

The Impact of the Covid-19 on the Provision of Public Services: A Survey Study on the Water and Sanitation Company in Giza

تأثير فيروس كورونا على تقديم الخدمات العامة:
دراسة استقصائية على شركة المياه والصرف الصحي بالجيزة

Nivein Wahdan *

nivein.wahdan@must.edu.eg

Abstract:

Global developments and transformations have brought about many changes across various countries, particularly in developing nations, manifested in globalization, the communications revolution, the effects of international agreements, and global economic and trade openness.

The emergence of the COVID-19 pandemic is one of the most significant developments experienced worldwide, creating an urgent need for governments to seek effective solutions to meet the needs of their citizens. This study aims to examine the impact of the COVID-19 pandemic on the provision of public services, focusing specifically on the case of the Water and Sanitation Company in Giza, Egypt.

The study begins by shedding light on the development and spread of the coronavirus and its effects on the government sector in general and public service delivery in particular, followed by an analysis of the major problems faced by the governmental apparatus. Numerous weaknesses related to administrative and organizational systems were identified. Additionally, the field study assessed and analyzed the impact of the pandemic on public service delivery.

This study employed a descriptive-analytical approach to present and analyze the data collected; a total of 126 questionnaires were distributed to senior management and officials at the Water and Sanitation Company in Giza.

* دكتوراه الإدارة العامة والمحلية - جامعة مصر للعلوم والتكنولوجيا.

The study concluded with a presentation of the key findings from the field study, which highlighted a significant lack of sufficient attention to technical or managerial training for employees at the Water and Sanitation Company to cope with the challenges posed by the crisis (with 98% of the sample expressing this view), resulting in an inability to manage administrative and organizational problems and diminishing performance effectiveness.

Furthermore, 95% of the sample indicated that poor work performance is linked to inadequate financial returns, necessitating a reconsideration of the wage and incentive system within the public sector. Additionally, the lack of adequate financial resources and support weakens government agencies and limits the willingness of administrative units to expand and develop services for citizens, with this issue ranking third, as noted by 93% of the sample. This ranking logically reflects the most significant problems faced by the administrative apparatus during the COVID-19 crisis.

Keywords: COVID-19, Pandemic, Public Sector, Giza water and Sanitation Company, Public services.

ملخص:

فرضت التطورات والتحوّلات العالمية الكثير من التغييرات على دول العالم المختلفة وبشكل خاص النامية منها والمتمثلة في العولمة وثورة الاتصالات والآثار الناجمة عن الاتفاقيات الدولية والانفتاح العالمي والاقتصادي والتجاري.

ويعدّ ظهور جائحة كورونا من أهم التطوّرات التي شهدتها دول العالم ككل وأصبح هناك حاجة ملحة للبحث عن حلول فعالة تستطيع من خلالها الحكومات سد احتياجات مواطنيها. تأتي هذه الدراسة لدراسة أثر جائحة كورونا على تقديم الخدمات العامة بالتطبيق على الحالة المصرية والمتمثلة في شركة مياه الشرب والصرف الصحي بالجيزة. فتبدأ الدراسة بإلقاء الضوء على تطور ونمو فيروس كورونا وأثره على القطاع الحكومي بصفة عامة وتقديم الخدمات العامة بصفة خاصة ثم دراسة أهم المشاكل التي عانى منها الجهاز الحكومي. فهناك الكثير من نقاط الضعف المتعلقة بالنظم الإدارية والتنظيمية. كذلك تناولت الدراسة الميدانية تقييم وتحليل أثر جائحة كورونا على تقديم الخدمات العامة.

واعتمدت هذه الدراسة على المنهج الوصفي التحليلي في عرض وتحليل البيانات التي تم جمعها؛ حيث تم توزيع عدد (126) استمارة على مديري الإدارات العليا والمسؤولين في شركة مياه الشرب والصرف الصحي بالجيزة.

واختتمت الدراسة بعرض أهم النتائج التي توصلت إليها الدراسة الميدانية التي ركزت أن هناك عدم اهتمام كافٍ بالتدريب الفني أو الإداري للعاملين في شركة مياه الشرب والصرف الصحي بالجيزة للتعامل مع متغيرات هذه الأزمة (بنسبة 98% من آراء العينة محل الدراسة) مما أدى إلى عدم القدرة على التعامل مع المشاكل الإدارية والتنظيمية داخل الإدارات وأفقدتها فعالية الأداء.

