



Publisher homepage: www.universepg.com, ISSN: 2707-4668 (Online) & 2707-465X (Print)

<https://doi.org/10.34104/ajssls.023.01420153>

Asian Journal of Social Sciences and Legal Studies

Journal homepage: www.universepg.com/journal/ajssls

Asian Journal of
**Social Sciences
and Legal Studies**



Role of E-Governance amid the Pandemic in Providing Healthcare, Education, and Social Services (HESS) in Bangladesh

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ABSTRACT

COVID-19 has imposed a severe impact on health, economics, society, trade & commerce, administration, and all aspects of human existence. In this regard, digital governance, i.e., electronic governance (e-governance), is now playing a significant role in tackling the drastic effects of COVID-19 in Bangladesh. E-governance refers to the process of using information and communication technology in the field of delivering public services. The principal aim of this study was to figure out what role e-governance plays in health, education, and social services (HESS) in Bangladesh during the pandemic. This research, in precise, focused on the impact of e-governance on the government's decision-making, emergency health care management, education management, and social welfare in Bangladesh during the COVID-19 pandemic. The study was done using a qualitative method. The findings of the study reveal the significant implications of e-governance in the management of health issues, education issues, and social issues during the pandemic. In particular, the findings of the study demonstrate the contribution of electronic learning, telemedicine, one-stop service centers, and emergency helpline services (999) in terms of addressing the devastating effects of the pandemic in Bangladesh. Moreover, the study incorporated both practical and managerial contributions. As a result, the authors believe that this study's contribution is crucial and practical for determining what the actual effects of e-governance were in Bangladesh during the pandemic.

Keywords: COVID-19, E-Governance, Healthcare services, Education management, and Bangladesh.

INTRODUCTION:

SARS-CoV-2 is a disease-causing virus (Ahmed & Akter, 2021), which has already been known as COVID-19, which causes human respiratory sickness (Poudel *et al.*, 2021). The pandemic has had a significant impact on all areas, including health, education, the economy, and society (Hasan *et al.*, 2021). Every nation is battling the epidemic at the same time (Ahmed, 2020). The Bangladeshi government carried out a number of commendable steps to combat the pandemic's terrible impacts (M. T. Islam *et al.*, 2020). Indeed, in response to this global crisis, the government focused considerable effort on

digital governance, i.e., e-governance (M. N. Islam and Najmul Islam, 2020).

E-governance, sometimes referred to as "electronic governance", is an ICT-based integrated system that is used in all operational governance systems to offer public services efficiently (Ullah *et al.*, 2021). E-governance, however, has a very wide range of applications (Six, 2004). The e-governance model (Fig. 1) outlines the breadth of its operational domains (Satiji, 2021) and claims to promote government accountability, transparency, & efficient service delivery while also reducing poverty, combating

corruption, and enhancing democratic principles through citizen participation (Bhuiyan, 2011).

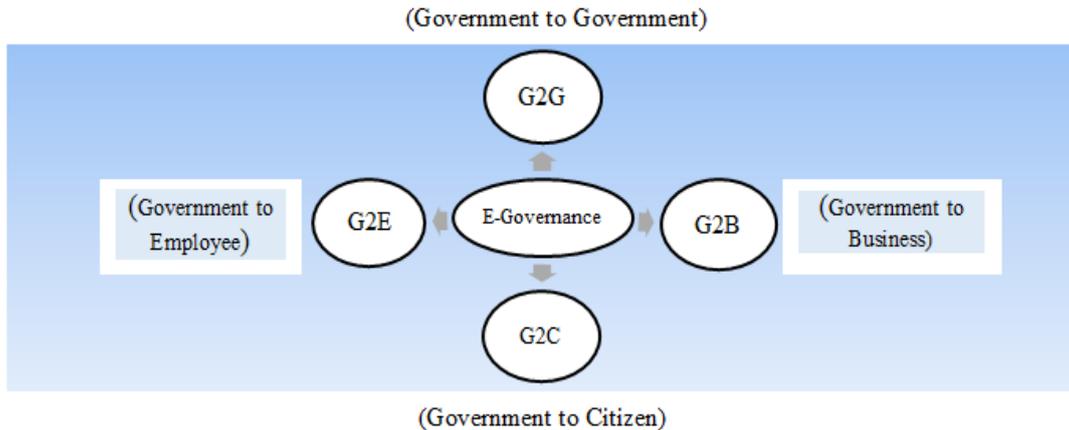


Fig. 1: Scope of e-governance (illustration by authors) (Six, 2004).

