigate such emergencies. A qualitative methodology approach was used, focused on understanding the social phenomenon, using semi-structured interviews to explore the experiences and perceptions of specialists. It was considered that comprehensive education should include health, road safety and community participation, preparing the Peruvian population to face crisis situations. The importance of connectivity and economic formalization is emphasized to invest in infrastructures with utility to become hospital institutions sustainability for populations. It was concluded that in coherence with the information presented and the responses of the specialists, an incipient proposal for public management to face health emergencies assisted by Artificial Intelligence was obtained.
Key words: Proposal, management, emergencies, health, artificial intelligence, artificial intelligence.

Propuesta incipiente de gestión pública para afrontar emergencias sanitarias e importancia de la Inteligencia artificial

Dentro de las emergencias sanitarias se está considerando la Pandemia del Covid-19 por impactar en la economía y la salud a nivel global, está revelando la vulnerabilidad de los sistemas. La inteligencia artificial (IA) podrá aportar soluciones para frenar, prevenir y mitigar dichas emergencias. Se empleó un enfoque metodología cualitativo, centrado en la comprensión del fenómeno social, utilizando entrevistas semiestructuradas para explorar experiencias y percepciones de especialistas. Se consideró que la educación integral debe incluir la salud, seguridad vial y participación comunitaria, preparando a la población peruana a enfrentar situaciones de crisis. Se enfatiza la importancia de la conectividad y formalización económica para Invertir en infraestructuras con utilidad para constituirse en instituciones

hospitalarias sostenibilidad para las poblaciones. Se concluyó que en coherencia a las informaciones presentadas y respuestas de los especialistas se obtuvo una Propuesta incipiente de gestión pública para afrontar emergencias sanitarias coadyuvada por la Inteligencia artificial.
Palabras clave: Propuesta, gestión, emergencias, sanitarias, Inteligencia artificial

Proposta incipiente de gestão pública para lidar com emergências de saúde e a importância da inteligência artificial.

Entre as emergências de saúde, a pandemia de Covid-19 está sendo considerada por seu impacto na economia e na saúde globais e está destacando a vulnerabilidade dos sistemas. A inteligência artificial (IA) poderia fornecer soluções para conter, prevenir e mitigar essas emergências. Foi empregada uma abordagem metodológica qualitativa, com foco na compreensão do fenômeno social, usando entrevistas semiestruturadas para explorar as experiências e percepções dos especialistas. Considerou-se que a educação abrangente deve incluir saúde, segurança viária e participação comunitária, preparando a população peruana para enfrentar situações de crise. Enfatiza-se a importância da conectividade e da formalização econômica para investir em infraestrutura útil, a fim de se tornarem instituições hospitalares sustentáveis para a população. Conclui-se que, em coerência com as informações apresentadas e as respostas dadas pelos especialistas, foi obtida uma proposta incipiente de gestão pública para enfrentar emergências de saúde, com a ajuda da inteligência artificial.
Palavras-chave: Proposta, gestão, emergências, saúde, inteligência artificial, inteligência artificial, inteligência artificial

I. Introduction

Within the health emergencies, the Covid-19 Pandemic is being considered due to its impact on the economy. This pandemic is revealing the vulnerabilities in the economy and global health, causing collapses in services and increasing inequalities. In this context, artificial intelligence (AI) could be an effective solution to prevent future outbreaks, improving diagnoses and resource management. However, its implementation faces challenges in data quality and equitable access. A comprehensive strategy is proposed that includes training of health personnel, digital literacy and collaboration between governments and the private sector, thus strengthening the resilience of systems to future crises ***;*** thus, Sohrabi et al. (2020) mention that the COVID -19 pandemic has had a devastating impact on the economy and global health.

Artificial intelligence (AI) emerges as a promising solution to prevent, optimize diagnostic processes and mitigate risks of future pandemics

Regarding the management of education

Tang et al. (2020) indicate that deep learning is a specialty of AI that uses convolutional neural networks to analyze image, video, and audio data. It is also applied in the simulation of dynamic systems using reinforcement learning.

