Czech University of Life Sciences Prague

Faculty of Economics and Management
Department of System Engineering and Informatics

Master's Thesis

Creation of a road map for the development of
E-government facilities in Bangladesh

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Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

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Objectives of thesis

The primary objective of the study is to compare the E-Governance facilities of Bangladesh with Denmark and the United Kingdom (UK). The following are the objectives of this thesis.
i. To study the existing E-Governance facilities of Bangladesh.
ii. To study the existing E-Governance facilities of Denmark.
iii. To study the existing E-Governance facilities of the United Kingdom (UK).
iv. To Compare the E-Governance facilities of Bangladesh with Denmark and UK.
v. To Suggest a Road map for Bangladesh to improve their E-Governance facilities.

Methodology

A study of the relevant literature, research articles, and online resources pertaining to E-Governance facilities is necessary in order to accomplish the objectives. Information related to E-Governance facilities like e-services, e-security, e-information, e-commerce and e-taxation.

The approach of the case study was selected for the purpose of comprehending the E-Governance capabilities in Bangladesh, Denmark, and the United Kingdom. In order to obtain the data, websites that were relevant to E-Governance facilities in Bangladesh, Denmark, and the United Kingdom were taken into consideration. To acquire the data, some apps having to do with e-Government were used in Bangladesh, Denmark, and the United Kingdom. These applications were also subjected to analysis.

After examining the e-governance infrastructure of each nation, a comparison of the e-governance infrastructure of all three nations was carried out. The degree of facilities available for e-government in Bangladesh was evaluated based on the comparison. This comparison lays forth a plan for improving the E-Governance facilities in Bangladesh and gives a road map for doing so.

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Abubakr, M., & Kaya, T. (2021). A Comparison of E-Government Systems Between Developed and Developing Countries. International Journal of Electronic Government Research, 17(1), 1–14. https://doi.org/10.4018/ijegr.2021010101

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Declaration

      I declare that I have worked on my master's thesis titled " **Creation of a road map for the development of E-government facilities in Bangladesh**" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 08/11/2023   _____Md Shajahan Hossain_____

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Abstract

E-government provides individuals and companies with government services, information, and communication through digital technology. E-government services include online tax filing, applying for permits and licences, viewing public documents, paying fines and fees, and engaging in government forums and conversations. E-government may also prevent corruption by giving individuals more knowledge about government actions and decisions.

E satisfy-government development is led by Denmark and the UK. Denmark scored 1st and the UK 11th in e-government development in the same UN E-Government Study. EGDI ratings are high and e-government development is "extremely high" in both nations. Denmark and the UK have adopted several e-government facilities, including citizen service portals, digital identification systems, electronic voting systems, and open data portals. These facilities have greatly increased government efficiency, transparency, and public participation and action.

Bangladesh was rated 111th in the UN E-Government Survey 2022. The country's EGDI was 0.5630, Bangladesh's EGDI score is "poor" and needs improvement. To increase governance transparency and service delivery, Bangladesh must strengthen its e-government capabilities. To achieve this aim, a legislative and regulatory framework, infrastructure, public involvement, e-government service delivery centres, open data regulations, digital entrepreneurship, and capacity development are needed. These processes are essential for e-government efforts because they guide the formulation and implementation of laws and regulations, create user-friendly platforms for people to access government services, conduct citizen surveys, and encourage public engagement in decision-making.

Abstraktní

E-government poskytuje jednotlivcům a společnostem vládní služby, informace a komunikaci prostřednictvím digitálních technologií. Služby elektronické veřejné správy zahrnují online podávání daňových přiznání, žádosti o povolení a licence, prohlížení veřejných dokumentů, placení pokut a poplatků a zapojování se do vládních fór a konverzací. E-government může také zabránit korupci tím, že jednotlivcům poskytne více informací o vládních akcích a rozhodnutích.

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Bangladéš byl hodnocen na 111. místě v průzkumu UN E-Government Survey 2022. EGDI země bylo 0,5630, bangladéšské skóre EGDI je „špatné" a potřebuje zlepšení. Aby se zvýšila transparentnost správy a poskytování služeb, musí Bangladéš posílit své schopnosti elektronické správy. K dosažení tohoto cíle je zapotřebí legislativní a regulační rámec, infrastruktura, zapojení veřejnosti, centra poskytování služeb elektronické veřejné správy, regulace otevřených dat, digitální podnikání a rozvoj kapacit. Tyto procesy jsou nezbytné pro úsilí o e-government, protože řídí formulování a implementaci zákonů a předpisů, vytvářejí uživatelsky přívětivé platformy pro lidi, aby měli přístup ke službám státní správy, prováděli průzkumy mezi občany a podporovali zapojení veřejnosti do rozhodování.

Klíčová slova: Infrastruktura,e-služby,e-commerce,e-danění,e-justice,e-NID,E-Governance,cestovní mapa, zdroje, data, digitalizace, sítě

Table of Contents

List of Tables

List of Figures

1. Introduction to E-Government

E-government, also known as electronic government, is the practise of delivering government services, information, and communication to individuals and companies using electronic technologies, such as the internet, mobile devices, and other digital communication channels. E-government is a movement towards using the Internet and other digital technologies to enhance the efficiency, effectiveness, and openness of government while also enhancing public involvement and participation.

Examples of e-government services include online tax filing, applying for government permits and licenses, accessing public records, paying fines and fees, and participating in online forums and discussions with government officials. E-government initiatives can also include digital transformation of government operations, such as digitizing records, automating processes, and implementing data analytics and artificial intelligence to improve decision-making. E-government has the potential to increase the accessibility, convenience, and speed with which government services and communications are delivered, while also encouraging openness and accountability in government processes.

E-government may help governments save administrative expenses by decreasing paperwork and manual operations. This has the potential to make government processes more efficient and effective. E-government can improve citizen engagement and participation in government by making it easier for people to access information and communicate with their representatives. This can help to build trust and accountability between citizens and government. E-government can improve service delivery by providing citizens with faster and more convenient access to government services, such as online applications and payments. This can lead to better customer service and increased satisfaction.

By giving people easier access to data regarding government processes, e-government may aid in combating corruption and increasing public trust in government. By bringing government services online, e-government programmes may also aid in closing the digital divide for those who otherwise would not have easy access to them.

Overall, e-government has the potential to transform the way that governments interact with citizens and businesses, leading to more efficient, transparent, and accountable government operations. E-government can lead to more efficient and effective government operations, improve citizen engagement and participation, enhance service delivery and reduce corruption. It can also bridge the digital divide, improve the quality of services, facilitate collaboration between government agencies, promote innovation, public-private partnerships, and improve emergency response. Providing individuals with access to information and fostering openness and accountability in government processes, e-government may bolster democracies.

1.1 Objectives

The primary objective of the study is to compare the E Governance facilities of Bangladesh with Denmark and United Kingdom (UK). The following are the objectives of this thesis.

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1.2 Methodology

A study of the relevant literature, research articles, and online resources pertaining to E-Governance facilities is necessary in order to accomplish the objectives. Information related to E-Governance facilities like, e services, e security, e information, e commerce and e taxation.

The approach of case study was selected for the purpose of comprehending the E Governance capabilities in Bangladesh, Denmark, and the United Kingdom. In order to obtain the data, websites that were relevant to E Governance facilities in Bangladesh, Denmark, and the United Kingdom were taken into consideration. To acquire the data, many apps having to do with eGovernment were used in Bangladesh, Denmark, and the United Kingdom. These applications were also subjected to analysis.

After examining the e-governance infrastructure of each nation, a comparison of the e-governance infrastructure of all three nations was carried out. The degree of facilities available for e-government in Bangladesh was evaluated based on the comparison. This comparison lays forth a plan for improving the E-Governance facilities in Bangladesh and gives a road map for doing so.

2. Literature review

E-governance goes beyond government websites. E-governance aims to simplify governance for government, individuals, and companies. Hence, e-governance promotes good governance. Hence, good governance and e-government share goals. Good governance entails employing economic, political, and administrative authority to enhance the overall administration of a nation. Individuals in wealthy countries may imagine a future in which all government contacts may be completed at a single counter 24 hours a day, seven days a week, with no lines. Yet, developing countries will struggle to achieve this level of efficiency and flexibility (Basu,S. 2004).

E-government is a networked system that allows individuals to communicate with the government while also gaining access to expanded government services via electronic apps. E-governance was created with the use of information and communications technology (ICT), and digitization prospects throughout the globe are experiencing revolutionary change (Khan, M., Khurram, DS and Zubair, DSS. 2020.)

There is a once-in-a-lifetime chance for governments to make better use of electronic identification information and expand their capacity for distributing social and economic advantages through e-governance. Eighty percent of the republics surveyed made authenticating the e-government e-services used by their most vulnerable people a priority in 2018. This is a significant rise from the thirty percent who took this step in 2012. Having government buildings on wheels that can provide essential social services like distant learning and healthcare might greatly improve people's day-to-day lives. These services are very vital to rural communities since citizens there often face more challenging conditions than those in urban areas (Sarker, M. N. I., Hossin, M. A., Frimpong, A. N. K., and Xiaohua, Y. 2 018.).

Implementing e-government may enhance government services to stakeholders. Yet, several obstacles prevent its execution. The high incidence of failure in deploying e-government in developing nations motivates more study in this area. Six obstacles prevent the widespread use of e-government in developing countries. They include things like information technology (IT) infrastructure, managerial concerns, digital culture, financial

resources, government restrictions, and available personnel. There are a number of challenges that must be overcome before e-government can be properly implemented (Meiyanti, R., Utomo, B. S. B., Sensuse, D. I., & Wahyuni, R. 2018)

E-government may improve governance, transparency, and service delivery, but infrastructure, resources, and digital literacy are obstacles. E-government requires a solid legal and regulatory framework, institutional competence and leadership, stakeholder engagement, and public and community involvement in digital service design and execution. During lockdowns and societal estrangement, numerous nations have used e-government to sustain crucial services. There are different models, including centralized and decentralized systems, and the choice of model should depend on the specific needs and context of the country or region (Asian Development Bank Institute, 2016).

Barriers to access and usage of digital technologies, such as a lack of infrastructure, low levels of digital literacy, and high costs, must be addressed in order to close the digital divide. To guarantee that all individuals have access to and are able to make use of digital technology, governments should prioritise expenditures in digital infrastructure and education. Supporting the execution of the Sustainable Development Goals is another way in which e-governance projects may aid in the promotion of sustainable development (SDGs) (United Nations, 2020).

Mensah et al. (2022) explores how Chinese citizens see e-public government's value. Information quality, service delivery parameters, user orientation, efficiency, openness, and responsiveness substantially affect public value. Public value also influences behaviour. The research found that a well-designed and implemented e-government system may improve government administration and interaction potential in terms of quality information, transparency and accountability, openness, responsiveness, organisational efficiency, and user orientation. In e-government literature, it shows public value drivers.

Denmark leads public sector digital transformation globally. A strong mandate for coordination, cross-governmental approach, consultative and consensus culture, and required IT-project and business case model are unusual aspects found in the research. Strategy cycles include ex ante, ex-post, and vulnerability identification. Local government in transparency and informal communication with the commercial sector and academics are potential limitations. The IT-project approach might improve change management and creativity (Nielsen,M. 2019).

Denmark leads the 193 UN Member States in digital governance in 2020, followed by Korea and Estonia. From 1968's CPR number, Denmark has led e-government innovation. The commercial and governmental sectors and Danes are largely trusted. The Agency for Digitisation has three strategic goals: implement public digital services that are simple to use and high-quality, continue to construct digital services that offer a stable foundation for development, and put trust and security at the centre of creating new digital solutions. Cyclical review strengthens the governance model with each e-Government plan [Sear, M. J. (n.d.)]