In particular, e-governance has meritoriously contributed to the provision of health-related services during the COVID-19 pandemic by incorporating e-health services (Jahan & Ali, 2021), telemedicine services, National Call Center Services (333-1), National Health Window Services (16263), IEDCR Services (10665), and COVID-19 Tele-Health Services (09666777222) (Ahmed, 2021). Additionally, e-governance has been effective in tackling the terrible impact of the pandemic on the education sector by combining e-learning and remote learning procedures (Das & Adhikary, 2022). Similarly, e-governance launched a one-stop service center (Kamal *et al.*, 2021) an emergency helpline service (999) (Tithi, 2022), and digital services for people to solve social concerns during the pandemic and raise public awareness (Egberri, 2022). Therefore, the authors contemplate that e-governance played a significant role in terms of eliminating the pandemic's terrible impact on health, education, and social services.

Aim and Objectives of the Study

The principal purpose of this study was to evaluate the role of e-governance in health, education, and the social services (HESS) amid the pandemic in Bangladesh.

The specific purposes were -

- a) To assess the role of e-governance in terms of addressing healthcare issues amid the pandemic in Bangladesh.
- b) To elucidate the role of e-governance in terms of addressing education issues amid the pandemic in Bangladesh.

- c) To clarify the role of e-governance in terms of providing social services amid the pandemic in Bangladesh.

Review of Literature

Rana, (2013) argues that e-governance is a novel and multifaceted idea. The scope of the e-governance incorporates the notions of government to citizen (G2C) services (e-citizenship, e-transportation, e-education, e-registration, e-health, e-taxation, e-help); citizen to government (C2G) services (e-democracy, e-feedback); government to government (G2G) services (e-administration, e-police, e-court); and government to business (G2B) services (e-taxation, e-licensing, e-tendering), etc. (Rana, 2013). As well Mat Dawi *et al.* (2021) articulate that in terms of addressing the current global crisis, e-governance and social media played a significant role. Most individuals desire to get e-governance based health information and shielding directions amid the pandemic. During the COVID-19 epidemic, e-governance and social media played notable roles in involving citizens in protective behavior. In addition, community health experts and decision-makers got the maximum aid from the execution of e-governance and social media in governing infection diffusion among the common people (Mat Dawi *et al.*, 2021). Besides, Patel and Patel, (2021) argue that GIS-based e-governance approaches have gained significant attention regarding eliminating the extreme consequence of the pandemic on health, the economy, and administration. With the blessings of e-governance, several organizations, including the healthcare centers, hospitals, and the police administration, have played a significant role in eliminating

the severe effects of the COVID-19 pandemic. Moreover, in forecasting, decision-making, and civic accomplishment, the application of technology in all governance services is also vital. However, e-governance plays an important role in hygienic services, socioeconomic analysis, gender analysis and development analysis (Patel & Patel, 2022; Fuerte, 2023).

Syahputri and Kusdarini, (2021) articulate that to meet the complex societal demands and to provide effective service delivery, especially amid the COVID-19 pandemic, the e-governance has been playing a gigantic role in implementing the innovative policies of the modern state. It has been observed that enormous technological development has occurred in the modern law state as a result of the benefits of e-governance (Syahputri & Kusdarini, 2021). In addition Goyal *et al.* (2021) debate that with the blessings of e-governance, contact-tracing mobile applications have played a remarkable role in enhancing community consciousness and providing real-time healthcare information, as well as diverse healthcare inventiveness. The government launched a community-driven mobile application for contact tracking during the epidemic to investigate how several values (privacy concerns, epistemological value, restricted value, convenience value, and practical value) affected people's intentions to utilize a mobile application method. Similarly, owing to their practical significance, there was a good desire among residents to utilize mobile-based apps during the pandemic in order to acquire real-time healthcare help and information (Goyal *et al.*, 2021).

