

COVID-19: It's time to be Thankful to our ICT Professionals

Muhammad Arshad

Deanship of e-Learning and Information Technology, Jazan University, Gizan, Kingdom of Saudi Arabia

E-mail: msarshad@jazanu.edu.sa

ABSTRACT

The role of Information and Communication Technology (ICT) is significant amid the disease outbreaks and the new normal. Whereby resilience is a key factor initiated by the business and risk leaders in a world where the new normal is the disease outbreaks. A recent report by the analysts has highlighted continuity in the spread of coronavirus and urges the organizations towards necessary preparations. Coronaviruses (CoV) represent a large family of viruses with the capability of several common to severe and complicated health conditions including Severe Acute Respiratory Syndrome (SARS-CoV) and Middle East Respiratory Syndrome (MERS-CoV). COVID-19 is the novel coronavirus which initially appeared in the form of acute pneumonia (44 cases) in the Chinese city of Wuhan from December 31, 2019, through January 3, 2020. The developing and underdeveloped countries are struggling hard to counter the rapidly growing and widespread challenge of COVID-19 because it has greatly influenced the global economies whereby the underdeveloped countries are more affected by its devastating impacts, especially the life of the low-income population. In this scenario, a significant economic toll is associated with the pandemic due to its widespread negative impacts in the form of the collapsed economy due to international travel restrictions, partially or completes closure of business and manufacturing activity in major parts of the world including Asia, Europe Middle East, and North America which is resulting in reduced remittance flow. In this context, the present research is primarily aimed to explore/figure out the significant impact of Information and Communication Technology and its professionals during this phase of the pandemic. Their presence around us often goes unnoticed during normal days while the COVID-19 pandemic has pushed the once-anonymous ICT support professionals towards a new role: **Enterprise Rescuers**.

Keywords: *Coronavirus, COVID-19, Intervention, ICT, Pandemic*

1. INTRODUCTION

A pandemic is an outbreak disease that has occurred through a wide area, for example, several continents or across the globe, involving a huge amount of citizens. A widespread infectious disease with a healthy number of infected individuals is not a pandemic. Widespread infectious pathogens with a small number of sick individuals, such as seasonal influenza recurrences, are usually omitted because they arise periodically in significant areas of the globe, rather than distributed all over the planet as illustrated in figure 1.



Figure 1. The 1918–20 "Spanish flu" influenza pandemic [1]

Disease pandemics like smallpox and tuberculosis have existed throughout history. One of the most destructive pandemics had been the Black Death (also regarded as The Plague), which in the 14th century destroyed an estimated 75–200 million individuals.

Many important pandemics also include the influenza pandemic in 1918 (Spanish flu) and also the influenza pandemic of 2009 (H1N1). Present pandemics contain HIV / AIDS, and the coronavirus pandemic of 2019–20 [1].

1.1 CORONAVIRUS/COVID-19

Coronavirus outbreak (COVID-19) is a modern virus causing illness. The illness triggers respiratory distress (such as flu) and signs including cough, nausea, and trouble breathing in more extreme situations. You should cover yourself by constantly washing your mouth, not rubbing your face, and preventing near interaction (1 meter or 3 feet) with the un-well men [2].

The COVID-19 coronavirus global epidemic is the biggest public health epidemic of the modern period and the largest threat confronting humanity after World War Two. The virus has spread on every continent except Antarctica since its appearance in Asia late last year. In Africa the Americas, and in Europe, reports are increasing every day. Countries compete to delay the transmission of the infection by monitoring and handling victims, tracking connections, banning movement, quarantining people, and canceling major gatherings such as sports activities, festivals, and classrooms. The pandemic runs like a wave-one that can fall on anyone least prepared to deal with it yet.

However, COVID-19 is something more than just a safety issue. It has the ability to generate catastrophic societal, political, and economic problems by stressing each of the countries it hits that would trigger deep scars [3, 4].

1.2 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

ICT is a methodology and management technique used by scientists, technologists, and engineers in the handling of information, its application, and interaction with social, economic, and cultural issues [5]. In the past few decades, ICT has become a part of our lives impacting both our culture and human life, now commonly used in the educational world [6]. Today's age is the 21st century, and it is also the age of Information and Communication Technology (ICT). Science and technology are linked to every aspect of life; a massive flow of knowledge is increasing around the globe in all fields [7].