Rojas Fernández, VH (2021). focuses on administrative management and its relationship to teaching practice in public educational institutions. The author argues that effective management is essential to create an environment conducive to teachers' learning and professional development. Aspects such as planning, organization, and evaluation are discussed, emphasizing the need for an administration that supports and motivates educators.

Mei et al. (2020) mention that open source software development has become relevant, promoting collective intelligence to create high-performance programs. A notable example is Covid-Net, which uses X-rays to detect COVID-19 infections; in addition, Wang & Wong (2020) state that Covid -Net is a system that identifies anomalies in X-ray images, allowing reliable detection of respiratory problems associated with COVID-19.

Regarding Public Management in local governments and artificial intelligence:

Public management at the local level plays a crucial role in the response to health crises such as the COVID-19 pandemic. Local governments are the closest to the population and are therefore responsible for implementing policies that address the specific needs and realities of their communities. Their ability to coordinate efforts between various institutions and mobilize resources is essential to ensure an effective and timely response to emergency situations.

Albarrán-Gil JL and Majo Marrufo HR (2020) Page 32 highlight the importance of inter-institutional coordination to neutralize the impact of COVID-19 and manage the return to the new normal. They propose viable alternatives that emphasize the need for a systemic approach, where different entities collaborate for the benefit of the population. Recommendations include the establishment of clear health protocols, the use of information technologies to improve communication and education, and the implementation of measures that encourage citizen participation in decision-making; they also mentioned and proposed viable alternatives on the Neutralization of COVID-19 and how the return to the new normal should be, considering that the solution must involve the concurrence of several institutions, integrated into systems for the benefit of the population, who also expressed Recommendations

In this sense, artificial intelligence (AI) is emerging as a promising tool to optimize public management at the local level. Its ability to analyze large volumes of data can facilitate the early identification of outbreaks, improve diagnostic processes, and manage health resources more efficiently. For example, AI can be essential in contact tracing and predicting disease spread patterns, allowing local governments to react with greater agility and precision; emotional health care is also necessary in all circumstances; thus, Garay Paucar, E. Z, et al. (2021) mentioned the importance of emotional balance in municipal staff, proposing that adequate management of emotions contributes to improving efficiency and conflict resolution in the administrative field; they highlighted the relevance of coping strategies that allow employees to manage the stress and pressures inherent to their work, especially in a post-pandemic context, where social and work demands have increased.

II. Methodology

The methodology was developed with a qualitative approach, focusing on understanding social and human phenomena from a deep and contextual perspective. Instead of seeking to quantify data, it focused on exploring meanings, experiences and perceptions through methods such as semi-structured interviews of approximately 30 minutes with each of the six Peruvian experts, three of them for Education Management and three specialists for Local Government Management; both studies considering the intervention of Artificial Intelligence.

2.1. The semi-structured interview was applied for the following reasons:

Depth of Analysis : Allows for a richer and more nuanced understanding of complex issues, such as post-pandemic public management.

Contextualization: Provides a framework for understanding how policies and programs impact people's lives.

Flexibility: Facilitates the adaptation of questions and approaches as the research develops.

Troncoso-Pantoja C, Amaya- Placencia A. (2017), was used allowing:

Targeted Focus: Targeted questions allow you to delve deeper into specific topics, preventing the interviewee from straying from the objective.

Gaining valuable insights: Facilitates the acquisition of relevant information that can inform future policies and practices.

Margin of slack: so that the interview allows the interlocutors to have relative restriction on the topic with an adequate margin to address related topics without them being exactly the topic in question.

This qualitative approach was essential for the design of effective strategies to respond to emerging social needs after the possible last stages of the Covid-19 pandemic; for which some members of this research were chosen to do the respective interviews because they were aware and sensitive to the problems that the COVID-19 pandemic has meant and because they had prior knowledge.

Considering the information obtained through these interviews according to Troncoso-Pantoja C, Amaya-Placencia A. (2017) pointing out their effectiveness in collecting information on the post-Covid-19 public management proposal and its relationship with social development and artificial intelligence.