Accordingly Burlacu *et al.* (2021) elucidate the significance of e-governance, especially in the era of globalization and the global health crisis period in terms of e-service delivery, including digital communication, budget management, & macroeconomic estimates. The study highlights that e-governance connotes the internet or electronic-based services among the different stakeholders, including government to government, government to citizen, and government to business. E-governance can ensure better service delivery to citizens while also being efficient, transparent, accountable, and responsive. In particular, e-governance has played a substantial role in eliminating the drastic effect of the pandemic on health and economic events (Burlacu *et al.*, 2021). Respectively, Roseth *et al.* (2021) argue that the COVID-19 pandemic has raised the dependency on

digital governance around the globe for providing public services. The study reveals that COVID-19 led several countries to be digitized. Furthermore, the study shows that, while the percentage of internet users increased dramatically during the pandemic, many limitations of digital governance have been identified, such as inadequate infrastructure, poor skills, limited internet accessibility, and so on. Therefore, the study suggests that the accessibility and value of digital services need to be improved for the prospect of digital governance in public service (Roseth *et al.*, 2021). Conversely, Ata-Agboni and Olufemi, (2021) elucidate that although digital governance in third world countries has attained notable progress amid the COVID-19 pandemic in terms of service delivery, it is now facing several challenges due to inadequate infrastructure, poor skills, and limited internet connectivity (Ata-Agboni & Olufemi, 2021). However, throughout the literature review, it has been found that no particular study has been conducted yet to explore the role of e-governance in terms of addressing the drastic effect of the pandemic on health, education, and social issues.

METHODOLOGY:

This study is based on a descriptive research design that aims to explore and describe the role of e-governance in providing HESS in Bangladesh during the pandemic using secondary data. Secondary data sources such as the research reports, articles, book sections, newspapers, website, and statistical databases from reputable organizations such as the World Health Organization (WHO), the United Nations (UN), the Bangladeshi government, and other academic sources has been used in this study. In particular, the secondary data has been collected through an extensive search of online databases such as Google Scholar, PubMed, Science Direct, and other relevant online sources. The required information has been collected from the period January 2020 to December 2022 to capture the effects of the pandemic on e-governance in providing HESS in Bangladesh.

Thereafter, the collected data has been analyzed using the thematic analysis. The analysis involved identifying themes, patterns, and insights from the secondary data, which has been used to demonstrate the research objectives. However, ethical considerations in this study involve ensuring that the data

sources used are reputable and reliable, and that the sources are appropriately cited to avoid plagiarism. In contrast, the limitations of using secondary data in this study include the lack of control over the data collection process, the possibility of incomplete or inaccurate data, and the potential for bias in the selection and interpretation of the data. In conclusion, this methodology section provides a comprehensive description of the approach taken to investigate the role of e-governance in providing HESS during the pandemic in Bangladesh using secondary data. This approach offers insights into the use of e-governance during a crisis, which can inform policy and decision-making in the future.

RESULTS AND DISCUSSION:

Role of E-governance Amid the Pandemic in Terms of Addressing Healthcare Issues in the Bangladesh

The government of Bangladesh (GoB) has already adopted a number of e-governance efforts to combat the pandemic's devastating impact (Umbach & Tkalec, 2022). During the pandemic, telemedicine was an active government program under the concept of e-governance that played a significant role in delivering emergency healthcare services and healthcare information to the citizens (Ullah *et al.*, 2021). Telemedicine provides the general people with a practical and secure approach to consulting medical experts about the signs of infectious illnesses, treatment, psychiatric problems, and other difficulties (Monaghesh & Hajizadeh, 2020). Patients may get medical treatment remotely without having to deal with the hassle of travel, reducing their chance of contracting extremely contagious infections. From this perspective, telemedicine is particularly helpful for senior citizens who may have restricted mobility and various comorbidities (Ribeira *et al.*, 2020). In terms of using emergency healthcare services, under the notion of telemedicine and the telehealth, the National Call Center 333-1, the National Health Window 16263, IEDCR-10665, the COVID-19 Tele-Health 09666777222, and Mother Tele-Health 0966888888, etc., gained significant attention from the citizens of Bangladesh (Ahmed, 2021).