Information and Communication Technologies (ICTs) in all facets of life have become ubiquitous entities. In the last twenty years, the use of ICT has profoundly changed the processes and procedures of almost all modes of business and governance. ICT is an umbrella concept that encompasses any communication tool, including radio, television, mobile phones, computer and network equipment, satellite systems, etc., as well as various facilities and devices such as video conferencing and distance learning. ICT is a large subject matter, and the principles evolve, which includes any device that can electronically store, retrieve, modify, send, or receive information in a digital medium (e.g., personal computers, digital television, email, or robots) [8, 9].

2. ICT AS A SILENT SOLDIER DURING COVID-19

According to International Data Corporation (IDC), the COVID-19 outbreak would pose both challenges and opportunities for the ICT sector. The virus, which started in Wuhan, China, in late December 2019, has continued to spread – bringing shutdowns in the traditional Chinese New Year festival season in extensive sectors including food services, retail, entertainment, and tourism, with several businesses postponing their resumption of operations until late February. Not only has the epidemic affected social development and daily life, but it has also taken a toll on both the Chinese and global economy, and the ICT sector as well [10]. Figure 2 illustrated the COVID-19 pandemic around the world.



Figure 2. COVID-19 around the World

The COVID-19 outbreak would affect the overall economy more than the 2003 SARS outbreak. IDC expects that the effect will be large in the first quarter, but will slowly decrease in subsequent quarters – with limited impact on full-year growth. The following sections will present an overview of the ICT based activities within Health and Social Care, Global and Government agencies, Support for Teaching and Learning, ICT Research and Development for COVID-19, finally when will COVID-19 end, these sections will then be followed by a conclusion [11].

2.1 EFFICIENT UTILIZATION OF ICT FOR HEALTH AND SOCIAL CARE

On April 9, 2020, Chinese and Arab medical experts organized a video conference session hosted by the Cairo-based Arab League (AL) to exchange knowledge and expertise on how to fight COVID-19 as illustrated in figure 3 [12].



Figure 3. Video conference Session between Chinese and Arab Experts

Fourteen Arab experts from their country's health ministries, and Chinese officials and ministry experts attended the meeting. The Chinese side said their country is completely prepared to provide advice and consultation on the novel corona-virus and its treatment and prevention methods, either orally or by video conference technology. The Secretary-General also expressed the hope that more such conferences will be conducted in the future, as the battle to combat the COVID-19 pandemic requires cooperation from all the countries concerned [13].

Turkish and Chinese experts shared opinions and experiences on the ongoing war against the novel coronavirus, with the death toll in Turkey increasing to 75 with over 3,600 cases as of March 26, 2020 as illustrated in figure 4. A three-hour video conference put together the representatives of the Health Ministry's Turkish Science Board with the Chinese authorities who fought the first war the corona-virus was first seen as a pandemic in the city of Wuhan, China.



Figure 4. Turkish and Chinese Experts Video conference Session on COVID-19

The Science Board for coronavirus and Chinese officials and scientists exchanged information and experience on the virus during the conference, according to a statement by the Ministry of Health. The question-and-answer session preceded China's Corona-Virus presentation. Meanwhile, on March 27, 2020, the Minister of Health held a video conference with health directors from 81 provinces in Turkey about the nation's fight against the pandemic [14].

Thank you Urdu Post for taking me LIVE in Questions & Answers session. Some very practical questions asked by Ms. Aqsa, channel's presenter. Dr. Salman Shahid is a multi-faceted British Pakistani talent currently based in Manchester where he works as a consultant and has his own International Health Care Business. Figure 5 illustrate the LIVE session details over COVID-19.

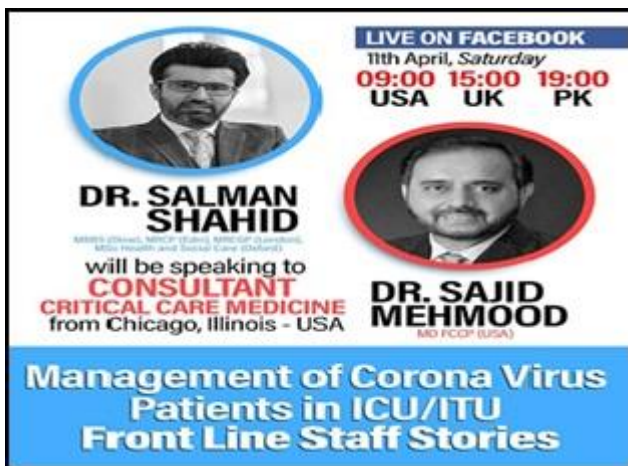


Figure 5. Details of LIVE Facebook Session

During the last couple of months, Dr. Salman Shahid successfully conducted LIVE sessions around the world with different experts in Health and Social care by Facebook. On April 11, 2020, in conversation with Dr. Sajid Mehmood from the USA, Dr. Salman Shahid LIVE from the UK (MD FCCP Diplomate American Board of Critical Care Medicine, Consultant Intensivist, and Member APPNA COVID-19 Task Force State of Illinois, USA). They shared the stories which they have experienced being the front line staff on this battle against COVID-19 [15].