Due to considerable public sector engagement, Denmark is the most digitalized nation. Public sector cost and demographic issues have encouraged digitalization. Over 20 years, Denmark has developed a four-stage digitalization approach. Digital self-service apps have been widely used and improved efficiency. Centralized digital infrastructure lets organisations and municipalities reuse shared services cost-effectively. 70% of the population uses digital public services, including 60% of the uneducated (Lars Thuesen 2019, February 26)

The Danish public sector is highly decentralized, divided into three levels: state, regions, and municipalities. Denmark has implemented a number of digital policies and laws since 2002, building on previous initiatives. Broadband coverage has been a key aspect of Denmark's digitalization plan, and the funding scheme involves all authorities and government levels being responsible for their own digitization, with state government providing seed money and other parties investing additional resources (Scupola,A. 2018).

Finland is a global leader in e-government, with a highly developed and advanced system that has been implemented across all levels of government. It is based on the principles of openness, transparency, and citizen participation, and provides a wide range of services to citizens and businesses. Key features of the e-government system include strong government support, comprehensive services, high levels of citizen participation, advanced ICT infrastructure, and high levels of internet penetration and access to broadband. The government also actively solicits feedback from citizens on the system's development and implementation (Abubakr, M., & Kaya, T. 2021)

South Korea leads the area in e-government innovation and involvement. From the 1980s, it has developed six phases of e-Government, including intelligent digital governance. South Korea's success depends on good infrastructure, continual investment, a solid implementation framework, and outside technical assistance. The e-Participation Index (EPI) and the 2019 OECD Digital Government Index put it top in e-Government [Sear, M. J. (n.d.-c)].

South Korea's prosperity is due to strong leadership, legislation, and bureaucracy that encourage infrastructure development. Indonesia should follow South Korea's e-Government practises. Continuity with one policy or programme makes a major difference, but changing policies or programmes every time a leader change does not. Indonesia needs a unified e-Government master plan for long-term and short-term governance, politics, culture, management, economics, anthropology, philosophy, religion, agriculture, industry, commerce, defence, and security (Salsabila, L., & Purnomo, E. P. 2018).

South Korea has been one of the top five e-government nations for 20 years. An effective state, a good policy process, and organisations with a track record of policy achievements are complimentary drivers, according to political economics study. Asian Financial Crisis and democratisation also contributed. E-government development is part of the government's aim of Korea as a worldwide ICT leader. Korea may teach other nations about e-government technology and aspects, but Korea's contextual circumstances and drives make its model distinctive (Seed, P. T., Kim, J., & Kwon, S. 2022)

SDGs 16 and 16.9 aim to help 1.1 billion people without identification by 2030. The fast use of cell phones in emerging countries is helping to bridge the connectivity gap by improving mobile connection quality and speed. Digital divides are the differences between populations and areas that have access to contemporary ICT and those who don't. By prohibiting off-line access for services that may use online techniques, governments may unwittingly create new technological divisions. Several nations are establishing "digital by default" facilities, which mostly use internet services and offer minimal off-line facilities, to improve quality and availability. Denmark has a "digital first" approach, whereas the UK uses a work tracking instrument panel for facility managers to measure facility utilisation on electronic and non-electronic networks (Andersen, K.N., J.A. Nielsen, and S. Kim. 2019)

Social inclusion and emergency response need digital literacy. The Silver Infocomm Initiative (SII) in Singapore attempts to bridge the digital divide for seniors over 50. It has

encouraged IT awareness and literacy among seniors to prepare them for a digital society, and public sector personnel need e-government perks to improve their digital abilities (Ali, M.A., M.R. Hoque, and K. Alam. 2018.)

Internet payment methods are faster, more convenient, and cheaper. PayPal has 137 million accounts and 8 million daily transactions. PayPal's global payment solutions allowed isolated PayPal customers to make payments during the COVID-19 shutdown. WeChat and AliPay are used in China, whereas PayPal and local banks are used elsewhere (Ma,Y 2019).

Denmark's e-government initiatives have been characterized by a focus on citizen-centricity, simplification and personalization, a centralized governance structure, and the use of open standards and open-source software. They have also been successful in leveraging the potential of mobile technology to provide citizens with access to e-government services anytime, anywhere (Hulse, 2011).

Denmark's e-government initiatives are driven by a strong political commitment to open and transparent government and a focus on improving efficiency, effectiveness, and accessibility. They are built around the principles of "one-stop shopping" and citizen-centricity, with shared services and a centralized governance model. Denmark has also been successful in leveraging mobile technology and social media to improve citizen engagement and participation in government. These initiatives have led to significant improvements in efficiency and cost savings, as well as increased citizen satisfaction and participation (Jensen & Larsen, 2014).

Denmark's e-government initiatives are characterized by a high level of digital maturity, driven by a strong political commitment to digitalization and a focus on citizen-centricity. They are focused on improving the quality and efficiency of government services, while also reducing costs and increasing citizen participation. They have been successful in promoting collaboration and information sharing among government agencies, as well as between government and private sector partners. Data analytics and machine learning technologies are emerging as a key area of focus, with the potential to drive further efficiencies and improvements in service delivery. Denmark is a model for other countries, with a well-established and mature digital ecosystem that prioritizes citizen needs and collaboration (Andersen, T. H., Janssen, M., Lember, V., Tan, Y. H., & Zuiderwijk, A. 2019).

Denmark's e-government initiatives are characterized by a strong focus on efficiency and effectiveness, as well as a commitment to democratic principles and public administration values. They promote government-private-citizen cooperation. Online consultations, social media, and other digital platforms have improved government services, reduced expenses, and increased public involvement and participation. Challenges facing Denmark include issues related to data security, privacy, and citizen trust. Overall, they represent a successful balance between efficiency and democracy, and offer important lessons for other countries looking to develop their own e-government strategies (Nielsen, 2015).

Denmark's e-government programmes are shifting from online service delivery to digital co-creation that stresses citizen and stakeholder involvement and co-design. User-centered design, innovation culture, and privacy and trust challenges are included. The study concludes that the e-government transition reflects a major move towards more collaborative and citizen-centered public service delivery and provides vital lessons for other nations wanting to establish comparable models (Fuglsang & Fink, 2018).

Denmark is a leader in e-government, with a high level of adoption and use of digital government services by citizens. However, there are significant variations in attitudes towards e-government among different demographic groups, with younger citizens and those with higher levels of education and income generally being more positive. Privacy and security concerns are a key barrier to adoption of e-government services, with many citizens expressing concerns about the security of their personal data and the potential for misuse. Trust is also a key factor in determining citizen attitudes, and governments need to take steps to build trust with citizens through transparent and accountable practices. This article highlights the importance of understanding citizen attitudes and addressing issues related to privacy, security, and trust in order to increase adoption and use (Hansen & Jensen, 2019).

Denmark has been a pioneer in using co-creation as a tool for public sector innovation, with a focus on involving citizens and businesses in the design and delivery of digital government services. This has enabled the Danish government to develop digital services that are more responsive to citizen needs and preferences, as well as more efficient and effective. However, there are also challenges associated with co-creation, such as ensuring that all stakeholders are adequately represented and have an equal voice in the process, and the need for clear guidelines and governance structures to ensure that co-creation is effective and equitable. This article highlights the importance of co-creation and the need to embrace new models of collaboration and partnership in order to meet the evolving needs of citizens and businesses (Kristensen & Fuglsang, 2020).

Digitalisation is seen as an important driver of local government reform in Denmark, with the potential to support efficiency and democratic values. The Danish model emphasizes user-centered design, collaboration across agencies, and open data. However, there are concerns about the potential negative effects on jobs and the need to ensure that citizens without digital skills are not left behind. A critical perspective is needed to ensure that digitalisation is used in ways that align with democratic values and do not exacerbate existing inequalities (Triantafillou & Kjaer, 2020).

The concept of digital governance is becoming more important than e-government in Danish municipalities. There is a need for a strategic approach to digital transformation that aligns with the overall vision of the municipality. User-centric design is important in the development of digital services, collaboration between different departments is key, and leadership is important in driving digital transformation efforts. Digital transformation can lead to improved efficiency, increased citizen engagement, and better services for citizens. This article highlights the importance of digital transformation in the context of local government in Denmark and provides insights into how municipalities can approach this process (Andersen & Toubol, 2021).

Denmark has a long history of e-government and public involvement. Danish public sector innovation efforts include digital portals and co-creation platforms. This essay emphasises the necessity of citizen co-creation of public services but acknowledges that execution is difficult. The paper notes that these programmes need continual investment, review, and improvement (Kristensen, 2012).

The Trading Standards Department in the UK faced several challenges in implementing e-government, such as resistance to change, lack of technical expertise, and the need for additional resources. The study identified several critical success factors for e-government implementation, such as strong leadership, effective communication, training and development of staff, and stakeholder involvement. The authors suggest that the

implementation of e-government in the Trading Standards Department could be improved through the development of a comprehensive e-government strategy, a clear understanding of user requirements, and the integration of it with other organizational systems (Nawaz, M. S., Akram, M. U., & Ahmad, Z. 2016).

Open data use is limited by lack of awareness and knowledge, legal restrictions, technical difficulties, political and cultural factors, and user feedback. Collaboration and partnerships are essential for overcoming these barriers and realizing the full potential of open data for the public good. Open data can contribute to social and economic benefits, such as increased transparency and accountability, improved service delivery, and the development of new products and services. Communication and engagement with users, stakeholders, and the public are essential for successful implementation and use of open data initiatives (Mellon, J., Peixoto, T., Sjoberg, F., & Lehmann, S. 2017).

The UK has made significant progress in e-government, but there are still challenges to overcome, such as citizen trust and the digital divide. Successful initiatives such as the Government Digital Service and the Digital by Default Standard have resulted in improved efficiency and cost savings, but there is still room for improvement in user experience and accessibility. The UK's open data policy has been successful in promoting transparency and innovation, but challenges remain in ensuring data quality and privacy protection. Collaboration between government agencies, private sector, and civil society is essential for the success of e-government initiatives (Terán & Rodríguez, 2016).

The Digital by Default Service Standard has led to a cultural shift in the UK government's approach to service delivery, facilitating collaboration and knowledge-sharing between government departments and other stakeholders. It has also helped to establish a common language and understanding of digital service design but has limitations such as a lack of enforcement mechanisms and a need for ongoing evolution to keep pace with technology and user needs (Mutel & Dinculescu, 2019).

Throughout the last two decades, the UK government has led e-government development with a user-centered strategy and several projects. Government Portal and Directgov provide information and services to individuals. The UK government has built governance structures and frameworks to manage and execute e-government programmes despite data privacy, security, and interoperability issues. AI and blockchain can enhance government services (Li & Janowski, 2017).

E-government promotes social, economic, and environmental objectives, supporting sustainable development. This requires government, public, and stakeholder participation. Citizens need digital literacy to use e-government services and vote. E-government programmes should be accessible and inclusive for all individuals, regardless of socioeconomic class, geography, or ability (Alzahrani, A., Smith, S., & Chen, C. 2021).

Perceived ease of use, usefulness, and trust significantly influence citizen adoption of e-government services in the UK. Social influence also plays a significant role, while age, gender, education, and income have no significant effect. The study recommends that e-government service providers should focus on improving their services to encourage citizen adoption (AbuAli & Dwivedi, 2017).

Bangladesh has made progress in implementing e-government policies, but there are still challenges to be addressed. The lack of awareness and skills among the general public is a major barrier, as is the lack of coordination between different government agencies and departments. To address these issues, the study suggests that a comprehensive e-

government strategy should be developed that involves all stakeholders and that the government should focus on capacity building initiatives to enhance the skills and knowledge of civil servants and improve the availability and accessibility of e-government services to citizens, especially in rural areas (Islam & Kabir, 2018).