According to a research finding, it has been observed that the extremely infectious characteristics of the COVID-19 virus have prompted physicians, nurses, and patients to worry. As a consequence, not only patients but also several physicians and nurses have

become ill with and died from COVID-19. In such an emergency, the difficulties of physically consulting doctors have arisen as a significant barrier for individuals seeking medical aid. In these circumstances, telehealth, telemedicine, and patient video consultations have all played a more significant role than ever in the delivery of healthcare services (Chowdhury *et al.*, 2021). In spite of telemedicine's evident benefits, it is currently seldom used in developing countries like Bangladesh and has not yet been heavily influenced by clinical practice (Holtz, 2021) due to technical issues (Anjana *et al.*, 2020), poor infrastructure (Kaplan, 2020), resource constraints (Moss *et al.*, 2020), inadequate internet connections (Khilnani *et al.*, 2020), & the slow spread of internet networks (Jiménez-Rodríguez *et al.*, 2020). In a similar vein, difficulties with telemedicine service implementation in poor nations include problems with devices (Bokolo Anthony Jnr, 2020), failures of video consultation platforms (Yoon *et al.*, 2020), difficulties with software updates (De Simone *et al.*, 2020). Similarly, inadequate the real time technical assistance and inadequate information technology support (Tashkandi *et al.*, 2020) were measured as another barrier to using or navigating various telemedicine systems (Howgego *et al.*, 2020).

E-governance & National Health Window (NHW) during the Pandemic

The National Health Window (NHW) also played a significant role in alleviating the devastating impact of COVID-19 on Bangladesh's healthcare sector. The MIS (Management Information System) Division of the Department of Health under the Ministry of Health and Family Welfare of the People's Republic of the Bangladesh operate the National Health Window (NHW) emergency telehealth care service system. SYNESIS IT Limited, a mobile healthcare provider, controls all aspects of the National Health Window (NHW). By calling the hotline number (16263), anybody may get basic healthcare services via direct consultation with a physician. This service is accessible 24 hours per day, the seven days per week (IEDCR, 2021). In essence, NHW is devoted to providing service seekers with primary health services, including information on government hospitals, doctors, ambulances, & any healthcare emergency information. However, despite the fact that approximately 62.21% of the population now utilizes the telemedicine, approximately 38.79% of the population in Bangla-

desh still lacks access to National Health Window services due to a lack of skilled doctors, a lack of professionalism, ineffective communication, patient

dissatisfaction, inadequate service quality, etc. (Ahmed, 2021).

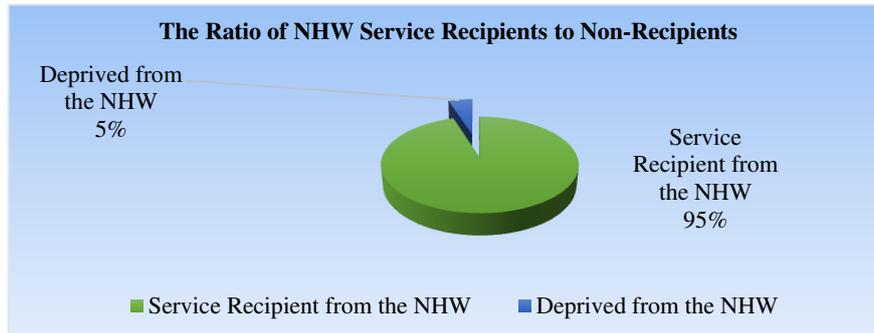


Fig. 2: The ratio of NHW service recipients to non-recipients (Ahmed, 2021).

However, NHW services in Bangladesh have run into a lot of problems because many people don't know how to use computers, don't know much about health, are disabled, or have low incomes. There are also structural problems, such as the geographical isolation, internet capacity, and lack of technical hardware (Hilbert, 2011).

Role of e-governance amid the Pandemic in terms of Addressing Education Issues in Bangladesh

Under the shade of e-governance, e-learning played a significant role in terms of eliminating the devastating effect of the pandemic in the education sector (Adedoyin & Soykan, 2020). All educational institutions were closed for about two years as a result of the abrupt COVID-19 epidemic. This has resulted in a number of difficulties for the students,

including high session congestion, frustration, unemployment, study breaks, and global sagging (Bozkurt *et al.*, 2022). The government of Bangladesh took praiseworthy initiatives in the terms of continuing the general education system from the very beginning of the pandemic (Khan *et al.*, 2021). For instance, by incorporating the support of teachers, educators, and instructors, the education ministry supplied learners with real-time interactive courses, pre-recorded materials, and digital sessions for the homework on a limited scale during the pandemic (BRAC, 2020). In a statistics, it has been found that half of the total learners including several dimensions (male, female, rural, urban, ethnic minorities, and children with disabilities), had participated in the e-learning process during the pandemic.