2.2. Six semi-structured and composite questions were developed: Considering the research of Meza Riquelme, M, Condori Pereyra, A & Encalada Carbajal, D (2020) suitable for each three specialists in the areas of: Education management and local government management respectively.

2.2.1. Questions for Education Management Specialists:

a. Improvements in educational management:

Is there a food culture in educational institutions ? Linked to the quality of food and consumption processes, that is, does the population know what is the minimum time and the psychosocial-cultural conditions in which food should be consumed?

a.1. In educational institutions:

Is there training on dietary practices? For example, there should be approximately half an hour to eat, in a good family environment, free of distractions; as well as the relevance of programming and curricular executions?

a.2 Demographic dynamics:

Do citizens have training in road safety? Do they know the isolation measures, their body mass index (BMI), level of anemia, and indicators linked to strengthening organic defenses? As well as the effects of the herd community ? Do they know academic institutions, NGOs and corporations that mitigate population displacement?

2.2.2. Questions for Local Government Management Specialists:

a. Connectivity:

Is there a budget to provide residents of your community with access to connectivity through broadband services for the entire population, after verifying that they have devices with the respective filters for accessing selected information? Considering virtual information to be reliable and of standardized use, are there cybersecurity plans, with severe sanctions and penalties for computer crimes?

b. Informality:

Are there policies to eradicate informality, through incentives for tax exclusion for a certain period at the start of business activity and minimum tax rates, to allow the formalization of small and medium-sized businesses?

Are there demographic policies and vertical growth of infrastructure to preserve green areas? As well as policies for risk and disaster prevention in coordination with the MTC, to prevent the population. Formation of neighborhood brigades for citizen security, treatment of waste and garbage dumps, care of green areas and plantations, mitigation of sounds and elimination of pollutants.

III. Results

To address the responses on the proposals to address a pandemic such as COVID-19 from the perspective of educational management and food culture, the following concordances were had:

3.1. For specialists in Education Management:

a. Training in Food Practices and Culture:
   - Include in the curriculum teaching about proper eating habits, emphasizing the importance of devoting time to meals, the environment in which they are consumed and the absence of distractions.
   - Organize workshops for parents and students that promote balanced nutrition in a healthy family environment.

b. Improvements in the School Environment:
   - Create spaces within institutions that encourage socializing during meals, such as well-designed dining rooms and scheduling appropriate times for eating.

c. Road Safety Education:
   - Develop road safety education campaigns in schools to encourage respect for traffic regulations and improve student safety when travelling.

d. Knowledge and promotion of public health:
   - Include information on isolation measures, public health, and how they relate to pandemic control in the school curriculum.
   - Teach students about Body Mass Index (BMI), anemia, and the importance of a strong immune system.

e. Community Strengthening:
   - Encourage participation in community campaigns that promote vaccination and the creation of collective immunity (herd community).
   - Provide information on NGOs and organizations working to mitigate population displacement, integrating this knowledge into school projects.

That is to say: The proposed responses highlight the need for a comprehensive education that addresses not only nutrition and physical health, but also road safety and community participation. This not only prepares students to face crisis situations, such as a pandemic, but also contributes to forming more informed and responsible citizens.

3.2. For Local Government Management Specialists :

a. Connectivity

a.1. Connectivity Budget:

- Investment in Infrastructure: Allocate a percentage of the local budget to improve connectivity infrastructure, ensuring that all citizens have access to broadband services.

- Device Distribution: Implement subsidy or donation programs for devices (such as tablets or computers) for low-income residents, guaranteeing access to information.

b. Cybersecurity Plans:

- Development of Cybersecurity Strategies: Establish plans that include cybersecurity training for the population, with an emphasis on identifying reliable and secure information.

- Legislation and Sanctions: Enact laws with severe sanctions for cybercrime, including establishing mechanisms to report and prosecute such conduct.

c. Education on Virtual Information:

- Digital Literacy Training: Offer courses and workshops that teach the population to navigate online information critically and effectively, to discern between reliable and unreliable sources.

d. Informality

d.1. Policies to Eradicate Informality:

- Tax incentives: Implement policies that offer a tax exemption period to new companies, facilitating the formalization of small and medium-sized businesses.