After an ongoing nationwide lockdown to curb the spread of the novel coronavirus, a Vietnamese entrepreneur in Ho Chi Minh City invented a 24/7 the automatic dispensing machine which provides free rice for people out of work as illustrated in figure 6.



Figure 6. 24/7 Automatic Rice Dispensing Machine

Vietnam has registered 262 cases of COVID-19 and no deaths so far, but as a result of a 15-day social distancing program that began on March 31, 2020, several small businesses were shut down and thousands of people were temporarily laid off work [16].

Social distancing has proved to be a very successful tool in fighting coronavirus to limit the spread of the disease. Although millions of people sit at home helping to flatten the curve, many of our customers in the manufacturing and pharmaceutical sectors still have to go to work every day to ensure we fulfill our basic needs as illustrated in figure 7 [17].



Figure 7. Social Distancing Detector Software

To support the efforts of our customers and help maintain a social distance protocol in their workplace, Landing AI has created an AI-enabled social distance detection tool that can detect whether people keep a safe distance from each other by analyzing video streams from the camera in real-time.

The detector may highlight people whose distance in red is below the minimum appropriate distance, and draw a line to underline this. The program can even issue a warning to remind people to keep a safe distance if the protocol is breached [18].

2.2 ICT SERVICES FOR GLOBAL AND GOVERNMENT AGENCIES

The Association of Southeast Asian Nations (ASEAN) Heads of State / Government of Member States held the Special ASEAN Summit via video conference on April 14, 2020 as illustrated in figure 8. They expressed our deep concern over the spread of Coronavirus Disease 2019 (COVID-19), which was declared a pandemic by the World Health Organization (WHO) on March 11, 2020, and its negative impact on people's well-being and global socio-economic growth.



Figure 8. Declaration of the Special ASEAN Summit on Coronavirus Disease 2019

Constrained separated by the coronavirus pandemic, Southeast Asian leaders connected up by video conference on April 14, 2020 to plan a methodology to beat an emergency that has compromised their economies and kept a huge number of individuals in their homes under lockdowns [19].

On March 20, 2020, the European Union (EU) and the Association of Southeast Asian Nations (ASEAN) convened a ministerial-level video conference to discuss Coronavirus Disease 2019 (COVID-19) as illustrated in figure 9.



Figure 9. ASEAN and EU Video Conference on COVID-19

Against the backdrop of the March 11, 2020 declaration by the World Health Organization (WHO) that the COVID-19 outbreak is a "pandemic," the EU and ASEAN

exchanged information on developments in the COVID-19 outbreak in their respective regions and their attempts to contain the outbreak in question. In response to this global pandemic, the EU and ASEAN will continue to enhance and use regional and international cooperation and coordination mechanisms [20].

Group of 20 leaders will address the coronavirus crisis via video conference, in an attempt to establish a coherent plan of action. Members from the Community of 20 global economies will convene a video conference to discuss the coronavirus outbreak on March 26, 2020 as illustrated in figure 10.



Figure 10. Screen Grab of the G20 Virtual Summit

At a separate video conference, G20 finance ministers and central bankers agreed to create an "action plan" to respond to the outbreak that the International Monetary Fund believes would cause a global recession. A later statement gave only a few specifics. A separate statement said the King of Saudi Arabia will preside at the video conference "to advance a coordinated global response to the COVID-19 pandemic and its human and economic implications" [21, 22].

Boris Johnson has warned his top ministers the coronavirus crisis "is going to get worse before it gets better" at the first cabinet meeting in history to be held entirely on a video call. The prime minister chaired a cabinet meeting in which ministers all appeared on a single screen via video conferencing app Zoom as illustrated in figure 11.



Figure 11. Prime Minister Video Conferencing Meeting

Mr. Johnson, speaking via video link from self-isolation, has warned members of his Cabinet that the coronavirus pandemic in the UK is "going to get worse before it gets better".