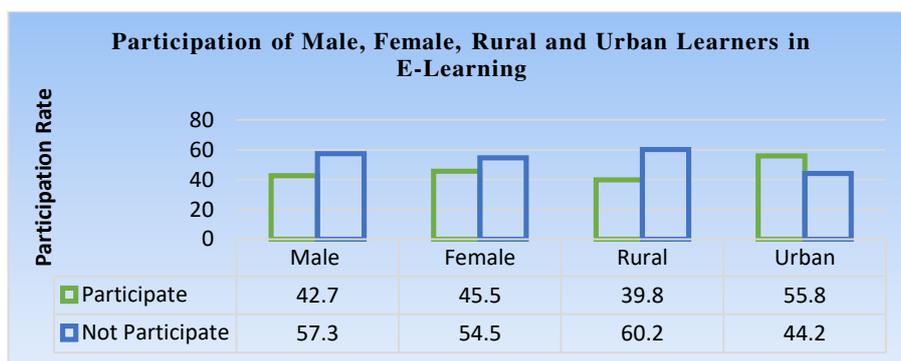


Fig. 3: Participation of male, female, rural and urban learners in e-learning (BRAC, 2020).

According to the survey of BRAC (2020), more female learners (n = 881.79, 42.7%) participated in the e-learning process than males (n = 827.5, 42.7%), whereas more urban learners (n = 1081.4, 55.8%) participated than rural learners (n = 771.32, 39.8%) (BRAC, 2020). These statistics reveal that about half of the learners participated in the e-learning process, which was very significant in

eliminating the devastating effect of COVID-19 on the education sector. BRAC's study also revealed that students from diverse backgrounds, including Madrasa, Bangla medium, and ethnic minority pupils, engaged in the e-learning process throughout the pandemic. The following graph illustrates the engagement of students from various backgrounds in the e-learning process (BRAC, 2020).

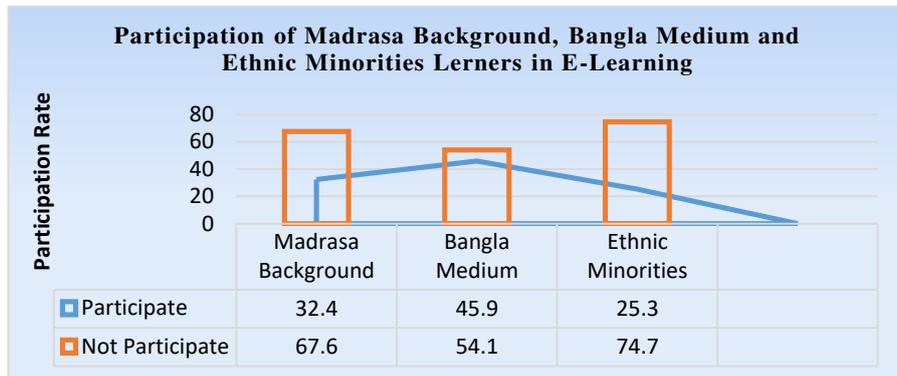


Fig. 4: Participation of students from various backgrounds in the e-learning process during the Pandemic (BRAC, 2020).

The above bar chart depicts the participation of students from various backgrounds in the e-learning process, with 32.4% (n = 627.9) coming from a Madrasa background, 45.9% (n = 889.5) coming from a Bangla medium background, and 25.3% (n = 490.3) coming from an ethnic minority group (BRAC, 2020). These statistics show the inclusiveness of the students' participation in the e-learning process amid the pandemic. At the same time, such statistics also demonstrate the significance of e-learning in addressing the catastrophic impact of the pandemic on Bangladesh's educational system. Despite the commendable contribution that online learning made during the pandemic, a number of issues have been raised regarding the challenges of online learning in higher education, including information privacy concerns, system security concerns, economic disparities, poor IT skills (Abdur Rehman *et al.*, 2021), accessibility concerns (M. S. Islam *et al.*, 2021), poor management, bureaucratic complexity (Hassan, 2022), and unbalanced legal frameworks, etc. (M. T. Islam & Habib, 2021). Therefore, concerned authorities should take appropriate initiatives to address the challenges of online learning in education.