كما أكدت مفردات العينة (بنسبة 95%) على أن ضعف الأداء في العمل يرتبط بضعف العائد المادي مما يستلزم إعادة النظر في نظام الأجور والحوافز داخل القطاع

الحكومي. بالإضافة إلى أن عدم توافر الموارد المالية المناسبة والدعم المالي يؤدي إلى ضعف الأجهزة الحكومية ويحد من رغبة الوحدات الإدارية في التوسع والتطوير لخدمة المواطنين واحتلت هذه المشكلة المركز الثالث بنسبة 93% من آراء العينة. وبحق فإن الترتيب يعد منطقيًا لأهم المشكلات التي واجهت الجهاز الإداري خلال أزمة كورونا.

الكلمات المفتاحية: كوفيد-19، جائحة كورونا، الجهاز الحكومي، شركة مياه الشرب والصرف الصحي بالجيزة، الخدمات العامة.

Introduction:

1.1 BACKGROUND OF THE Study:

Due to globalization, social and environmental challenges, communication revolution and the effects of international agreements, most of the governments in the entire world were actively seek for an effective and efficient policy to can satisfy the needs of its society.

Particularly in Egypt, the government recently devoted to imply electronic techniques and good governance mechanism. Nevertheless, unfortunately, COVID-19 appeared in Wuhan, a city in China, in December 2019. It is quickly spread and distribute around the globe. This growing worldwide transmission is what a pandemic is now (Lauren M. Sauer, 2021)

In mid-May 2020, most of the government plans has been delayed as the effect of COVID-19 have been noticed on the entire world.

Nevertheless, lock down put negative impact on the economic sector as well as the social dimensions; it was really a shock when billions of people have been called to stay at home. There was no expectation or re planned policies arranged to can face the effect of this pandemic on the development at all. Although prior to a crisis and certainly during the early stages of a crisis or disaster, organizational preparation and strategic planning can reduce or limit the impact to the crisis (Burnett, J. (1998).

No doubt, that Organization with a team-centred approach will manage crisis more effectively than those that rely solely (Penrose, J.2000)

So currently, all the countries around the world are combining by the force of the current waves of COVID-19.

1.2 STATEMENT OF THE STUDY

Although various government interventions efforts in Egypt to can overcome the sudden shock of COVID-19, the delivery of public services to the society has remained poor in performance and low in efficiency.

It is known that, the Giza water and Sanitation Company in Egypt is one of the important public sectors there, but it needs more trained and highly designed policies in order to reach the expected role in delivering the public services to its society. Therefore, the study problem is to identify the impact of covid-19 on the delivery of public services and how to overcome the weakness points arise through the field study. However, the dimensions of the research will illustrate the problems that face the public employee and how it affects the delivery of the services.

Thus, the study seeks to answer this main question:

Determining the extent of the link between the government capacity to provide public services to citizens, and reforming the administrative, organisational and financial aspects. In order to answer this question we need to have these sub- questions

(A) To what extent the government delivery services have been affected by the pandemic of COVID-19.

(B) What is the managerial, financial and technical problems that is faced by the public employee and prevent them to reach the optimum level of performance in delivery public services to the society?

In order to answer these questions, the research will highlight the beginning of the pandemic, how it affects the public services and the role of the government to can overcome the previous problems.

1.3 Importance of the STUDY

The importance of study arises due to the topic of COVID-19 and how it gets the world attention during the pandemic . No doubt that, there was a fear-ness of the virus all around the world that affect people's lives and the ability of the governmental institutions to drive human development. Currently, although the number of COVID-19 cases in Egypt compared to other countries was low, but the public sector has suffered in providing the public services to its society.

Thus, the importance of the study was followed from two aspects:

A-first, the academic scientific side related to the theoretical aspect, which was concerned with presenting the theoretical frameworks and previous studies related to the subject of research, in addition to providing the database and scientific information for those interested and researchers about the impact of the Corona virus on the provision of public services to citizens.