Bangladesh has made significant progress in the implementation of e-government initiatives in the last decade, such as the development of a national e-governance architecture and the establishment of an e-government academy. However, there are still significant challenges in the implementation, such as lack of coordination between government agencies, limited resources, and a lack of skilled personnel. To ensure success, the government must develop a robust and reliable ICT infrastructure and provide basic services to citizens. E-government initiatives have the potential to improve government efficiency, reduce corruption, and increase citizen participation in governance (Chowdhury, Bhuiyan, & Gope, 2019).

The National Data Centre and other e-services have advanced Bangladesh's e-Government aspirations. These endeavours are hampered by a shortage of trained labour, IT infrastructure, and funds. The authors suggest developing human resources and building ICT infrastructure to overcome these obstacles. To succeed, the Bangladeshi government must work with business sector and civil society organisations (Hoque, Kibria, & Abdullah, 2018).

Bangladesh's Digital Bangladesh strategy and efforts have advanced ICT use for sustainable development. The National ICT Policy, a2i, and Bangladesh National Digital Architecture are examples (BNDA). a2i has implemented digital services including e-health, e-education, and e-commerce, boosting government services and public involvement. Nonetheless, digital inequality, digital literacy, and digital infrastructure issues persist (Sakib, M. N., Rahman, S. F., & Kabir, S. M. A. 2019).

Bangladesh has made progress in the development of e-governance initiatives, including the establishment of a dedicated government agency for ICT development. However, the success of these initiatives has been hindered by challenges such as inadequate infrastructure, low levels of computer literacy among the population, and resistance from government officials. To address these challenges, the authors recommend a comprehensive approach that includes addressing infrastructure and capacity-building needs, establishing policies and regulations, and engaging stakeholders in the development process. Potential benefits include increased transparency, efficiency, and accessibility of government services, improved citizen participation and engagement in the democratic process, and partnerships between the government, private sector, and civil society organizations (Kabir, M. A., Islam, M. N., & Ali, M. 2020).

Digital Bangladesh has made progress in ICT infrastructure development, education, and public service delivery, but the initiative faces several challenges, such as inadequate funding, lack of coordination, and poor governance. The government needs to take a more holistic approach to the initiative to make it a reality (Islam & Akter, 2015).

E-governance in Bangladesh has improved, but infrastructure, internet connectivity, computer skills, and financial constraints remain. To address these issues, the government needs to take a more strategic approach, such as creating a policy framework, developing a national ICT infrastructure, increasing internet penetration, and promoting computer literacy among the population. This article emphasizes the importance of political will, strong leadership, and effective governance in achieving successful e-Governance in Bangladesh (Alam, 2012).

E-governance in Bangladesh is hindered by a lack of infrastructure, low ICT literacy, limited funding, poor interagency collaboration, and resistance to change. To succeed, successful e-governance implementation requires effective leadership, reliable ICT infrastructure, skilled workforce, data security, and legal frameworks (Islam & Rahman, 2014).

The implementation of an ICT-based grievance redressal system in Bangladesh has improved the efficiency and effectiveness of the system, reduced corruption and nepotism, and increased transparency and accountability. However, the system faces several challenges, such as inadequate infrastructure and connectivity, low level of ICT literacy among the general public, lack of trust in the system, and bureaucratic resistance to change. To address these challenges, the article recommends developing an integrated e-governance strategy, increasing public awareness and participation, strengthening the legal and regulatory framework, and enhancing the capacity of government agencies. The article concludes that further efforts are needed to ensure its sustainability and effectiveness (Morshed, M. G., & Islam, M. 2014).

Bangladesh has established a national data centre, a government web site, and other online government services. Nevertheless, issues including government agency cooperation, ICT infrastructure, and user knowledge and involvement must be addressed. E-government in Bangladesh may increase efficiency, transparency, public access to information, and IT employment. A national e-government plan, better coordination, and open data and information standards are recommended to improve e-government. To guarantee equitable access, user-centric design and the digital divide should be addressed (Rahman & Rabbani, 2015).

3. E-government facilities

E-government, or "digital government," uses ICT to give government services and information to individuals, corporations, and other government bodies. Common e-government services include:

Online portals: Many governments have websites where people can go to find information, services, and forms. These portals can be used to pay taxes, apply for permits and licences, register to vote, and access public records.

Mobile apps: Many governments have made mobile apps that make it easier for people to use their phones or tablets to access government services and information. For example, people can use mobile apps to pay parking tickets, report potholes and other problems, and get alerts about emergencies.

Electronic voting: Electronic voting is a method of voting that uses electronic systems to cast and count votes. This can make it easier and faster for citizens to vote, and it can also help cut down on mistakes and fraud.

Digital signatures are a way to make sure that electronic documents, like contracts or legal documents, are real. Digital signatures can be used by governments to make it easier for people to sign and send documents online.

Online chatbots: Some governments use chatbots to provide assistance to citizens who need help navigating government services or finding information. Chatbots can be available around the clock and can help government workers do less work.

Online payment systems: People can pay for government services and fees online by using online payment systems. This can make things like parking tickets, business licences, and property taxes easier and more convenient for people to pay.

Social media: Governments can use social media platforms like Twitter, Facebook, and Instagram to communicate with citizens and provide updates on government services and initiatives.

Open data portals: Through open data portals, governments can make public data available to people. This information can be about budgets, crime rates, health care outcomes, and more. This can make it possible for people to look at and use government data in new and creative ways.

Electronic health records: Electronic health records can be used by governments to store and share patient information between healthcare providers in a safe way. This can help improve care for patients and cut down on mistakes made by doctors.

Digital identity systems: Governments can use digital identity systems to make it easy and safe for people to use government services and prove who they are online.

Geographic information systems (GIS): Governments can use GIS to map and analyse data about things like land use, natural resources, and infrastructure that have to do with geography. This can help the government make better policy decisions and run more smoothly.

Online education and training: Governments can offer their citizens online education and training programmes on a wide range of topics, such as public health, job skills, and financial literacy. This can help to encourage learning for life and get people ready to work.

Online dispute resolution: Governments can use online dispute resolution systems to help people settle disagreements without having to go to court or have a hearing in person. This can help bring down costs and make it easier for people to get justice.

Telehealth services: Governments can use telehealth services to help people in rural or underserved areas get health care from afar. This can make it easier for people to get care and cut down on the cost of care.

Electronic permits and licences: Governments can give their citizens electronic permits and licences that can be requested and given out online. This can cut down on the need to go to government offices in person and speed up the process of getting permits and licences.

Electronic record keeping: Electronic record keeping systems can be used by the government to store and manage documents and records. This can help make sure that government information is correct and easy to find.

Electronic court systems: Governments can use electronic court systems to manage court proceedings, such as filing and processing court documents and holding remote hearings. This can help to make the court system work better and save money.

Online dispute resolution: Governments can use online dispute resolution systems to help people settle disagreements without having to go to court or have a hearing in person. This can help bring down costs and make it easier for people to get justice.

Cybersecurity measures: Governments can use cybersecurity measures to keep cyber threats from harming government information and services. This can help make sure that personal and sensitive information about citizens is safe and kept private.

Electronic procurement: Goods and services can be bought by the government with the help of electronic procurement systems. This can help make the procurement process run more smoothly and save money.

E-participation platforms: E-participation platforms are a way for citizens to have a say in how their government makes decisions. This can be done through public meetings, surveys, and forums where people can give feedback and ideas.

Digital asset management: Photos, videos, and other multimedia content can be managed and shared by the government using digital asset management systems. This can make it easier for people to find and use information and services from the government.

Smart city services: Governments can improve services like transportation, waste management, and energy use by using smart city technologies. For example, sensors can be used to improve traffic flow and reduce traffic jams, or to keep an eye on trash cans and figure out the best way to collect trash.

Digital document signing: Governments can use digital document signing to let people sign and send documents online, so they don't have to sign them in person. This can help make government services more helpful and easy to use.

Blockchain technology: Blockchain technology can be used by the government to make transactions and records more secure and open. For example, blockchain can be used to make voting systems that are secure and easy to understand, or it can be used to track the history of government assets like land or artwork.

AI and machine learning: Governments can use AI and machine learning to look at a lot of data and make predictions or suggestions based on what they find. AI can be used to find possible fraud in government programmes, predict traffic patterns, and improve transportation services, among other things.

Virtual reality (VR) and augmented reality (AR): Governments can use VR and AR to give citizens immersive and interactive experiences, like virtual tours of government buildings or AR-powered guides to historical sites.

Cloud computing: Cloud computing lets governments store and manage government data and apps, which can then be accessed from anywhere with an internet connection. This can help make government services more flexible and able to grow.

Digital asset tracking: Governments can use digital asset tracking systems to keep track of where government vehicles or equipment are and how they are being used. This can help the government work more efficiently and save money.

Social listening and sentiment analysis: Tools for social listening and sentiment analysis can be used by governments to keep an eye on what people are saying and thinking on social media. This can help the government find possible problems or concerns and make better policy and decisions.

3.1 E-government facilities in Europe countries

Estonia: As we've already said, Estonia is known as a leader in e-government and has set up a wide range of e-government services, such as online voting, filing taxes online, and digital signatures. The citizens' ID cards have a secure chip that is linked to the country's digital identity system. This lets them use online government services.

Denmark: Denmark has set up a number of e-government services, such as borger.dk, which is a centralised government portal that lets people use a number of government services online. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Norway: Norway has set up a number of e-government services, such as Altinn, which is a centralised government portal that lets people and businesses use a number of government services online. The country has also put in place an electronic voting system and a digital health record system.

United Kingdom: The UK government has set up a number of e-government services, such as a central government website called GOV.UK that gives people access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Finland: Finland has set up several e-government services, such as Suomi.fi, which is a centralised government portal that lets people use a number of government services online. The country has also set up several digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Germany: Germany has set up a few e-government services, such as service-bw, a centralised government portal that lets people access a number of government services online. The country has also set up several digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Italy: Italy has a few e-government services, including a centralised government portal called Italia.it that gives access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Sweden: Sweden has a number of e-government services, such as a centralised government portal called 1177.se that lets people use the internet to access a number of government services related to health. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Austria: Austria has set up several e-government services, such as HELP.gv.at, which is a centralised government portal that gives access to a wide range of government services and information. The country has also set up several digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Belgium: Belgium has put in place several e-government services, such as eGov, which is a centralised government portal that lets people use a number of government services online. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Switzerland: Switzerland has set up a number of e-government services, such as a centralised government portal called ch.ch that gives access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

France: France has set up a number of e-government services, such as a central government website called service-public.fr that lets people use the internet to access a number of government services. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

3.2 E-government facilities in Asian countries

Singapore: Singapore is a leader in e-government and has put in place a number of digital services, such as SingPass, a centralised government portal that lets people use a number of government services online. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

South Korea: South Korea has set up a number of e-government services, such as e-Government, a centralised government portal that lets people access a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Japan: Japan has set up a number of e-government services, such as e-Gov, which is a centralised government portal that lets people use a number of government services online. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Taiwan: Taiwan has set up a number of e-government services, such as a centralised government portal called iGov that gives access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

India: India has put in place several e-government services, such as e-Gov, which is a centralised government portal that gives access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Malaysia: Malaysia has set up several e-government services, such as a centralised government portal called MyGov that gives access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

China: China has set up several e-government services, such as gov.cn, which is a centralised government portal that lets people use a number of government services online. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

United Arab Emirates: The United Arab Emirates has set up a number of e-government services, such as a centralised government portal called mGovernment that gives people access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Indonesia: Indonesia has put in place a number of e-government services, such as e-Government, a centralised government portal that gives access to a wide range of government services and information. The country has also set up a number of digital

services for businesses, such as making it possible to register a business online and file tax returns electronically.