2.3 ICT SUPPORT FOR TEACHING AND LEARNING

School uniform is not compulsory but for remote learning lessons, children need to be dressed in smart casuals. Video conferencing of teachers and students for online classes will protect privacy and security issues. As schools went online as a precaution against coronavirus the rules and guidelines were set. The school guidelines cover different areas such as dress code, one-to-one chat, recording, and cybersecurity; they also provide counselling for parents, most of who often work from home to prevent COVID-19 spreading. Some school instructions will go into specifics like what history to have – "neutral" or "serious" – when going to live or what tone of voice to use as illustrated in figure 12 [23].



Figure 12. An e-Learning Session at Home

The classes will require a regular schedule, and students would benefit from a desk-and-chair configuration similar to the one they are used to in school. Many schools have shared Q&A sheets with all stakeholders, and have performed remote class trial runs. However, despite its limitations on socializing, some students have found it difficult to completely turn to e-learning, so a regulated form of peer interaction is permitted online. The students have a choice to talk among themselves – when appropriate; the teacher activates the function for them. This facilitates cooperation but at the same time always helps to preserve discipline [24].

According to the World Bank website the title subject is "How countries use edtech (including online learning, radio, television, and text) to promote remote learning access during the COVID-19 pandemic." The World Bank is working actively with education ministries in dozens of countries to support their efforts to use educational technology of all kinds to provide students with remote learning opportunities while schools are being closed as a result of the COVID-19 pandemic and are engaged in active dialog with dozens more. The World Bank is cataloging new strategies in support of this work [25];

AFRICA

Egypt

During the school suspension which began on March 15, 2020, the Ministry of Education and Technical Education (MOETE) announced steps to introduce distance learning and assessment.

Kenya

As a result of school closures, the Ministry of Education issued recommendations for enhancing teaching and learning for its 15 million students out of school. Four major channels will be used to provide educational programs and services to the learners as of March 23, 2020.

Rwanda

The Board of Rwanda Education (REB) has taken measures to help remote-learning students. As of April 4, 2020, it started broadcasting educational radio programs, which are also available on its district-level radio stations such as Huye, Musanze, Rubavu, Nyagatare, Rusizi, as well as the Parliament channel.

ASIA

China

Nearly 200 million elementary and secondary school students in China started their new semester – online – on February 9, 2020.

Malaysia

On April 6, 2020, the public broadcaster Radio Televisyen Malaysia (RTM) launched a new TV channel named TV Okey to deliver television education programs to all students, particularly those without Internet access. The TV and radio programs will also be broadcast online on the RTM website.

Saudi Arabia

The Ministry of Education (MOE) uses TV and social media to broadcast lessons for all grades and has named 127 supervisors and teachers to provide regular lessons in 112 educational subjects across 19 TV channels (nationally broadcast from a Riyadh classroom). The Department provides students five options for virtual learning.

AUSTRALIA

Fiji

Fiji's Ministry of Education, Heritage, and Arts have launched additional radio programs for out-of-school students. These education radio programs will be distributed through the Fiji Broadcasting Corporation and the Schools Broadcasting Network. During the two-week school closure period from April 6 to April 17, 2020, the regular programs will be aired exclusively weekdays on the RF One and RF Two radio stations of the Fiji Broadcasting Corporation. This curriculum includes literacy, numeracy, and early childhood education for grades 1-8. The plan for radio broadcasting can be found on the Ministry website. The Ministry website also hosts a wide

range for all subject areas of interactive learning opportunities for grades 1-13.

EUROPE

Austria

A large number of service deals were collected on the website of the Ministry of Education. It uses learning tools such as Moodle and LMS, as well as cloud applications from companies such as Microsoft and Google. The Ministry-developed content platform Eduthek provides learning and exercises material from outside providers for kindergarten and pupils of all school levels to practice at home and to deepen their skills.

The public television channel ORF 1 has been providing a special education program to students at all levels of the school since 18 March 2020. The program for pre-school and elementary school children is broadcast each morning between 6-9 am.

Czech Republic

On 12 March 2020, the Ministry of Education, Youth and Sport (MEYS) launched the "Distance Education" website, which assists schools and teachers in providing distance education.