B- Second, the practical field side through the application of ideas and recommendations for improving the performance of the administrative apparatus during the face of the Corona crisis, which can be a reference for facing various crises in the future, as the study ended with the most important problems that hinder the provision of public services to citizens efficiently and effectively. Also the study included some administrative, financial and organizational aspects of the administrative apparatus of the Egyptian state

So, The importance of the research not only because it is considered from the first studies-within the limit to the researcher's knowledge-that highlight

the effect of COVID-19 on the delivery of public services but also it may help decision –makers through the recommendations of the study reaches to it can cure the defects that happens on delivery of public services since the pandemic happens and overcome any future crisis through an effective and efficient policies .

1.4 OBJECTIVES OF THE STUDY:

The broad objective of the study is to assess the impact of the COVID-19 on delivering the public services.

The specific objectives of the study are as follows:

-Provide adequate facts about the impact of the COVID-19 on the delivery of public services.

-To highlight the relation between COVID-19 and the effectiveness of the public servants in satisfying the needs of the society.

-To determine the problems that face public employee in the water and wastewater sector in Giza that prevent them from working effectively through the pandemic.

1.5 HYPOTHESES:

Scientific hypotheses are an attempt by the researcher to explain a particular phenomenon that requires a test to ensure its validity, as it is expectations assumed by the researcher by putting forward the variables of the study problem, which aims to test it to ensure the sincerity of the results that have been expected to be reached. That indicates the validity of the researcher's interpretation of the reality of the problem at hand.

Therefore, the study based on two main hypotheses as follows:

A-First hypothesis: predicted that the effectiveness of the public services in delivering public services during COVID-19 cannot be improved due to the failure of the managerial and organizational levels.

B-Second hypothesis: predicted that weakness in the performance of the public service delivery to the society is related to the rigid job structure and lack of domestic financial resources in the managerial units.

1.6 SCOPE AND LIMITATION OF THE STUDY:

The study addressed the impact of the COVID-19 on delivering public services by applying the questionnaire on the water and Sanitation Company in Giza (place of study)

In spite of the subject of the study being too broad, it only focuses on referring appropriate governmental policies to overcome the pandemic of corona virus and reform the delivery of public services.

The time for distribution for the questionnaire -the tool for the data collection chosen by the researcher- is from 1 January 2024 to 31 January 2024.

2.0 REVIEW OF RELATED LITERATURE

2.1 CONCEPTUAL FRAMEWORK

Due to the sudden, exist of the pandemic to all the countries, COVID-19 can easily crake the services that has been delivered by the public sector. It makes a huge gap between perceived services and expected ones. In overall, Government performance in Egypt was regarded positive in the health sector but on the other hand, many other sectors have been negative outcomes. However, During COVID-19 pandemic many countries take a lot of steps in order to apply the rules of good governance for the sustainable recovery and building a new normal life once the crises has passed (OECD, 2020).

Responsiveness is one of the important components of good governance, where the customer services willingness to help customers and to provide prompt service (AWOKE, 2020).

2.1.1 HOW TO ENSURE AN EFFECTIVE RESPONSE TO THE PANDEMIC

According to united nations (Department of Economic and Social Affairs (UNDP, 2020): there are nine key roles public servants have been and must continue to play to ensure an effective response to the pandemic as follows:

- A) Ensuring continuity of public services
- B) Providing service before self-courage and humanness in practice
- C) Quick thinking, creativity and innovation
- D) Information and awareness creation
- E) Strategic thinking

F) Building and enhancing state legitimacy, government credibility and people's trust-Matching with these keys (Naumann&Giel,1995) discussed that there is a correlation between employee satisfaction and both internal &external customer satisfaction.

2.2 characteristics of the Public sector Services during the pandemic:

During quarantine and social distancing people all over the world, suffer from deficiency on delivering the public Services. Fundamental change happened for almost all the public sector employee, where and how they work. Moreover, the medical procedures that must be applied through dealing face to face in the work place with the customers. It is clear that the community differ than before, there was a need to increase distance between people, postpone any large gatherings and holding any conference.

So, modifying tradition work systems become not a choice, it is the only a way to can deal through this pandemic. The availability of effective performance of data and electronic tools for the public employee become more important than ever.