Philippines: The Philippines has put in place a number of e-government services, such as e-Government, a centralised government portal that lets people access a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Thailand: Thailand has put in place a number of e-government services, such as the e-Government portal, which gives people access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Vietnam: Vietnam has put in place a number of e-government services, such as e-Government, a centralised government portal that gives access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

3.3 E-government facilities in African countries

Rwanda: Rwanda is seen as a leader in e-government in Africa. It has put in place a number of digital services, such as Irembo, a centralised government portal that lets people use a number of government services online. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Kenya: Kenya has set up a number of e-government services, such as eCitizen, which is a centralised government portal that gives people access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Egypt: Egypt has set up a number of e-government services, such as e-Government, which is a centralised government portal that lets people access a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

South Africa: South Africa has put in place a number of e-government services, such as e-Government, a centralised government portal that lets people access a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Ghana: Ghana has set up a number of e-government services, such as the e-Government portal, which gives people access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Nigeria: Nigeria has put in place a number of e-government services, such as e-Government, a centralised government portal that gives access to a wide range of government services and information. The country has also set up a number of digital

services for businesses, such as making it possible to register a business online and file tax returns electronically.

Tunisia: Tunisia has implemented a range of e-government services, including a centralised government portal called the Tunisian Government Portal, which provides access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Morocco: Morocco has put in place a number of e-government services, such as the Moroccan e-Government Portal, which gives people access to a wide range of government information and services. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

Uganda: Uganda has set up a number of e-government services, such as the e-Citizen Portal, which is a centralised government portal that gives access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Tanzania: Tanzania has set up a number of e-government services, such as the Tanzania e-Government Portal, which gives people access to a wide range of government information and services. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and file tax returns electronically.

Ivory Coast: The government of Ivory Coast has set up a number of e-government services, such as the Ivory Coast Government Portal, which gives people access to a wide range of government services and information. The country has also set up a number of digital services for businesses, such as making it possible to register a business online and send invoices electronically.

3.4 E-government facilities in American countries

United States: The United States has a strong e-government infrastructure, and citizens can use a number of online portals and services. There are websites for government services like Social Security, Medicare, and filing taxes. The government also has online resources for businesses, such as the ability to apply for permits and licences, file tax forms, and get market research data.

Canada: Canada has also put money into e-government services, with the goal of giving people online tools and resources. Online services are available from the government for getting health care, filing taxes, and managing government benefits. The Canada Revenue Agency also has a secure online portal for filing taxes and managing your tax information.

Mexico: In Mexico, the government has started a number of e-government projects to make government services more open and easier to find. This includes an online platform where people can weigh in on government decisions and online services for registering a business and filing taxes.

Brazil: Brazil has put a lot of money into e-government infrastructure, with the goal of making it easier for people who live in remote or rural areas to use government services. The government has made a number of online portals and services available to citizens. These include an online platform for accessing public services and a mobile app for keeping track of government projects and investments.

Argentina: Argentina has also put money into e-government infrastructure, with the goal of making the government more open and getting more people involved. The government offers a number of online services, such as a way to access government services and a way to keep track of how much money the government spends and how much money it has.

Chile: Chile has put a lot of money into e-government infrastructure, with the goal of making it easier to use government services and more open. The government has a number of online services, such as a platform for accessing public services, a portal for filing and managing taxes, and a website for keeping track of how much the government spends and how much money it has.

Colombia: Colombia has put in place a number of e-government programmes to make it easier for people to use government services and to make the government more open. The government has online tax filing, business registration, and health care management services, as well as a way for people to have a say in how the government makes decisions.

Peru: Peru has put money into e-government infrastructure to make government services more efficient and easy to use. The government has online services for filing taxes, setting up a business, and managing health care, as well as an online platform for getting information and resources from the government.

Ecuador: Ecuador has put in place a number of e-government programmes to make it easier for people to use government services and to make the government more open. The government has online tax filing, business registration, and health care management services, as well as a way for people to have a say in how the government makes decisions.

Uruguay: Uruguay has put a lot of money into e-government infrastructure, with the goal of giving people better access to government services and making the government more open. The government has online services for filing taxes, setting up a business, and managing health care, as well as an online platform for getting information and resources from the government.

Table 1: E-Government-Best Practices across the world

Country	Best Practices
Singapore	Centralized portal for government services, mobile apps for accessing government services, digital ID system
South Korea	Online portal for accessing government services, mobile app for tracking government services and submitting complaints, digital signature system
Estonia	Digital ID system for citizens, online voting system, national data exchange platform
Denmark	Online portal for government services, digital signature system, national citizen registry
Norway	Online portal for government services, digital ID system, digital mail system
Sweden	Online portal for government services, digital ID system, e-invoicing system
United Kingdom	Online portal for government services, digital ID system, digital tax filing system

United States	Online portals for accessing government services, such as Social Security and Medicare, online resources for businesses, such as tax filing and market research data
Canada	Online services for accessing healthcare, filing taxes, and managing government benefits, secure online portal for tax filing and management
Australia	Online portal for government services, digital ID system, online tax filing system
New Zealand	Online portal for government services, digital ID system, national data exchange platform
United Arab Emirates	Smart government initiative, which aims to provide all government services through digital channels
Rwanda	National ID system for citizens, online portal for government services, mobile money system for paying government fees
India	Digital India initiative, which aims to provide all government services through digital channels, national digital ID system for citizens
China	National e-government platform, which allows citizens to access government services and information online
Japan	My Number system, which provides a national ID number for citizens to use when accessing government services and information online
Finland	National data exchange platform, online portal for government services, digital ID system
Germany	Online portal for government services, digital ID system, digital signature system
Netherlands	Online portal for government services, digital ID system, national citizen registry

Source: All information from those countries' apps and websites, all pictures and references are given below.

3.5 E-Government - Best apps across the world

Singapore: SingPass Mobile - This app allows Singapore citizens to access government services using their mobile devices. It offers features such as facial recognition, fingerprint scanning, and mobile notifications for secure and convenient access to government services.
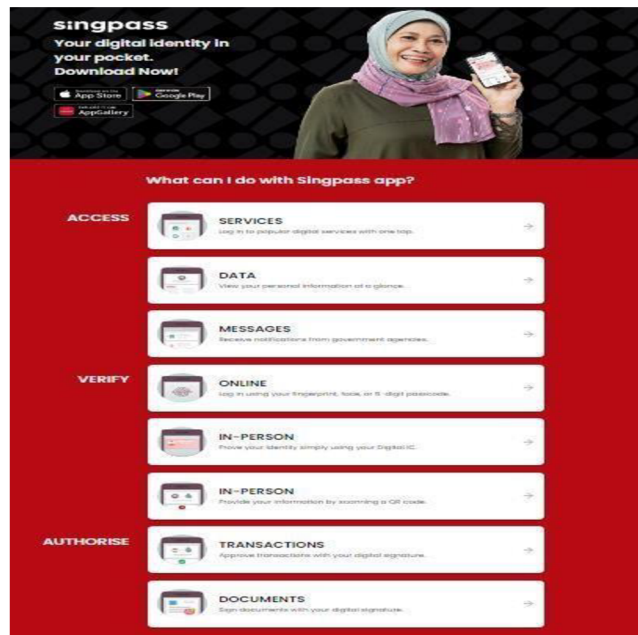
Figure 1. SingPass Mobile (https://app.singpass.gov.sg/)

South Korea: Smart Sheriff - This app was developed to protect children from cyberbullying and inappropriate online content. It allows parents to monitor their children's online activity and block harmful content.

Estonia: Mobile-ID - This app allows Estonian citizens to use their mobile devices as a digital ID, allowing them to securely access government services and sign documents electronically.

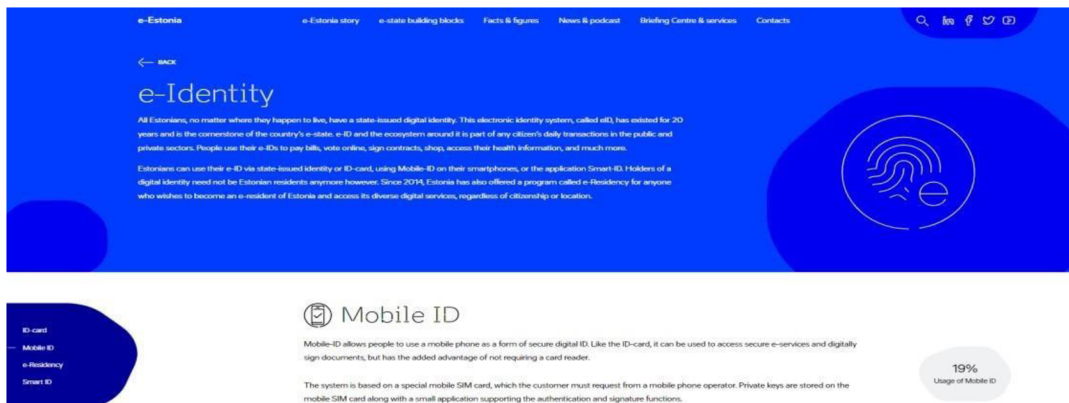Figure 2. Estonia: Mobile-ID(https://e-estonia.com/solutions/e-identity/mobile-id/)

United Kingdom: HMRC app - This app allows UK citizens to manage their taxes on the go. Users can file tax returns, check their tax credits, and track their tax refunds.

Figure 3. United Kingdom: HMRC app(https://www.gov.uk/guidance/download-the-hmrc-app#:~:text=The%20HMRC%20app%20is%20a,your%20income%20and%20benefits)

United States: Social Security Express - This app allows US citizens to access their Social Security accounts and manage their benefits, including checking their earnings history, estimating future benefits, and reporting changes.

Canada: MyCRA - This app allows Canadian citizens to manage their taxes on the go. Users can view their tax and benefit information, track their refund, and update their personal information.

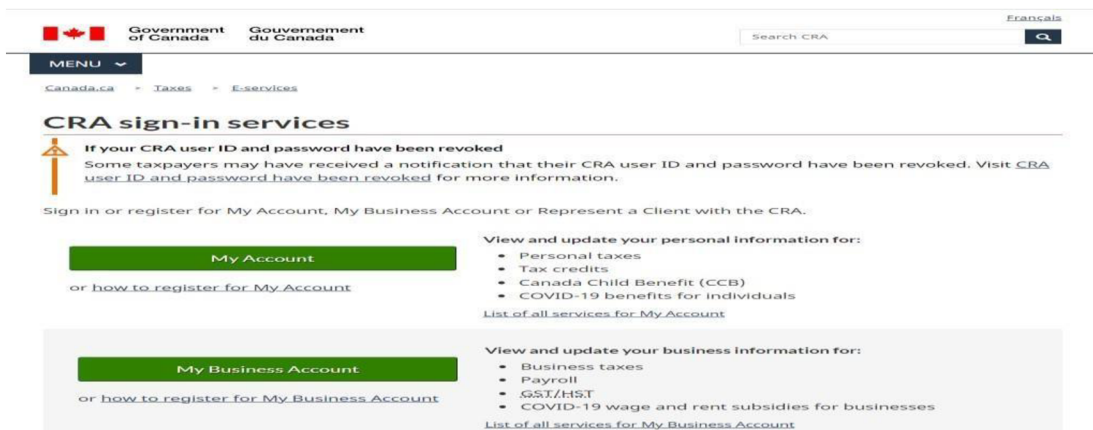Figure 4: Canada: MyCRA(https://www.canada.ca/en/revenue-agency/services/e-services/cra-mobile-apps.html)