- Consulting and Training: Provide technical assistance and training to entrepreneurs on how to formalize their businesses and the benefits that this entails.

The formalization of informal companies will allow the state to collect greater economic resources to invest in infrastructure with the purpose of becoming (through a contingency plan) sustainable hospital institutions for the population.

d.2. Vertical population growth and conservation of green areas:

- Sustainable Urban Development Policies : Promote the vertical growth of infrastructure through regulations that prioritize the conservation of green areas and environmental sustainability.

- Green Areas and Public Spaces: Ensure the creation and maintenance of parks and green areas, which serve as spaces for recreation and mitigation of environmental risks.

e. Risk and Disaster Prevention Policies:

e.1. In coordination with the Ministry of Transport and Communications (MTC): Establish disaster prevention and response plans in collaboration with the Ministry of Transport and Communications (MTC), with emphasis on the safety of the population.

e.2. Formation of Neighborhood Brigades: Create and train neighborhood brigades for citizen security, waste management and environmental protection, promoting active community participation in these initiatives.

That is to say: The responses and proposals underline the importance of connectivity and economic formalization in preparing for pandemics; so that when there are economic resources to invest in infrastructure, it can be done in the area of education with utility (through a contingency plan) for hospital or health institutions for the health of the population; with sustainability policies, local governments can not only strengthen the resilience of their communities, but also improve their response capacity to health and social crises.

IV. Discussion

The emerging proposal for public management to deal with health emergencies and the importance of Artificial Intelligence focuses on the creation of an effective public management framework to deal with health emergencies, such as COVID-19. It is argued that artificial intelligence (AI) can improve data collection and analysis, as well as the prediction of outbreaks. It is suggested that AI training for public officials is essential, as well as collaboration between sectors to ensure a comprehensive and effective response to future health crises.

Public management for social development faces similar challenges to those mentioned in the studies on Covid-19. The implementation of AI can optimize processes in the field of public health, allowing for more informed and data-driven decision-making. Like testing for the virus, social development initiatives require robust data collection and analysis, which can benefit from the use of advanced technologies.

Artificial intelligence (AI) is defined as a discipline of computer science that uses learning models inspired by human neural networks. Thanks to technological advances, "intelligent" systems have been developed that are capable of processing large volumes of data quickly, improving decision-making. AI covers areas such as voice recognition, natural language processing and computer vision, and is complemented by machine learning and deep learning techniques, which allow models to be optimized and massive amounts of information to be processed **.**

Discussions regarding information on education management:

It is important to compare this research with those of Romero, V., et al. (2020) who mention that the Covid-19 Pandemic has impacted university education in the country, highlighting the transition to remote learning. Despite social isolation and lack of familiarity with digital tools, the opportunity for teachers to transform the crisis into an educational experience is identified. The key lies in the pedagogical strategy and student motivation.

For his part, Villela Cervantes, CE (2018) mentions that preventive education and food culture in the context of virtual education, which was widely used during the Covid-19 pandemic, is based on the use of advanced technologies and second-order cybernetics, which studies communication systems in living beings and their application to information. This article aimed to explore the relationship between virtual education and the sciences of complexity. In the knowledge society, new learning models emerge that challenge traditional approaches, highlighting the need for universities to offer more blended and virtual programs, as well as courses on open access platforms.

Although complexity sciences are not yet the dominant paradigm, it is essential to examine the model of virtual education and online learning. To do so, inter-, multi- and transdisciplinarity must be encouraged in educational processes, moving away from the traditional disciplinary approach. According to Velásquez Monroy, BR, et al. (2021), the text highlights the importance of the connectivist theory in the contemporary educational context, especially after the challenges presented by the COVID-19 pandemic. Public education management, in this new panorama, must recognize and adapt its strategies to this theory, which emphasizes the creation of collaborative networks for learning.

The descriptive methodology used for the analysis, based on the work of George Siemens and scientific articles, provides a solid basis for understanding how connectivism can be implemented in the classroom. This approach is crucial in the post-pandemic, where ICTs have become essential tools that allow students and teachers to interact more dynamically and effectively.