2.2.1 THERE ARE FIVE CHARACTERSITCS OF THE EXPECTED PUBLIC SERVICES :(Palmer,1994)

- A) Intangibility
- B) Inseparability
- C) Variability
- D) Owner ship

2.2.2 THERE ARE SEVERAL PREVIOUS STUDIES THAT HELPED THE RERESARCHER ON THESE STUDYAS FOLLOWS:

First, A Angelou Article (2024) which examines the link between the response of the Eurozone to the crisis and the EU, s economic management to the Covid-19 pandemic.

Also, The study of (Angelos Angelou, Stella Ladi, Dimitra Panagiotatou, Vasiliki Tsagkroni, 2023) the article attempts to explain the efficient implementation of arduous public policies during the pandemic and how citizens welcomed policies coming from experts rather than policymaking.

Third, the study of Brendan J Carroll, Lars Brummel, Dimiter Toshkov, Kutsal Yesilkagit (2023), it indicates the coordinated actions needed from the government at all levels in response to the pandemic.

Also, the study of Keegan McBride, Anastasiga Nikiforova, Martin Lnenicka (2023), it declares how open government data can be used as a valuable crisis management tool.

Then, the study of (Stella Ladi, Angelos Angelou, Dimitra Panagiotatou, 2022) analysing the handling of the pandemic's first phase in Greece.it highlights the effective response to the crisis which have driven from European countries with the pandemic. In addition, it attempts to explain how countries with limited resources and weak administrative system can apply new challenges to its management.

The study of (Irman, Omar M. L,2020) highlights a detail information on COVID-19 and discussed advanced methods of prevent and management the pandemic. This study may be useful to create awareness among the public to prevent, manage and treat COVID-19.

In addition, there is (Amirhoshang H.Deh kordi etal, 2020) study, it highlights the effectiveness of the corresponding policies by the countries to help in future pandemic analysis.

Moreover, the study of (Jialin Liu,Siru Liu. ,2020) describes the initial assessment and management of COVID-19and the contents of the management of COVID-19 are introduced.

In addition, study of (David J. Hauston, 2005) found that government employees are more likely to volunteer for charity and to donate blood than for-profit employees are.

Last, we have (Stephen P.Osborne, Kerry (2005). This study aims to provide its readers with the skills necessary to understand manage and sustain change and innovation in public service organization.

2.3 THE IMPACT OF COVID-19 ON THE GOVERNMENTAL ROLE:

During a crisis, citizens, media representatives, lobby groups, public administrators and private organizations all look to government to make sense of what is going and to do something to restore order (Arjen Boin, 2007). Moreover, Although COVID-19 is a health shock to the entire world but it causes severe economic and social crisis.

This crisis is also a reminder of our core relationship with nature: we are all part of and depend upon a complex web of life that we have put under heavy stress (Mc Mahon, 2020). Therefore, the actions that would be taken by the government must be bolder and more coordinated.

In effect, of COVID-19 crises, most of the countries are in sudden lock down and governments' authorities are busy to can have a strong health system parallel to a stable economic policy.

Accordingly, in Egypt, public sector is already testing by COVID-19 and how it will struggle to overcome the negative effects on its services.

Along the same, before COVID-19 existed, the public sector in general was suffering from having an appropriate wage scale for the employee, lack of retraining, centralized strategy and unfair employment law. In addition, regarding the virus spread there was not any incentives to motivate employee to work under fear-ness and worry of infection.

Thus, the government have to implement new version of policies that is more sensitive to the effects of COVID-19.

2.4 THE ROLE OF PUBLIC EMPLOYEE DURING THE COVID-19:

The outbreak of the COVID-19 pandemic has affected most of the developed countries and developing one as well. Therefore, we cannot deny the life-threatening environment around the entire public employee in any government institution.

Moreover, the society expect from the public employee and the government at all to have fully implementations of their services in spite of any danger. Moreover, although this crisis, most of the public employee are putting their lives at risk in order to continue performing their work effectively.

3.0 RESEARCH METHDODOLOGY OF THE STUDY:

3.1 RESEARCH DESIGN

After we discussed the theoretical framework of the study on the previous pages and ends up with the important key factors that will be measured. We will examine the hypothesises of the study that mentioned before. We will begin by research approach, sampling frame, source of data and data collection techniques then end up with the analysis of the hypothesises and its results.