Australia: myGov-This app allows Australian citizens to access a range of government services, including Medicare, Centrelink, and the Australian Taxation Office, using a single login
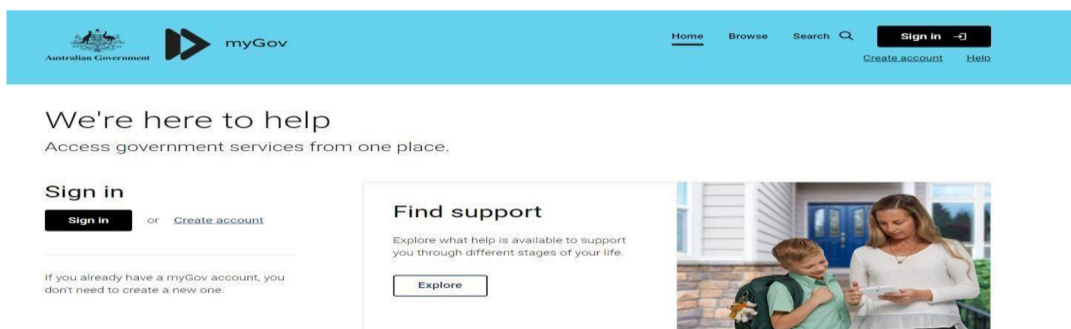
Figure 5:Australia: myGov(https://my.gov.au/en/about/help/mygov-app)

India: mAadhaar - This app allows Indian citizens to access their Aadhaar card, a national ID card, on their mobile devices. Users can also use the app to update their personal information and lock their biometric data.
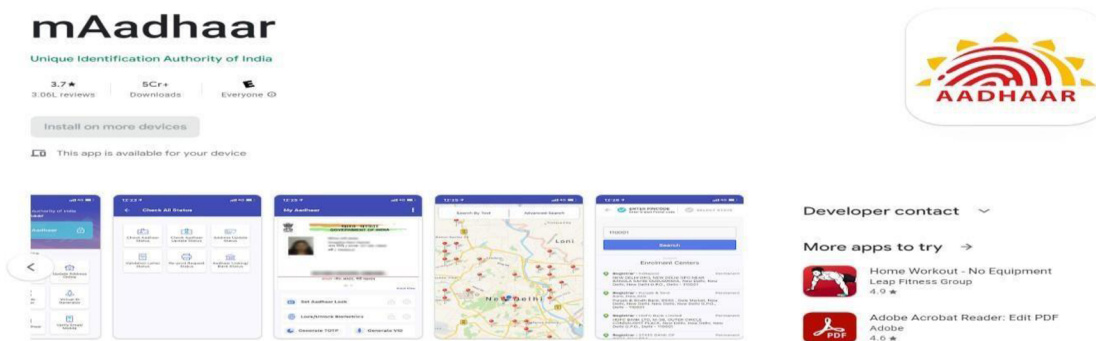
Figure 6:India: mAadhaar(https://play.google.com/store/apps/details?id=in.gov.uidai.mAadhaarPlus&hl=en_IN)

Germany: AusweisApp2 - This app allows German citizens to use their mobile devices as a digital ID, allowing them to securely access government services and sign documents electronically.
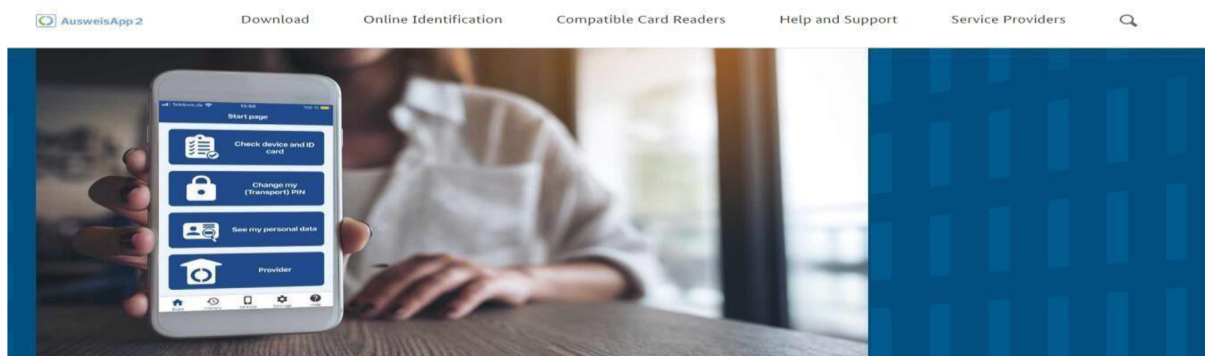
Figure 7: Germany: AusweisApp2(https://www.ausweisapp.bund.de/en/home)

Japan: My Number Card App - This app allows Japanese citizens to access government services using their My Number card, which is a national ID card. It offers features such as facial recognition and fingerprint scanning for secure and convenient access to government services.
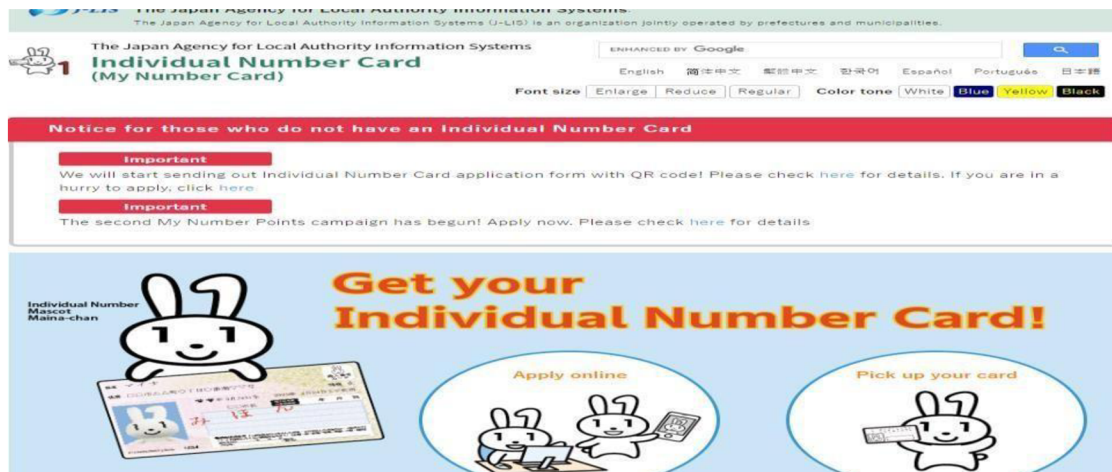
Figure 8: Japan: My Number Card App(https://www.kojinbango-card.go.jp/en-kofushinse-smartphone/)

Brazil: Meu INSS - This app allows Brazilian citizens to access information about their social security benefits and apply for benefits online. Users can also schedule appointments and check the status of their applications.

Figure 9: Brazil: Meu INSS(https://meu.inss.gov.br/#/login)

Mexico: Mi Conta - This app allows Mexican citizens to manage their taxes and access government services, including the National Institute of Statistics and Geography, using a single login.

Figure 10: Mexico: Mi Conta(https://play.google.com/store/apps/details?id=com.chownow.mimexico&hl=en&gl=US)

France: Impots.gouv - This app allows French citizens to manage their taxes on the go. Users can file tax returns, check their tax credits, and pay their taxes securely and conveniently.

Figure 11: France:
Impots.gouv(https://play.google.com/store/apps/details?id=fr.gouv.finances.smartphone.android&hl=fr)

Norway: DigiD - This app allows Norwegian citizens to use their mobile devices as a digital ID, allowing them to securely access government services and sign documents electronically.


Figure 12: Norway:
DigiD(https://play.google.com/store/apps/details?id=nl.rijksoverheid.digid.pub&hl=en&gl=US)

Sweden: BankID - This app allows Swedish citizens to use their mobile devices as a digital ID, allowing them to securely access government services and sign documents electronically.

Figure 13: Sweden: BankID(https://www.bankid.com/en/privat/skaffa-bankid)

Saudi Arabia: Absher - This app allows Saudi Arabian citizens to access a wide range of government services, including passport and visa services, traffic violations, and utility bills. Users can also use the app to manage their government documents and interact with government agencies.

Figure 14: Saudi Arabia : Absher(https://apps.apple.com/sa/app/absher-%D8%A3%D8%A8%D8%B4%D8%B1/id1004966456)

South Africa: GovChat - This app allows South African citizens to interact with government agencies and officials, report issues, and access information about government services. It also offers a chatbot feature for answering common questions.

Figure 15: South Africa:GovChat(https://www.govchat.org/)

Malaysia: MySejahtera - This app was developed to help manage the COVID-19 pandemic in Malaysia. It allows citizens to check in at public places, monitor their health status, and receive updates and notifications related to the pandemic.

Figure 16: Malaysia: MySejahtera(https://mysejahtera.malaysia.gov.my/traveler_en/)

New Zealand: RealMe - This app allows New Zealand citizens to use their mobile devices as a digital ID, allowing them to securely access government services and sign documents electronically.M
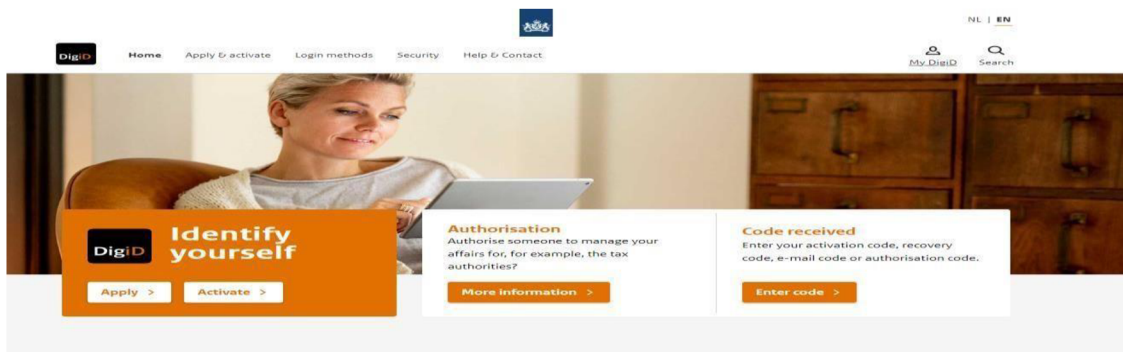
Figure 17: New Zealand: RealMe(https://www.realme.govt.nz/)

Chile: Gobierno Digital - This app allows Chilean citizens to access a range of government services and information, including passport and visa services, social security benefits, and taxes. It also offers a chatbot feature for answering common questions.

Figure 18: Chile: Gobierno Digital(https://digital.gob.cl/)

Denmark: MitID - This app allows Danish citizens to use their mobile devices as a digital ID, allowing them to securely access government services and sign documents electronically.

Figure 19: Denmark: MitID(https://www.mitid.dk/en-gb/help/help-universe/mitid-app/downlaod-app/)

4. E-Government Facilities in Denmark, UK, and Bangladesh

4.1 E-Government Facilities in Denmark

Denmark is a leader in e-government and has implemented a number of digital services and initiatives to improve the efficiency and accessibility of public services. Examples of e-government facilities include MitID, Borger.dk, e-Books, Digital Post, NemSMS, and Digital selvbetjening. These facilities are designed to make public services more efficient, accessible, and citizen centric. MitID is a digital identification system used by Danish citizens to access a wide range of public services, such as tax returns, health records, and online banking. Borger is an online self-service portal that allows citizens to manage their

personal information and access public services at their convenience. Digital Post is a secure digital mailbox used by public authorities to send messages and documents to citizens.

i. E-Democracy in Denmark

Denmark has a long history of democracy, which shows in its political system and way of running the country. People know the country for its high level of political participation, its policies on social welfare, and the fact that its government is open and honest.