Current Enrollment Status of the Bangladeshi Students in E-learning (online classes)

In Bangladesh, there are 46 public universities, 105 private universities, and more than 1500 institutions connected to national universities that provide higher education to their students. These institutions embraced the e-learning method to continue higher education in Bangladesh throughout the epidemic under the e-governance notion (Basilaiia, 2020). Besides, in a particular study, it was discovered that students at public universities were much more likely to the participate (n = 1202.5, or 59%) than

students at private universities (n = 835.5, or 41%), even though only 45% of students (n = 917) and 55% of students (n = 1121) had access to the internet and a device to join the class, respectively (M. S. Islam *et al.*, 2020). These statistics clearly state that Bangladesh has already entered the fourth industrial period, and under the shade of e-governance, e-learning has played a vibrant role in recovering the losses of education.

Role of e-governance in terms of Providing Social Services amid the Pandemic in Bangladesh E-governance and One-stop Service Center during the Pandemic

Under the shade of e-governance, One-Stop Service (OSS) is one of the most prominent service-oriented ideas in the world (Kamal *et al.*, 2021). In the midst of the epidemic, OSS played a significant role in centralizing the execution of a variety of investment services as well as providing residents with essential services. In particular, OSS provided a variety of important services to the public under one roof, including e-health services, land use clearance, e-TIN registration, VAT registration, power connections, NID verification, and trade licenses (M. S. Islam, 2021).

Services of the Union Digital Centre (UDC) during the pandemic

The Union Digital Centre (UDC) is an integrated platform popularly known as one stop service center in Bangladesh (Hasanuzzaman, 2019). Under the umbrella of the e-governance, UDC has played a noteworthy role in terms of providing information and e-services to rural citizens amid the pandemic (A2i, 2020). It provides several kinds of government and commercial services to the periphery's citizens with the assistance of information and communication technology (ICT).

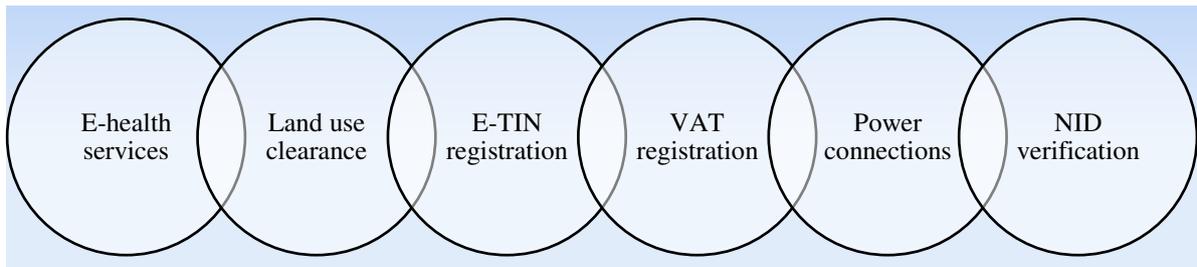


Fig. 5: One-stop services during the pandemic (M. S. Islam, 2021).

It is now increasingly popular with rural residents since it offers the greatest services at the lowest prices (Rahman *et al.*, 2020). It offers a variety of services, such as online birth registration, online death certificates, e-Porcha services for land-related paperwork, photocopy services, online applications, visa checking, internet surfing, trade license, NID rectification, e-passport application, the scanning services, etc (Akhter & Ahmed, 2022). The Rural

residents have paid a lot of attention to the UDC amid the epidemic in terms of using the internet to the browse, access e-health (Mostafa Kamal *et al.*, 2022), apply for passports online, register for the COVID-19 vaccine, and check visas. Additionally, it guarantees citizen-friendly bottom-up growth and links Union Parishad (UP) citizens to international and domestic networks (A2i, 2021).