3.1.1 RESEARCH APPROACH:

The study depends on descriptive and explanatory research methods to identify the factors affecting the public services delivery after the influence of COVID-19.

3.1.2 SAMPLING FRAME:

The sampling frame of the study includes the employee on Giza water and Sanitation Company as an example of the public sector in Egypt.

This study comes after doing an exploratory study where the research finds how it is a vital public institution. As it controls the delivery of water in all Giza and affects a large sector of the society.

3.1.2.1 SAMPLE OF THE STUDY

The number of the employee in the selected field study involving the upper and middle levels of the company (Director of Department and Head of Department) that are highly communicated with the society, mentioned as follows:

Employee	Number
Director of Department	63
Head of Department	80
Total	143

Table (1.3): represents the number of samples chosen for study.

The calculation for the required sample size will be as follows:

$$P=0.5 \text{ and hence } q=1-0.5=0.5$$

$$E=0.05$$

$$Z=1.96$$

Where, p:population,N:sample size ,z :confidence level at 95%(standard value of 1.96) ,

Pq : variance of population ,e :allowable error

$$\text{Sample size (N)} = \frac{(z\text{-score})^2 \times \sigma \times (1-\sigma)}{(\text{margin of error})^2}$$

Assuming that 95% confidence level (± 0.5)

$$\frac{(1.96)^2 (0.5) \times (0.5)}{(0.05)^2} = 384.6 \approx 385 \text{ respondent}$$

Where

$$\frac{N \times Z^2 \times R (1 - R)}{Nd^2 + Z^2 \times R (1 - R)}$$

Where

N: Population

q : (1-r)

d =standard deviation 0.5

$$\frac{143(1.96)^2 \times (0.5) (0.5)}{143(0.05)^2 + (1.96)^2 \times (0.5) (0.5)} = 105$$

Thus, the sample of the study is 105, the researcher increased it by 20% for the caution to be more accurate and well represented sample.

The sample will be $105 \pm (105 \times 0.20) = 126$.

Therefore, the questionnaire form will be held on 126 public employees.

3.1.3 SOURCE OF DATA:

The data on this study depends on both primary and secondary data sources.

3.1.4 DATA COLLECTION TECHNIQUES AND INSTRUMENTY:

The study depends on questionnaire on collecting data. The questionnaire was first constructed in English and then translated into Arabic with similar meanings to can be easily understood by the employee without any personal interaction.

3.1.5 INSTRUMENT VALIDITY AND RELIABILITY:

To establish the validity of the questionnaire, the researches asked academics to judge the accuracy, the content and the appropriateness of the items.

As for the questionnaire, the researcher calculated Cronbach alpha for all the areas to test the reliability for each area.

3.2 DATA ANALYSIS AND DISCUSSION:

The data obtained from the field of study were presented and analysed with descriptive statistics to provide answers for the research questions while the corresponding hypotheses were tested with Pearson product moment correlation coefficient, Pearson chi square, and Pearson's correlation and linear regression at 0.05 alpha levels.

3.2.1 FIRST: The statistical results concerns of examining the first hypothesis:

The Requirements of Managerial and Organizational Level (First Hypotheses)

To clarify the matter, the study classifies the managerial and organizational policies needed for the reform of the delivery of public services as follows:

3.2.1.1 A) REQUIREMENTS CONCERNING THE WAGES AND INCENTIVES:

Degree Of Acceptance Variables	Strongly Agree	Agree	Neutral	Strongly Disagree	Disagree
1-The public employee doesn't get enough wage to work especially under pressure	80 64%	10 8%	33 26%	3 2%	--
2-There is clear motivation system for the employee	70 55%	30 23%	3 2%	12 10%	12 10%
3-The reform of wages system directly affect the performance and outcome of the employee	100 79%	20 16%	6 5%	-	-

Table (2.3) classify the results of the questionnaire applied on the selected sample about wages and incentives.

The demographic characteristics of focused group discussion were discussed as follows based on the figure in Table (2.3): Basically, the sample of the employee worked in Giza water and Saitation company agreed that there is no enough wage for them, as the percent of the agreed employee are (72%) from the total number of the sample and also (78%) agreed that there is no motivation system to can encourage them to effectively work under COVID-19 pandemic. At last, (95%) agreed that the reform of the wages directly affect the performance and the outcome of the employee.