In Denmark, there has been more and more interest in e-democracy in recent years. E-democracy is the use of technology to make it easier for people to take part in the democratic process. Here are some examples of e-democracy projects in Denmark:

- Online voting: Denmark has been trying it out for a few years and has even used it in some local elections. But there are still worries about security and privacy, and online voting hasn't caught on very much.
- Citizen portals: Many Danish cities and towns have made citizen portals so that people can find out about local government services, make requests, and give feedback. These portals also make it easy for citizens to give their opinions on policy issues through online consultations and surveys.
- Social media: Danish politicians and government agencies use social media sites like Facebook and Twitter a lot to talk to citizens and take part in public debate.
- Open data: Denmark's government has a strong history of being open and honest, and a lot of government data is available online. People, journalists, and researchers can use this information to learn more about how the government works and to hold public officials accountable.

Overall, Denmark has been a leader in e-democracy projects, and the government has been supportive of efforts to use technology to make it easier for people to participate and get involved. But there are still problems to solve, such as making sure that online voting systems are safe and private and that e-democracy projects are available to all citizens, even those who don't have access to technology or don't know how to use it well.

ii. E-Participation in Denmark

In recent years, Denmark has made a lot of progress in the area of e-participation. People in the country are very tech-savvy and use technology a lot, which makes it easy to use technology to get more people involved in democratic processes.

Some of the most important things Denmark has done to encourage e-participation are:

- Online platforms: The Danish government has built a number of online platforms and portals that allow people to find out about government policies and services, give feedback, and take part in consultations.
- Social media: In Denmark, politicians and government agencies often use social media sites like Facebook and Twitter to connect with citizens and encourage public discussion.
- Open data: Denmark has a long history of open government, and many government agencies have put their data online so that citizens can access and use it.
- Online petitions: In Denmark, people are using online petitions more and more to voice their opinions and push for change.

- Crowdsourcing: Denmark has used platforms for crowdsourcing to find out what people think about things like urban planning and environmental policy.

Overall, e-participation has become an important part of the democratic process in Denmark, and the government has been supportive of efforts to increase citizen participation and engagement through technology. But there are still problems to solve, like making sure that e-participation programmes are available to all citizens, even those who don't have access to technology or don't know much about it.

In Denmark, eParticipation is mostly focused on the local and regional levels of government. Practitioners in the field have had to learn on the job, which has led to a second-generation view that sees the importance of face-to-face participation along with digital tools. But some governments still try to use simple forms of eParticipation, like social media, without thinking about the amount of work and moderation that is needed. Because of this, some participatory projects don't give citizens the chances they were supposed to (Hennen et al., 2019).

iii. E-Services in Denmark (Digital Government MetaMonitor, n.d.)

Denmark prioritizes digitizing governmental services to improve efficiency and convenience for people, hence e-services are well developed and extensively utilised. Denmark ranks high in Europe for human capital, digital skills, internet usage, and corporate digitalization. eGovernment, which streamlines public sector services at all levels and encourages citizen ICT usage, has propelled Denmark's digitalization of public services. Citizens may now use digital mailboxes, online tax filing, and online licence and permit applications. eParticipation has occasionally been sacrificed for eGovernment. Practitioners agree that eParticipation supplements face-to-face engagement. Several governments have used social media to speed up participation procedures without considering the effort and moderation needed. Participatory efforts have failed to engage citizens.

Denmark offers its residents, businesses, and visitors a wide range of online services. Some of Denmark's most popular online services are:

- Digital Post: This service is used to receive and send secure digital mail from public authorities, such as tax statements, medical records, and other important documents.
- MitID is a digital signature that lets people in Denmark access online services like online banking, e-tax, and other public services safely.
- E-tax is a service offered by the Danish Tax Agency that lets people file their taxes online, pay their taxes online, and get tax refunds.
- E-Boks is an online platform where people and businesses can store and access their important documents and communications from public authorities.
- Sundhed.dk is an online health portal that lets people look at their health records, make doctor's appointments, and talk to medical staff.
- Digital Postkasse: This is a digital mailbox that lets businesses receive and send secure digital mail from the government.
- Borger.dk is a portal for citizens that gives them access to a wide range of public services and information, such as applying for a passport, signing up to vote, and using healthcare services.

- Virk.dk is a business portal that gives access to a variety of public services and information, like registering a new business, filing taxes, and applying for permits.
- Rejseplanen is an online trip planner that gives information about trains, buses, ferries, and other public transportation in Denmark.
- NemSMS is a service that lets people get important information from government agencies, like appointment reminders and emergency alerts, through SMS.

iv. E-Governance in Denmark

Denmark has used e-government in different ways at different levels of government, from the national to the local. A few of these projects are:

- MitID is a digital ID system that lets Danes use a single login to get into a variety of public and private online services in a safe way.
- Through this project, citizens and the government no longer use paper mail to talk to each other. Instead, they use a digital system. It lets people send and receive digital mail to and from public authorities in a safe way.
- E-tax is a way for people in Denmark to file their taxes and pay their taxes online. People can use the system to file tax returns, see their tax assessments, and pay taxes online.
- Digital Health Record: Denmark has put in place a national digital health record system that lets doctors and nurses get electronic access to information about their patients. Patients can also go online to look at their own health records.
- Open Data: Denmark has a policy called "open data," which means that government data can be used and analysed by anyone. The goal of this project is to encourage openness and new ideas.
- Municipal E-services: Many Danish cities and towns have set up their own e-services, such as online permit, parking, and trash collection applications. This makes it easy and quick for people to get to these services.
- Digital Postcard: This project lets people get electronic notices from government agencies, such as reminders about doctor's appointments, tax deadlines, or city services.

v. E-Information in Denmark

Denmark offers its citizens a number of e-information services, such as:

- borger.dk is a citizen portal that tells people about public services and lets them use digital services like applying for a passport or driver's licence.
- eBoks is a digital mailbox where citizens can get important documents from government agencies, banks, and other service providers and keep track of them.
- sundhed.dk is a health portal that gives citizens access to their personal health data as well as information about health services and healthcare providers.
- Digital Post is a secure digital mailbox that the Danish government gives to its citizens so they can send and receive mail to and from government offices.
- virk.dk is a business portal that tells you how to start and run a business in Denmark and gives you access to digital services like registering a company or filing your taxes.
- Rejseplanen is an online public transportation planner that lets people in Denmark plan their trips using different types of public transportation.

- Kulturstyrelsen is a website run by the Danish Agency for Culture and Palaces. It gives information about Denmark's cultural history, museums, and cultural events.

vi. E-Security in Denmark

Denmark puts a lot of emphasis on e-security and has taken a number of steps to make sure that its digital services and infrastructure are safe. Some of the most important places in Denmark for e-security are:

- National Cyber Security Strategy: To protect Denmark's digital infrastructure from cyber threats, the Danish government has put in place a comprehensive National Cyber Security Strategy.
- Danish eID Scheme: Denmark has set up an electronic ID (eID) system that lets people and businesses use e-services in a safe and reliable way.
- Digital Signatures: Many people in Denmark use digital signatures to sign documents electronically in a way that is safe and legal.
- Cybercrime Center: To investigate and stop cybercrime in Denmark, the Danish National Police set up a Cybercrime Center.
- CERT-DK: The Danish Ministry of Defense has set up a Computer Emergency Response Team (CERT-DK) to keep an eye on cyber threats in Denmark and deal with them when they happen.
- Data Protection: To protect people's privacy and personal information, Denmark has strong data protection laws, such as the General Data Protection Regulation (GDPR).
- Secure Networks: The Danish government has set up secure networks, like the government-owned NITA network, so that sensitive information can be sent between government agencies and other organisations without being intercepted.

vii. Online Education and Training in Denmark

Denmark is known for having a great education system and has made a lot of progress in online education and training. Denmark also has a lot of online learning tools and platforms that people can use to improve their skills and knowledge in many different areas.

- Open University: The Open University in Denmark offers online courses and programmes in many different areas, such as business, education, languages, and technology. The courses are free and can be taken by anyone who has access to the internet.
- Online Courses: Through their e-learning platforms, several universities in Denmark offer online courses and degrees. These classes cover a wide range of topics, such as business, management, engineering, health, and technology.
- E-Libraries: Denmark has a large network of e-libraries that let people read online books, magazines, newspapers, and other educational materials for free. The Danish Digital Library has more than 12 million items and is the biggest e-library in Denmark.
- Learning a language: If you want to learn Danish, you can take online classes in the language. The Danish Language Learning Portal is an online learning platform with courses for beginners, intermediate, and advanced learners.

- Digital Skills: People who want to improve their digital skills can find a number of e-learning resources in Denmark. The National e-Learning Portal gives people access to online courses and resources that help them learn and get better at using technology.
- Vocational Training: EUDOnline is an e-learning platform in Denmark that helps people get vocational education and training. The platform has courses in fields like construction, healthcare, and business, among others.

During the COVID-19 pandemic, when many people can't go to traditional in-person classes, these online education and training tools and platforms have become even more important. People have been able to keep learning and training from the comfort of their own homes thanks to these e-learning resources and platforms.

viii. E-Healthcare in Denmark

Denmark has a well-established digital health care system that gives its people access to a number of e-healthcare services. In Denmark, some of the e-healthcare services available are:

- Digital prescriptions: In Denmark, all prescriptions are digital, and a national health portal called sundhed.dk lets patients, doctors, and pharmacists access them.
- Electronic health records (EHRs): All citizens have access to EHRs, which let doctors and other medical professionals look at patients' medical records, such as their medical history, test results, and treatment plans.
- Telemedicine is a service that is used a lot in Denmark, especially in rural areas where people may not have access to healthcare facilities. Telemedicine services include online medical advice, video consultations, and remote monitoring of patients.
- Health apps: Danes can choose from a number of health apps, such as ones that help them track their fitness levels, nutrition, and mental health.
- National healthcare portal: The national healthcare portal, sundhed.dk, gives information about healthcare services, doctors, and hospitals, as well as access to personal health records and online appointments.
- Patient portals: Many hospitals and clinics in Denmark have patient portals that let patients see their medical records, make appointments, and talk to their doctors.

ix. E-Taxation in Denmark

Denmark has set up advanced ways for its people to pay their taxes online. The Danish Tax Agency is in charge of the e-taxation system. They have made a digital self-service platform called "E-tax" (TastSelv). Citizens can use this platform to access and manage their tax information online. For example, they can submit tax returns, check their tax accounts, and pay their taxes.

The system also has a feature where the Danish Tax Agency automatically fills in information from different sources, like banks, employers, and public authorities, into the tax return. Citizens don't have to enter the information by hand, so they save time and make less mistakes.

The Danish Tax Agency has also made an app called "E-tax for mobile" (TastSelv til Mobil) that lets people access their tax information while they are on the go. The app lets you do things like check your tax accounts, get reminders about deadlines, and send in your tax returns.

In addition to these services, the Danish Tax Agency has made a secure digital mailbox called e-Boks. Every citizen has an e-Boks account that lets them get digital mail from the government, such as tax information. The e-Boks system makes sure that communication is safe and cuts down on the amount of paper used.

Overall, Denmark's e-taxation services make it easy and quick for people to deal with their taxes, and they also help cut down on the amount of paperwork that needs to be done by the government.

x. E-Commerce in Denmark

Denmark has a strong digital infrastructure and a lot of people who use the internet, so e-commerce is well developed there. Danish people are used to using e-commerce platforms, and a lot of shopping is done online in the country. A 2021 report by eMarketer says that, after the UK, Denmark has the second most e-commerce sales per person in Europe.