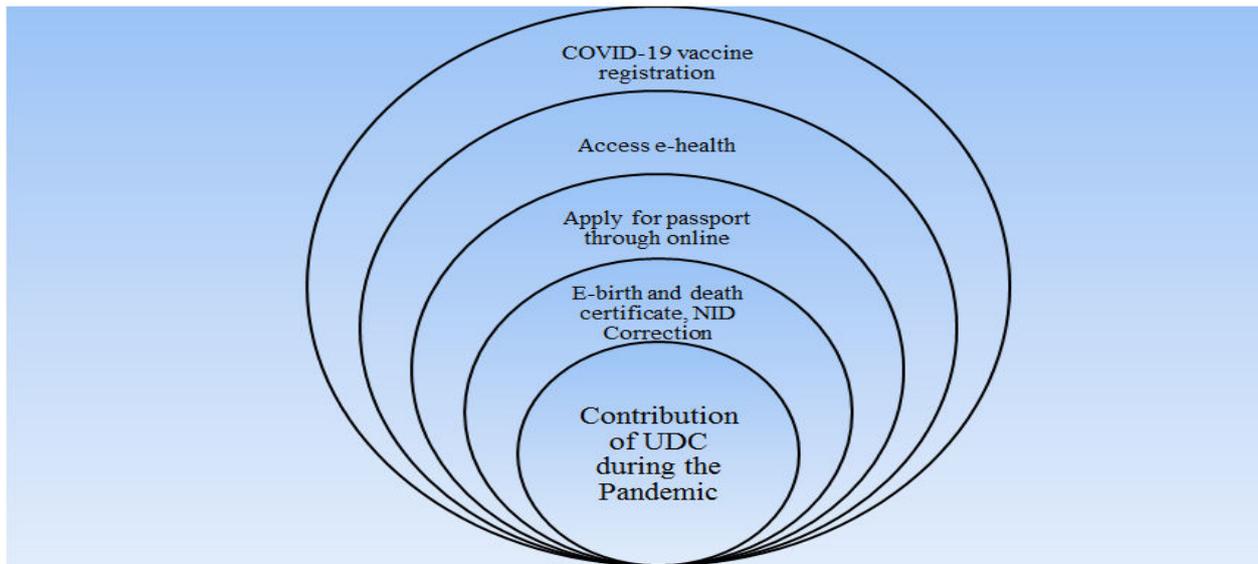


Fig. 6: Services of the union digital center during the pandemic (Illustration by Author).

However, UDC is constantly dealing with a number of issues, such as the financial crisis, poorly trained employees, slow internet, outdated equipment, inadequate logistical support, apathy to provide services, etc. (Biswas & Roy, 2020). Therefore, the relevant authorities should devise and execute appropriate measures to overcome the issues of the UDC so that it can offer all services as a one-stop service center.

E-governance and Emergency Helpline Service (999) during the Pandemic

The National Emergency Help Line (999) is a toll-free number that allows citizens to call and ask for help from police, fire service, and ambulance service

providers in case of any emergency or trouble. This is another output of e-governance, which was officially launched on 12 December 2017. During the pandemic, the national emergency helpline worked as a front-line fighter to address the extreme effects of the pandemic. The helpline has received over 35.3 million calls until January 2022 to fix several social issues (Tithi, 2022). Emergency hot-line services helped with many situations during the pandemic, including getting COVID-19 patients to the hospital, delivering government services to citizens' doorsteps, addressing women's and children's violence, putting an end to terrorist operations, etc (Mahmood *et al.*, 2022).

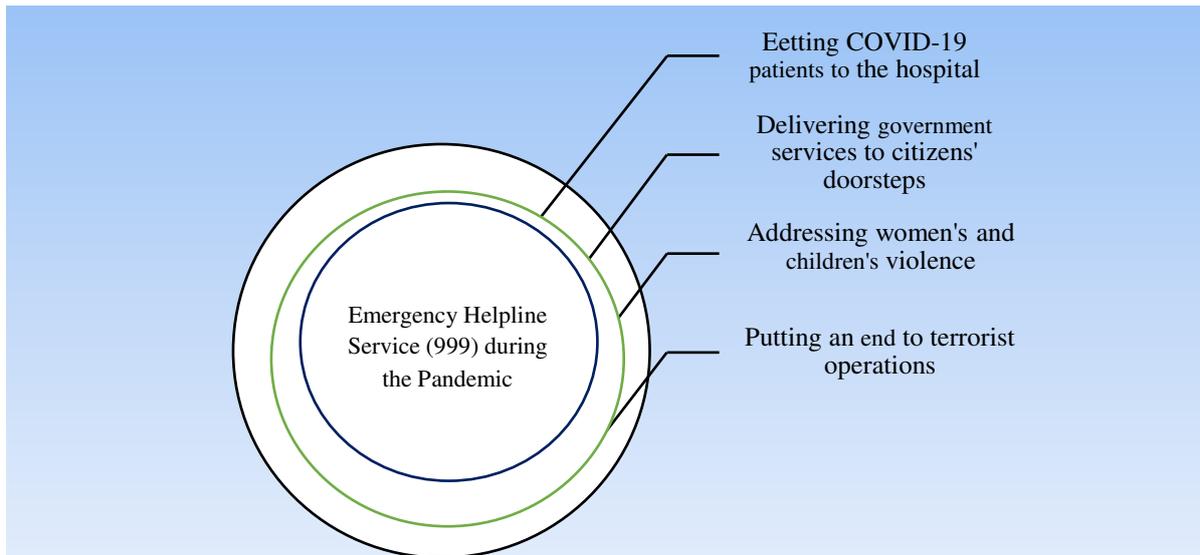


Fig. 7: Emergency helpline service (999) during the pandemic (Illustration by Authors).