Thus, from the above analyses we can observe that weak economic frame of the public employee has its negative effect on the performance of its employee.

3.2.1.2 B) Requirements concerning training:

Degree Of Acceptance Variables	Strongly Agree	Agree	Neutral	Strongly Disagree	Disagree
1-No formal training are applied including supervisor y and co-worker during the pandemic	69 55%	52 43%	3 2%	1 Zero	1 Zero
2-No enough concern to hire technical specialists to train the employee on highly working methods	70 55%	30 24%	20 16%	6 5%	-
3-There is a lack in the number of employees who knows how to deal with the new electronic business tools	100 79%	20 16%	6 5%	-	-

Table (3.3) clarify the opening of the selected sample concerns the training.

3.2.1.3 Statistical observation

It is clear from the previous table that (98%) of the sample agreed that there is no formal training applied in all the managerial levels, also (78%) agreed that there is no enough care of the technical training and (71%) agreed that there is no trained employee who knows to deal with the new electronic tools.

And above these, through the researcher interviews with some of the sample from the supervisors and co-workers from different managerial levels they declared that they did not receive any training courses on the high technical tools to can serve the customers especially during the pandemic although the company issued an application for the citizens to can ask for available services but unfortunately it doesn't serve its purpose effectively.

3.2.2 SECOND: The statistical results concerns of examining the second hypothesis:

The Weak Performance of the Public Service delivery to the Society is related To Rigid Jobs Structure and Lack Of domestic Financial Resources in the managerial units.

Degree of Acceptance Variables	Strongly Agreed	Agreed	Neutral	Strongly Disagree	Disagree
1) No domestic financial resources for the managerial 1 units to implement its goals	70 55%	30 23%	3 2%	12 10%	12 10%
2) Government doesn't give enough financial support to the managerial units	58 29%	36 46%	10 8%	19 15%	3 2%

Table (4.3) represents the opinion of the selected sample regarding the organizational financial resources

3.2.2.1 The statistical observations concerns of the financial resources:

To have effective public institutions capable of deliver the public services to the citizens in highly professional way, it must have its domestic financial resources. Thus there are amount of (78%) has been agreed about that, (2%) are neutral and only (12%) disagreed.

In addition, about (75%) has agreed that the government does not give any financial support to the managerial units, (8%) are neutral and (17%) are disagreed.

3.3 SUMMARY OF FINDINGS:

3.31 Arrangements of the problems that negatively affect the delivery of the public services according to its importance:

Arrangements of the problems	Problems percentage
1-No formal training applied including supervisory and co-workers during the pandemic	98%
2-Reform of the wages system directly affect the performance and outcome of the employee.	95%
3-No domestic financial resources for the managerial units.	93%

Table (5.3) represents the arrangements of the problems affecting the delivery of public service.

No doubt that these arrangements of the problems are considered very logic as the importance of the formal training of the employee that can help them easily serve the citizens to have their services comes at the first problem, then the importance of the wages arise to have the second problem. Then at last, the problem of the lack of the domestic financial resources comes to be the third.

3.4 CONCLUSION

From the previous statistical results, we can conclude that:

1 -The shape of technology must be changed to a suitable new one to be the bridge between face-to-face policies and on-line services.

2 -Government must understand the strong interaction between health care, economy and public sector so it has to take some series of actions to improve its poor policies in order to reform its performance as follows:

A-Improve the wages system of its employees

B- Applying the rules of good governance in responding to the impact of COVID-19 on the public sector in general.

C-Supporting employee to improve their technical knowledge by allowing them training courses to modify their skills to can overcome the terrible risk of the direct contact between people during this pandemic.

D-Modify tradition works methods to be on line and access the internet technology policies.

E-Allow managerial units with their own financial resources to be free in determining their needs away from the centralized budget of the government.

3.5 RECOMMENDATIONS:

There are some recommendations that may help in reforming the delivery of public services to the citizens as follows:

- Government must be fast –tracking to deal with any shock or tensions that may affect its policies.
- Government must set up Emergency plans for every service that are mostly needed to the society to can help to deliver the services without any delay.
- Government must support new plans and rules of good governance to heal any defect that may attack its policies through redesigning the old ones.
- Create new interaction channels with the citizens that prevent direct and face-to-face interactions through SMS, Phone Applications. Etc.
- Government must prepare many scenarios on how the Public servant can do the required tasks without any delay.
- --Finally, we are sure that COVID-19 had been over like other past pandemics, after the treatment had been allowed. Sure, there will be a mark and unforgettable lesson for the humans and countries as well.