Turkey

Education in Turkey is performed remotely using interactive education platform EBA (Eğitim Bilişim Ağı). Educational TV also helps to alleviate issues with Internet connectivity and bandwidth. Seven media companies broadcast EBA programs tailored to the TV during COVID-19. Primary, middle, and high school services are broadcasted in 18 separate networks, with six different channels allocated to each level of education.

SOUTH AMERICA

Argentina

www.educ.ar is the Argentine Ministry of Education's educational portal designed to provide curated digital resources to teachers, administrators, students, and families. As of April 1, 2020, the program "Seguimos Educando," developed by the Ministry of Education and the Secretariat for Media and Public Communications, began broadcasting educational content. Seguimos Educando airs 14 hours of television content per day and 7 hours of radio content produced specifically for students as a result of school closures.

Chile

In Chile, digital learning materials are hosted on the Aplus website. This content has been made available to other countries in the region by the Chilean Ministry of Education team to deal with the closure of COVID-19 developed schools. Some of these tools include free class videos produced in Chile for children aged 4-13 (especially useful in teaching literacy).

Colombia

Preventive quarantine in Colombia started the week of March 16, 2020, and as a result, the academic calendar was changed. Teachers were given time to prepare a pedagogical plan for the first two weeks, in order to build and establish exercises and assignments for the students, on March 20, 2020, classes restarted 'at a distance' with attention to two realities. Families with Internet access and technological services have access to digital learning, a Ministry of Education platform with more than 80,000 digital learning tools, grouped by grades, in different ways (games, videos, etc.), open to teachers, administrators, and other participants, covering pre-primary to middle school education.

Local governments are responding to an emergency that requires them to conduct official meetings remotely via teleconferencing or videoconferencing — this would also prohibit the public from attending meetings in person, as normally guaranteed by the state's Open Meetings Law. The order was one of the thousands released in response to the continuing COVID-19 outbreak as part of the state's response as illustrated in figure 13 [26].



Figure 13. Live-streamed School Meeting

Most local authority authorities are now switching to "virtual" sessions, with all participants taking part by telephone or by video conference. A screengrab displays the Bath Central School District Board of Education's live-streamed meeting held on March 9, 2020. Streaming online meetings is one of the primary ways in which local government agencies can preserve public participation under the restrictions on COVID-19-related public gatherings. As long as the present situation persists, the district will be live-streaming meetings online [27].

3. ICT RESEARCH AND DEVELOPMENT FOR COVID-19 PANDEMIC

Crises produce a lot of energy that can be a great source of creativity if constructively harnessed. The response from COVID-19 produces inspiring creative responses that show that need is indeed the mother of invention. It has already emerged and offers guidance for our short-term response in past crises, but also underlines the wider and more

pressing long-term need for better resource management and the institutionalization of technical innovation in public health. For example, open innovation is an established model that can draw on the energy and catalyze problem-solving from anywhere and everyone else [28].

COVID-19 poses a significant global threat to public health. The outbreak in China has posed the quickest spread, the widest variety of infections, and the greatest challenge in managing any public health emergency infections. In the fight against the outbreak, China has successfully leveraged emerging technologies such as artificial intelligence (AI), big data, cloud computing, blockchain, and 5 G that have effectively enhanced the efficiency of the country's efforts in disease monitoring, virus tracking, detection, control, and resource allocations. People are scanning a health QR code at Wuhan's Hankou Railway Station as travel restrictions to leave the city on April 8, 2020 as illustrated in figure 14.



Figure 14. Scan a health QR code

The epicenter of a global coronavirus disease (COVID-19) outbreak, are lifted and people in Wuhan, Hubei, China will be able to leave the city via road, rail, and air [29].

Thermal cameras have been mounted to track the body temperature of all those entering the Mosque of the Prophet, announced on April 17, 2020, by the Saudi Press Agency. The step is part of the efforts made by the General Presidency to prevent coronavirus from spreading in the Grand Mosque and the Prophet's Mosque as illustrated in figure 15.



Figure 15. Thermal Imaging Device

The thermal imaging devices will scan the body temperature within a distance of 9 meters of 25 people at a time with high precision. We work non-stop, and send video and audio updates to everyone in real-time. The thermal scanners save and store images and temperatures in their computer memory for a month, allowing experts to access them on screens and mobile devices remotely when necessary [30].

The Transportation Department of Dubai has introduced the latest technology in the identification of coronavirus cases-a smart helmet fitted with an infrared camera and other Artificial Intelligence (AI) technologies such as face recognition technology and car number reading technology as illustrated in figure 16.