Danish e-commerce sites sell a wide range of things, like clothes, electronics, books, and groceries. Danish stores like Bilka and Ftex have online stores, and there are also a lot of smaller, more specialised e-commerce businesses. Danes are known for caring about quality and sustainability, and there is a growing need for e-commerce platforms that sell products that are good for the environment and society.

Denmark is a popular place for cross-border e-commerce from other European Union countries, in addition to domestic e-commerce. Because of where the country is and how well it handles logistics, it is a good market for international e-commerce retailers. The Danish government has also taken steps to make cross-border e-commerce easier. For example, it has streamlined customs procedures and cut down on red tape.

Overall, e-commerce is an important part of Denmark's economy and consumer life, and the country has a strong digital infrastructure to support its continued growth.

xi. E-Justice in Denmark

Denmark has a well-developed e-justice system that lets people, lawyers, and government agencies use the internet to access justice services. Here are some of the ways that Denmark uses e-justice:

- Digital Post: The Danish government offers Digital Post, which is a safe digital mailbox service. It lets people and businesses send and receive electronic mail with government agencies. Businesses have to use Digital Post, but people can still choose paper mail if they want to.
- MitID is a digital signature system that gives secure online access to a wide range of public and private services, such as e-banking, tax returns, and health records. You can also use it to get into the Digital Post system.
- Retsinformation is a free online database that lets people look up Danish laws, court decisions, and administrative rules. The Danish Ministry of Justice keeps it up to date, and anyone can use it.
- Domstol.dk is the official site for the Danish courts. It tells about the Danish court system, how courts work, and what decisions they have made. It also lets you do things online, like file a case, make a payment, or look at court records.
- The Danish Criminal Records Registry is called Straffesags registeret. It tells you about people who have been convicted of crimes in Denmark and what their

sentences were. Access to this database is limited, and you need permission to use it.

- Digital Power of Attorney: People can give another person or organisation digital power of attorney, which lets them act in their place in legal matters. Using the Digital Post system, you can do this.
- E-Court is an online platform that lets lawyers file court cases and handle them electronically. It is being tested right now in a few places in Denmark.

4.2 E-Government Facilities in UK

The United Kingdom has implemented several e-government facilities to improve the efficiency and accessibility of public services. These include Gov.UK, HMRC Online Services, NHS App, DVLA Online Services, and UK Visas and Immigration Online Services. Gov.UK provides access to a wide range of public services, such as tax returns, passport applications, and benefits claims, while HMRC allows citizens to manage their taxes online. NHS App allows citizens to access their health records, book appointments with their GP, order repeat prescriptions, and access a range of other health services. DVLA online services allow citizens to manage vehicle registrations and licenses, as well as apply for visas and immigration services. All of these services are designed to make public services more accessible and convenient for citizens.

i. E-Democracy in UK

In the UK, e-democracy is the use of digital technology to get more people involved and involved in the democratic process. Some examples of e-democracy projects in the UK are:

- Online voting: At the moment, there is no way to vote online in the UK, but the government has been looking into the possibility of making it possible. In 2018, voters in five local authority areas took part in a pilot project that let them vote online in local elections. Most people thought the pilot was a success, and voters who used the online system were very happy with it. But there are still concerns about the security and dependability of online voting systems. Before it can be used more widely, it will need to be tested and evaluated more.
- Petitions: The UK government's online petitions website lets people create and sign petitions about a wide range of topics, such as policy proposals, social issues, and calls for action on specific problems. Petitions with a certain number of signatures are brought up for discussion in Parliament. This gives people a direct way to affect policy.
- Social media: In the UK, social media sites like Twitter and Facebook are now used a lot in political campaigns. Social media is used by political parties and candidates to connect with voters, spread their messages, and rally their supporters. People have also used social media to talk about and debate political issues in public. However, some people are worried about how social media will affect the quality of political discourse.
- Open data: The UK government has promised to support open data by making a variety of government datasets available to the public for analysis and reuse. This has led to the creation of new digital tools for civic engagement and accountability, such as websites that let people track government spending, keep an eye on public services, and hold politicians accountable.
- Digital consultations: The UK government asks the public what they think about policy issues by using online surveys and discussion forums, among other digital

tools. This lets people have their say on issues that affect them and give feedback on what the government is planning to do. Digital consultations are often used in addition to more traditional ways of consulting, like public meetings and written submissions.

- Online campaigning: Political parties and campaign groups use email campaigns, online fundraising, and targeted advertising, among other digital tools, to get people to support them and spread their messages. Online campaigning is becoming more and more important in the UK, especially for national elections, where parties spend a lot of money on digital advertising and social media.

Overall, the UK has been a leader in the development of e-democracy initiatives, which use digital technology to get more people involved in the democratic process and make it easier for them to get involved. Even though there are still problems to solve, like worries about the security and reliability of online voting systems and the effect of social media on political discourse, e-democracy is likely to remain an important part of UK politics in the coming years.

ii. E-Participation in UK

In the UK, e-participation is the use of digital technology to get people involved in making policy and to encourage them to take part in making public decisions. Here are some examples of projects in the UK that use e-participation:

- Online consultations: The UK government holds online consultations on a wide range of policy issues, giving people a chance to give feedback and shape the way policies are made. Public meetings and written comments are often held at the same time as online consultations.
- Citizen juries: A citizen jury is a type of deliberative democracy in which a group of randomly chosen citizens meets to talk about and decide on a policy issue. Citizen juries are often held online, with the help of digital tools that make it easier to talk and decide.
- Crowdsourcing is a way to get ideas and suggestions from a lot of people using digital platforms. In the UK, crowdsourcing has been used to get ideas and feedback on policy proposals and to get people involved in making public services together.
- Open data: The UK government has promised to support open data by making a variety of government datasets available to the public for analysis and reuse. This has led to the creation of new digital tools for civic engagement and accountability, such as websites that let people track government spending, keep an eye on public services, and hold politicians accountable.
- Social media: Sites like Twitter and Facebook, which are social media, have become important tools for getting people involved in the policymaking process. Social media is used by political parties, government agencies, and civil society groups to share information and talk with people about policy issues.
- E-petitions: The UK government has a website where people can make and sign petitions about a wide range of topics. Petitions with a certain number of signatures are brought up for discussion in Parliament. This gives people a direct way to affect policy.

iii. E-Services in UK

In the UK, "e-services" are digital services that the government gives to people and businesses. Some examples of e-services in the UK are as follows:

- Online tax filing: HM Revenue and Customs (HMRC) lets taxpayers file their tax returns online. This makes the process easier for taxpayers and reduces the amount of paperwork they have to do.
- Online applications for benefits: The UK government lets people apply for benefits like Universal Credit and Jobseeker's Allowance online, so they don't have to go to government offices in person.
- Online health care services: Patients can use the National Health Service (NHS) website to do things like make appointments, order prescriptions, and look at their medical records.
- Online business registration: The Companies House lets businesses sign up online, which makes it easier for entrepreneurs to start their own businesses.
- Online visa applications: The UK Visas and Immigration department makes it easier for foreigners to apply for visas to visit or work in the UK by letting them do so online.
- Online passport applications: Citizens of the UK can apply for passports online through the UK Passport Office. This cuts down on processing times and makes the application process easier.

iv. E-Governance in UK

In the UK, e-governance is the use of digital technologies and platforms to improve how the government works and how it gives services. Here are some examples of how the UK uses e-government:

- Open Government Data: Through the data.gov.uk portal, the UK government makes a lot of government data available to the public. This lets people access and use government data for a wide range of purposes, such as research, analysis, and making new products and services.
- Digital Identity: The UK government is making digital identity services so that people can prove who they are online when using government services. This will cut down on the need for people to visit in person or use paper to prove who they are.
- Digital Service Delivery: The UK government has put money into digital service delivery platforms like GOV.UK to make it easier for people to find and use the services they need.
- Online Service Delivery: The UK government offers a number of services online, such as filing taxes, applying for benefits, and getting a passport. This way, people can use government services from anywhere with an internet connection.
- Electronic Voting: The UK government is looking into how to use electronic voting technology to make voting better and get more people to vote.

v. E-Information in UK

E-information facilities in the UK are ways for people and businesses to get access to government information through the use of digital technology. Here are some examples of places in the UK where you can get information online:

- Gov.uk is the official website of the UK government. It is a one-stop shop for government information and services, making it easier for people to find what they need.

- National Archives: The UK National Archives gives online access to a wide range of government records, including historical records, genealogical records, and records of government activities and policies.
- Freedom of Information: Under the Freedom of Information Act, people can use an online request portal to ask for access to government information, such as records and documents.
- Open Access Publications: A wide range of UK government publications, such as research reports, policy documents, and other publications, are available online for free.
- Government Libraries: The UK government runs a network of libraries that give people access to government information and publications, such as online resources and databases.

vi. E-Security in UK

In the UK, e-security facilities are the steps that the government and other groups take to make sure that digital systems, networks, and data are safe. Some examples of e-security facilities in the UK are listed below:

- Cyber Security Strategy: The UK government has made a National Cyber Security Strategy to improve cyber security across government and industry, as well as to make the UK more resilient to cyber threats and better able to respond to them.
- Cyber Essentials: The Cyber Essentials scheme is a certification supported by the UK government that helps businesses protect themselves from cyber attacks. It gives organisations a set of basic technical controls they can use to make their cyber security better.
- National Cyber Security Centre: The UK's technical authority on cyber security is the National Cyber Security Centre (NCSC). It tells organisations how to protect themselves from cyber threats and works with law enforcement to deal with cyber incidents.
- Cyber Security Information Sharing Partnership: The Cyber Security Information Sharing Partnership (CiSP) is a joint project between the private sector and the government that lets organizations share real-time information about cyber threats and best practices.
- Data Protection: The UK has put in place the General Data Protection Regulation (GDPR) and the Data Protection Act 2018 to protect people's data and privacy. The GDPR and the Data Protection Act 2018 work together to make the UK a safer place to live.

vii. Online Education and Training in UK

Online education and training in the UK refer to the use of digital technologies to deliver educational content and training programmes. Here are some examples of places in the UK where you can learn and get trained online:

- Programs for learning at a distance: Many universities in the UK have programmes that let students study from home, so they don't have to go to campus for classes. These programmes typically involve the use of online resources, such as videos, webinars, and discussion forums, as well as periodic on-campus or online sessions.

- Continuing Professional Development: Many professional bodies in the UK offer online continuing professional development (CPD) programmes, which allow professionals to keep and improve their knowledge and skills throughout their careers. Most of the time, these programmes use online courses, webinars, and other tools.
- Online Skills Training: There are a number of online training providers in the UK that offer skills training programmes in areas like digital marketing, coding, and project management. People who want to learn new skills or move up in their careers can benefit the most from these programmes.
- Online Language Learning: There are a variety of online language learning platforms available in the UK, such as Babbel, Duolingo, and Rosetta Stone, which provide learners with access to interactive language courses and resources.
- Online tutoring: There are a number of online tutoring services in the UK that offer one-on-one or group sessions in math, science, English, and other subjects. Students who need extra help with their work can benefit the most from these services.