References:

- Amirhoshang Hoseinpour Dehkordi, Majid Alizadeh, Pegah Derakhshan, Peyman Babazadeh & Arash Jahandideh. (2020). Understanding epidemic data and statistics: A case study of COVID-19, *Journal of Medical Virology*, Retrieved April 24, 2020 from <https://doi.org/10.1002/jmv.25885>.
- A Angelou (2024), *Linking Crises: inter-crisis learning and the European commission's approach to the National Recovery and Resilience plans*, *Comparative European Politics*, 2024
- A Angelou, S Ladi, D Panagiotatou, V Tsagkroni, (2023), *Blackwell Publishing Ltd, Public Administration*, 2023
- Arjen Boin, Allan McConnell. (2007). Preparing for Critical Infrastructure Breakdowns: The Limits of Crisis Management and the Need for Resilience, *Journal of Contingencies and Crisis Management*, Vol.15, Issue.1, PP.50-59 Retrieved February 28, 2007 from <https://doi.org/10.1111/j.14685973.2007.00504.x>.
- Awoke, Habtamu Mekonnen 2010. *The quality Of Service Delivery and Customer Satisfaction. The practice and case of Banking Industry*, VDM, 2010.
- Brendan J Carroll, Lars Brummel, Dimiter Toshkov, Kutsal Yesilkagit (2023), *Regional Federal Studies*, 1-22, 2023
- Burnett. (1998) "A Strategic Approach to Managing Crises", *Public Relation Review*, Vol.24, Number 4. PP.475-486.
- David J. hauston (2005), "Walking the Walk", *Of Public Service Motivation: Public Employees and Charitable Gifts of Time, Blood and Monee* *Journal of Public Administration Research and Theory*, Volume 16, Issue 1, January 2006, Pages 67-86, <https://doi.org/10.1093/jopart/mui028>
- Imran Ali, Omar M.L. Alharbi. (2020). COVID-19: Disease, management, treatment, and social impact, *Science of The Total Environment* Vol.728, Issue.1, PP.1-6 Retrieved April 22, 2020 from <https://doi.org/10.1016/j.scitotenv.2020.138861>.
- Jialin Liu, Siru Liu. (2020). The management of coronavirus disease 2019 (COVID-19), *Journal of Medical Virology*, Retrieved May 05, 2020 from <https://doi.org/10.1002/jmv.25965>.
- Keegan McBride, Anastasiga Nikiforova, Martin Lnenicka (2023), *Information Polity* 28(2), 2023
- Lauren M. Sauer, M.S, *What is Coronavirus?* John Hopkins University, The Johns Hopkins Hospital, 2021 at hopkinsmedicine.org/health/conditions-and-disease/coronavirus.

- MC Mahon, J. 2020. study, Coronavirus lockdown, likely saved 77,000 lives in china just by reducing pollution, forbes, 16 March, <http://www.forbes.com/sites/jeff-mc-mahon/2020/03/16/coronavirus-lockdown-may-have-saved-77000-lives-in-china-just-from-pollution-reduction/#3e7a6bdf534fe>.
- Naumann, Earl & Giel (1995), "Customer Satisfaction Measurement and Management", ASQ, Quality Press, PP.374-376.
- Palmer, Adrian (1994), "Principles of Services Marketing, McGraw-Hill International Ltd, PP.3-7
- Penrose. (2000), "The Role of Perception in Crisis Planning", Public Relations Review, Vol.26, Number 2, PP.155-171.
- <https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/pb79-2020-June>.
- Responding to COVID-19, 2020, The Rules of Good Governance apply now more than ever, OECD, P.15.
- (Stephen P. Osborne, Kerry (2005,), Managing Change and Innovation In Public Service Organizations, Taylor Francis e-library, 2005.
- S Ladi, A Angelou, Panagiotatou (2022), Regaining trust; evidence – informed policymaking during the first phase of the Covid-19 crisis in Greece, South European Society and Politics, 27.(4)2022.