Connectivism is aligned with the need to develop critical competencies in students, such as the ability to research, evaluate and select information, skills that are increasingly necessary in a world saturated with data. ICTs not only facilitate access to information, but also promote active learning, where the student takes a leading role. In short, public education management must incorporate the principles of connectivism to foster more flexible and collaborative learning, leveraging ICT to enrich the educational process. This not only improves the learning experience, but also prepares students to face a constantly evolving work environment.

Velásquez's (2020) work invites us to reflect on the future of education in a post-pandemic world, highlighting the importance of integrating technology in an inclusive and effective way to promote meaningful and equitable learning. His analysis is relevant to consider how the lessons learned during this period can influence education in the long term; furthermore, according to Andrade, J., Bonilla, L., & Valencia, Z. (2011): both education and health come together to address situations such as school aggression or bullying, which can have multiple perspectives , that is, from various psychological approaches.

Furthermore, according to Vidal Ledo, M., et al. (2021) mentioned the Impact of Covid-19 on Higher Education and analyzed how the Covid-19 pandemic transformed higher education, focusing on medical education. The authors highlight the rapid transition to online teaching and the challenges faced by students and faculty, such as lack of access to technology. They also address the long-term implications for medical education, underlining the need to maintain quality standards and incorporate digital tools in future teaching; also Díaz, M.A.A., et al. (2019) examined various learning strategies in the university context, such as collaborative learning and gamification. The authors emphasize the importance of adapting these methodologies to the needs of students to improve their performance and encourage meaningful learning. They also discuss cultural and social factors that influence the choice of strategies, offering recommendations for innovation in educational practices.

For their part, Ponjuán Dante, G., & Torres Ponjuán, D. (2021) in their work on Managing ignorance to manage knowledge: an organizational necessity, address the management of ignorance in organizations and its relationship with knowledge. They argue that recognizing areas of ignorance is crucial for

effective knowledge management. They propose strategies to identify gaps and foster a culture of continuous learning, highlighting the use of technologies that facilitate collaboration and information sharing to improve decision-making and drive innovation.

Public Management for Social Development with AI:

The integration of AI in public management for social development has notable similarities with its application in the health context, such as the management of the Covid-19 pandemic. Just as AI optimizes diagnoses and treatments, it can improve decision-making in public policies, allowing for a more agile and informed response to social challenges.

Garay Paucar, E. Z, et al. (2021) complements the public management proposal by highlighting that, in addition to implementing technologies such as artificial intelligence, it is crucial to consider the emotional well-being of staff. The integration of AI systems must be accompanied by an approach that promotes emotional balance, since a balanced and motivated staff can more effectively use technological tools for decision-making and improving social management; in addition, according to Zacca González, G. (2018), it is important to achieve the quality and visibility of publications; with preference for information linked to or referring to the topic in question; even more so when said information is of quality, backed by information published in immediately accessible sources belonging to reliable databases such as Scopus, Web of Science, Doaj, Redalyc and others that can be found on the Internet.

Also, Rojas Fernández, V. H. (2021). His article relates to the public management proposal by suggesting that improving administrative management is vital for social development, especially in the post-pandemic context. The implementation of artificial intelligence can optimize administrative processes, but must be accompanied by a clear understanding of how these changes affect teaching practice and the school environment. The proposal underlines the importance of a comprehensive approach that combines technology with human-centered management, ensuring that both teachers and students benefit from technological innovations in the educational field.

For their part, Verdegay, J, et al. (2021) present a proposal aligned with the needs to establish ethical guidelines and theoretical models that guide the use of AI in public management. Both approaches highlight the relevance of avoiding dysfunctions in automated decision-making and advocate for a development that enhances human capabilities rather than replacing them. Likewise, the proposal highlights the context of the pandemic as a catalyst for rethinking social management structures, which complements the discussion on how AI can be a valuable tool in the recovery and improvement of social systems.

V. Conclusions

In accordance with the information presented and the responses from specialists, an incipient Proposal for public management to deal with health emergencies was obtained (taking as a reference the Covid-19 pandemic, which is expected to be overcome) assisted by Artificial Intelligence.

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