Figure 16. Smart Helmet Device

Deputy Chief of Police and Public Security in Dubai praised the Dubai Police Department of Transportation Security for using the smart helmet as part of modern technology to protect the transportation business. UAE is the first in the country to use this technology. In addition to the existence of artificial intelligence technologies such as face recognition technology and car number reading technology, the Director of Transportation Security Service, Dubai Police, said that smart helmets monitor the temperature of public transport users and calculate the audience temperature with high performance. This move is in accordance with the government's policy to protect the transportation safety sector in accordance with the best international standards and practices to combat the spread of coronavirus [31].

4. CONCLUSION

This paper reviewed the ICT based events, online education, and innovation in the ongoing COVID-19 pandemic. The world has seen the rise of SARS, the Zika virus, Ebola, and now COVID-19 in the last few years. An epidemic poses a growing danger. Cities around the world have made infrastructure engineering a priority for safeguarding their physical structures so that they can remain resilient and antifragile during natural disasters including earthquakes, tsunamis, and hurricanes. But pandemics have demonstrated that when it comes to maintaining communication and access to our community during biological disasters, such approaches are not enough. At this time of crisis, the primary challenge now is to incorporate and streamline digital technology at different stages of public

health response, especially in the context of disease forecasting and decision-making. A new age digital era has arisen in the 17 years after SARS; artificial intelligence and the Internet of Things (IoT) may be instrumental in keeping this new virus within acceptable limits.

Around the time of writing one-third of the world's population is a continuously restricted campaign to curb COVID-19 spread. The lockdown has for the first time pushed vast swaths of the working population into being isolated. The rapid surge in staff, students, teachers, and many other home-working professionals is driving a huge increase in demand for video conferencing, online networking devices, and chat systems only received a big boost from the latest global coronavirus pandemic to the work-from-home job community. But more and more people have said goodbye to their onerous work commute long before COVID-19 became a factor. Thanks to continually emerging technologies such as Facetime, Skype, Zoom, Slack, Google Hangouts, authenticator applications, and cloud storage – not to mention text and email – it's no longer important to be a successful team leader in a full-time office. In fact, from a home office, several kinds of work can be done just as effectively, if not more so. As attractive to workers as remote work is, it wouldn't be such a big phenomenon if employers didn't consider benefits from their desk-side too. Work-from-anywhere programs will improve employee productivity; decrease turnover and decrease organizational costs. Telecommuting workers with very complicated roles that do not entail a great deal of teamwork or social support will do better than their colleagues working in the workplace. A dispersed workforce is also in a stronger position to keep operations going in the event of a natural or manmade catastrophe, even though any of the community goes offline.

Now everyone remembers and appreciates doctors, nurses, pharmacists, and all other health officials. Without any doubt, they are frontline warriors throughout COVID-19 pandemic. However, no one cares about ICT professionals who work 24/7 to keep everyone connected and run smoothly. The whole world is in a Coronavirus crisis but ICT people are working in an office or from home. All banking systems continue to function, all hospitals websites and software's are functioning seamlessly, ATM machines and software works 24 hours a day to keep it working efficiently, Internet and mobile phone services are running continuously, peoples get uninterrupted updates on all the news channels, all entertainment channels are functional, Facebook WhatsApp, etc. Social media is functioning well today, our kids are learning online at home; pharmaceutical software and lab reports are running and managed regularly, software that manages the power grid are maintained by ICT professionals and experts. There is nothing in the world today that does not require computers and software, ICT people are working from home so as to ensure everything continues to run smoothly. Salute to life-saving doctors, nurses, a salute to police, cleaners, salute to millions of subsistence farmers, and all ICT professionals who are working behind the scenes.

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AUTHOR PROFILE

Muhammad Arshad working as an Assistant Professor in Deanship of e-Learning and Information Technology of Jazan University, Kingdom of Saudi Arabia. He has successfully completed PhD in Electrical and Electronic Engineering from Universiti Teknologi PETRONAS, Malaysia and MSc in Mobile and High Speed Telecommunication Networks with distinction from Oxford Brookes University, United Kingdom. Moreover, He has done Postgraduate Diploma in Information Technology and B.S in Computer Engineering from Canada and Pakistan respectively. His research interests in the area of Sensor Networks, Wireless and Mobile Communication Networks and Data Communication Networks. He is Graduate member of British Computer Society, United Kingdom and lifetime membership of Pakistan Engineering Council, Pakistan.