Conversely, the emergency helpline (999) also faces a number of obstacles, including a shortage of manpower, a lack of public knowledge, public ignorance, incorrect information, blank calls, hoax calls, missed calls, test calls, or repeat calls, and a lengthy response time (Mahmood *et al.*, 2022). One of the major criticisms of the emergency helpline service (999) is the delay in response. Therefore, the emergency service system has to be upgraded, and this should be a top priority. In this regard, the government, concerned authorities, the private sector, and the general public should come forward to ensure proper utilization of the emergency helpline service (999).

CONCLUSION AND RECOMMENDATIONS:

Information and communication technologies (ICT) have brought about a tremendous shift in the sphere of governance, which has reinforced the pledge between the government and its constituents. Innovative governance is the only option for contending with the other nations of the world in the twenty-first century. From this perspective, the notion of e-governance is now a core component of state administration. The study's conclusion reveals that e-governance has been crucial in tackling the pandemic's devastating impact on society, education, and health. During the rigorous lockdown, under the shade of e-governance, telemedicine services, the national health window, the COVID-19 Tele-Health Services (09666777222), and the national call center services (333-1) offered emergency healthcare services to people. Numerous lives have been spared

an early death because of e-services, which have been hailed as a godsend. Likewise, the concept of distance learning protected our education sector from annihilation. The one-stop service center, union digital center, national emergency hotline 999, and other related electronic services all significantly contributed to tackling the pandemic's severe societal repercussions. Even though the study's findings incorporate both theoretical and social contributions, the authors suggest that the problems with electronic governance in Bangladesh could be fixed by the following recommendations.

First and foremost, the government should ensure adequate infrastructural development (including high-speed internet, required software & devices, and real-time technical assistance) in the health, education, and other concerned public service sectors so that the service provider can execute the e-governance initiatives in the any circumstances. Secondly, the government should ensure the proper training of the service providers in the application of e-governance services at the required field. Thirdly, the government should ensure adequate real-time technical assistance & information technology support in terms of providing e-governance services to the citizens. Fourthly, the government as well as concerned authorities should focus on the quality of service that the e-government provides in terms of emergency situations. Fifthly, the government should implement more creative efforts in the related service sectors (such as telehealth, e-learning, video conferencing, m-commerce, e-commerce, etc.) so

that people may access the real-time services by employing e-governance policies at all levels. Sixthly, to accomplish the ultimate aims of e-governance in the era of the fourth industrial revolution, the government should provide adequate monitoring and assessment of e-governance services. Finally, to improve the practice of e-governance, the government and relevant ministries must decrease the bureaucratic complexity of e-governance at all levels and under all circumstances. However, the authors concluded by recommending that the government of Bangladesh should devote the most effort to fixing e-governance concerns and making its services more citizen-friendly. However, these findings incorporated both theoretical & social contributions. Theoretically, these findings would develop the field of literature and enhance the knowledge of practitioners in the field of electronic governance. Similarly, the outcomes of the study will strengthen researchers', academicians', & social practitioners' comprehension of the relevance of implementing electronic governance during the crisis moment. Although the research highlights the contributions of electronic governance in the domains of health, education, and social services in Bangladesh in the midst of the pandemic, it does not investigate the empirical effect of electronic governance. Due to financial limitations, the authors were unable to conduct the empirical analysis. Therefore, the authors propose that future research in a comparable field should be quantitative & investigate the concrete consequences of e-government in Bangladesh.

ACKNOWLEDGEMENT:

The author expresses his gratitude to the department of public administration and governance studies, which provided technical and library support to complete this study.

CONFLICTS OF INTEREST:

The author is declaring that there is no conflict of interest regarding this study, authorship, or publication of this article.

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Citation: Ahmed T. (2023). Role of E-Governance amid the pandemic in providing healthcare, education, and social services (HESS) in Bangladesh. *Asian J. Soc. Sci. Leg. Stud.*, 5(5), 142-153.

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