E-learning is a rapidly growing industry in the UK, and people of all ages and skill levels can choose from a wide range of options. Here are some examples of places in the UK where you can learn online:

- Massive Open Online Courses (MOOCs): Universities in the UK like the University of Edinburgh and the University of Leeds offer free online courses on a wide range of topics through sites like Coursera and edX. Anyone with an internet connection can take these classes, and many of them offer the chance to get a certificate or degree.
- Virtual Learning Environments (VLEs): In the UK, many schools and universities use VLEs like Moodle and Blackboard to give students course materials, help them have online discussions, and track their progress. Students can access course materials and talk to their teachers and classmates from anywhere with an internet connection using these platforms.
- Online tutoring: There are a number of online tutoring services in the UK, like MyTutor and TutorMe, that offer one-on-one or group sessions in math, science, English, and other subjects. Students who need extra help with their studies or who are studying from afar may find these services especially helpful.
- Online Language Learning: People in the UK can use platforms like Babbel, Duolingo, and Rosetta Stone to learn languages online. These platforms offer interactive language courses and other resources.
- Online training courses: A lot of companies in the UK offer their employees online training courses on things like health and safety, compliance, and customer service. These courses can be taken from anywhere and at the learner's own pace.

viii. E-Healthcare in UK

E-healthcare, also called "electronic healthcare," is a new field in the UK that uses digital technologies to improve how healthcare services are delivered and how easy they are to get. Here are some examples of places in the UK that offer e-healthcare:

- Telemedicine: Many healthcare providers in the UK offer telemedicine services, which let patients talk to doctors and other medical professionals from a distance using videoconferencing and other digital technologies. This can be especially

helpful for people who live in remote or rural areas or who have trouble moving around or getting around.

- Electronic Health Records (EHRs): Many healthcare providers in the UK use EHR systems, which let doctors and nurses access patient records and medical histories electronically. This makes it easier for doctors and nurses to share information and work together on treatment plans, which can improve the quality and coordination of care.
- Online Appointment Booking: Many healthcare providers in the UK let patients schedule appointments with doctors and other healthcare professionals online. This can cut down on wait times and make it easier to get health care.
- Remote Patient Monitoring: Some healthcare providers in the UK use technologies for remote patient monitoring, which let doctors and nurses check on the health of patients from afar using sensors and other digital devices. This can be especially helpful for people with long-term conditions who need to be watched over and helped all the time.
- Digital health apps: The UK has a number of digital health apps, like the NHS App and Babylon Health, that give patients access to health information, self-care tools, and virtual consultations with medical professionals.
- Electronic Prescription Service (EPS): EPS is a service offered by the NHS that lets doctors send prescriptions to pharmacies electronically instead of on paper. This can speed up the prescription process and make it more accurate. It can also make it less likely that mistakes or delays will happen.
- Patient Portals: Some healthcare providers in the UK offer patient portals, which are safe online spaces where patients can access their health information, test results, and other medical records. This can help patients take a more active role in taking care of their health and can also make it easier for patients and healthcare providers to talk to each other and work together.
- Wearable Health Technologies: Fitness trackers, smartwatches, and medical monitoring devices are just some of the wearable health technologies that are becoming more and more common in the UK. These technologies can give patients real-time information about their health and level of activity, and they can also let doctors check on patients from a distance and give them personalised care.
- Digital Mental Health Services: The UK has a number of digital mental health services, like the NHS's Improving Access to Psychological Therapies (IAPT) programme, which helps people with mental health problems get online therapy and counselling. These services can make it easier for people to get mental health care, reduce the stigma associated with it, and give patients more flexible and convenient ways to get care.
- Websites for Health Information: In the UK, there are many websites like the NHS website, Healthline, and Patient.info that give patients information and resources about their health. Patients can use these sites to find out more about their health conditions, get tools and resources for self-care, and connect with other patients and medical professionals.

Overall, e-healthcare services in the UK are growing quickly and changing the way health services are given and accessed. These facilities could help improve the quality and efficiency of health care and give patients more control over their own health and well-being.

ix. E-Taxation in UK

In the UK, e-taxation means using electronic systems and processes to handle taxes and collect money. Here are some examples of how the UK handles e-taxation:

- Self-Assessment is an online programme that lets people and businesses file their tax returns electronically. Compared to filing on paper, this can save time and cut down on mistakes.
- Online Payment: You can pay taxes and other fees to HM Revenue & Customs (HMRC) online. This makes it easy and safe for taxpayers to pay without having to carry cash or checks.
- Digital Tax Accounts: HMRC also offers digital tax accounts, which let taxpayers see their tax records online. This includes information about payments made, taxes owed, and tax refunds. This can help taxpayers to keep track of their tax affairs more easily, and can also reduce the administrative burden on HMRC.
- Making Tax Digital is a government programme that aims to update the UK tax system by requiring businesses to use digital systems for keeping records and filing taxes. The goal is to make it easier and faster to pay taxes and to cut down on mistakes and fraud in the tax system.
- Tax credits are payments made by the government to people and families who qualify, to help them pay for things like childcare, housing, and other costs. Online forms can be filled out for tax credits, and most payments go straight into bank accounts.
- Online Help and Resources: The HMRC offers a wide range of online help and resources, such as online guides, calculators, and webinars, to help taxpayers understand their tax responsibilities.
- PAYE Online Services: Employers can use HMRC's PAYE online services to manage their payroll and employee tax deductions electronically. This includes options for sending in payroll information, making payments, and telling the company about changes to an employee's information.
- Digital Certificates: HMRC issues digital certificates to tax agents and other authorized users, which can be used to access online services securely. This helps to protect against fraud and unauthorized access to sensitive tax information.
- Online Chat and Helpdesk: HMRC has a chat service and help desk that taxpayers can use to ask questions and get help from trained advisors. This can be a useful resource for taxpayers who need assistance with their tax affairs but are unable to visit a tax office in person.

x. E-Commerce in UK

E-commerce, or electronic commerce, has become an increasingly important aspect of the UK economy in recent years. Some examples of e-commerce in the UK are as follows:

- Online Marketplaces: Popular online marketplaces such as Amazon, eBay, and Etsy allow businesses to sell their products to a large audience of consumers without the need for a physical store. These platforms give businesses access to a variety of tools and services, such as online storefronts, payment processing, and marketing tools.
- Online retailers: Many brick-and-mortar stores also have online stores, where customers can look at products and buy them. Some of the biggest online stores in the UK are ASOS, Argos, and John Lewis.
- Digital Services: In addition to physical goods, e-commerce also encompasses the sale of digital services such as software, streaming media, and online courses.

Examples of popular digital service providers in the UK include Spotify, Netflix, and Udemy.

- Payment Processing: E-commerce also uses a variety of systems for processing payments to make online transactions possible. PayPal, Stripe, and Worldpay are all well-known ways to pay in the UK.
- E-Commerce Platforms: Shopify, Magento, and WooCommerce are all examples of e-commerce platforms that businesses can use to set up their own online stores. These platforms give you the tools and templates you need to build online storefronts, keep track of your products and inventory, and take payments.

Overall, e-commerce has become an important part of the UK economy. Each year, more and more of all retail sales are made online. As technology continues to advance and consumer behavior evolves, e-commerce is likely to continue to play a key role in the UK retail sector.

xi. E-Justice in UK

E-justice is the use of digital technology to improve the administration of justice in the UK. Here are some examples of e-justice in the UK:

- Online Court Proceedings: The UK government has set up a pilot online court programme called "Online Solutions Court" to handle low-value civil claims in a digital setting. This system lets people who are going to court submit their claims online, talk to court officials, and look at court documents from a distance.
- Electronic Filing and Case Management: Many courts in the UK have adopted electronic filing and case management systems to streamline administrative processes and improve efficiency. With these systems, court workers can manage cases and process filings digitally, so they don't have to use paper records as much.
- Videoconferencing and Virtual Hearings: Because of the COVID-19 pandemic, the UK legal system is moving faster to use videoconferencing and virtual hearings. These technologies allow parties to attend court hearings remotely, reducing the need for physical attendance and improving access to justice for those who may have difficulty attending court in person.
- Digital Legal Services: In the UK, there are now a number of online legal services that offer people and businesses a wide range of legal solutions. These services include online legal advice, document templates, and automated dispute resolution.
- Electronic Monitoring and Enforcement: The UK government has also put in place a number of electronic monitoring and enforcement measures, such as ankle bracelets and digital curfews, to keep track of criminals and make sure they follow court orders.
- With electronic case tracking, lawyers, judges, and other court officials can keep track of how a case is going in real time. This helps to cut down on wait times and makes sure that cases are handled quickly.
- Online Dispute Resolution: The UK government has created a website called "Resolver" that lets people settle disagreements with businesses without going to court. This platform uses automated processes and algorithms to find quick and fair solutions to disagreements.
- Digital Evidence Management: Digital evidence management systems allow law enforcement officials to manage digital evidence more efficiently. These systems make it possible to store, analyse, and share digital evidence in a safe way. This lowers the risk of losing data and makes sure that evidence can be used in court.

- Cybersecurity and Data Protection: As the use of digital technology in the legal system increases, there is a growing need for robust cybersecurity and data protection measures. The UK government has implemented a range of measures to protect against cyber-attacks and ensure the secure processing of personal data.
- Electronic Signatures: In the UK legal system, electronic signatures are becoming more and more common. This means that documents can be signed digitally instead of in person. This makes things run more smoothly and reduces the need for paper documents.

4.3 E-Government Facilities in Bangladesh

Bangladesh has made significant progress in implementing e-government facilities in recent years, including the Bangladesh Citizen Portal, Bangladesh National Digital Architecture (BNDA), Bangladesh e-Payment Gateway (BEPZA), National ID Card, e-Tendering System, and Digital Land Record Management System. These facilities are designed to make public services more accessible and efficient for citizens, but there are still challenges to be addressed, such as improving internet connectivity in rural areas and enhancing digital literacy among citizens.

i. E-Democracy in Bangladesh

E-democracy is a new idea in Bangladesh, where the government and civil society are working together to use technology to improve government transparency, participation, and accountability.

E-Voting: Bangladesh is still in the early stages of building up e-voting. But the government has taken steps towards using electronic voting machines (EVMs) in national elections. In 2018, a pilot project was held to test the use of EVMs. The EVMs are meant to cut down on election fraud and get more people to the polls.

The goal of these e-democracy tools in Bangladesh is to increase openness, accountability, and citizen involvement in government. They are meant to make government services easier to find and use and to encourage a culture of openness and participation between citizens and the government.

ii. E-Participation in Bangladesh

In Bangladesh, e-participation is becoming more popular, and the government is taking steps to encourage citizens to get involved in government through digital channels. Some of the ways that people can participate online in Bangladesh are:

- Citizen Service Centres: The government has set up Citizen Service Centres (CSCs) all over the country so that people can get public services like birth registration, passport and visa services, and other services related to the government.
- Online Public Opinion Polls: The government often does online polls to find out what people think about different issues. This gives people a chance to give feedback and opinions on policy matters.
- Social Media: In Bangladesh, social media sites like Facebook and Twitter have become important ways for people to get involved. Government agencies use these sites to talk to people and get feedback.

- Online Petitions: The government has set up a website where people can create and sign petitions about different issues. These petitions can then be sent to the government.
- E-Procurement: The government has put in place e-procurement systems for public procurement, which make the bidding process more open and encourage competition.
- Online Complaint Management System: To make it easier for people to complain about public services like water, electricity, and transportation, the government of Bangladesh has set up an online complaint management system. This system lets people know how their complaints are being handled and how their complaints are being handled.
- E-Participation in the Budgetary Process: The government of Bangladesh has started e-participation in the budgetary process to get more people involved in making and using the national budget. People can give feedback, comments, and ideas about the budgeting process and take part in public consultations about budgeting issues.
- Digital Land Management System: The government of Bangladesh has set up a digital land management system to help people with services related to land. The system lets people find out about land ownership, land transfers, and other related topics.
- E-Voting: The government of Bangladesh is thinking about putting e-voting in place for local government elections to make the process more open and efficient. With e-voting, people could use digital devices to vote from anywhere in the world.

In Bangladesh, these e-participation tools promote public involvement, transparency, and accountability in government. Yet, obstacles such as inadequate digital literacy and access to technology must to be solved in order for all individuals to engage in digital democracy.

iii. E-Services in Bangladesh

In recent years, the government of Bangladesh has undertaken a number of measures to offer residents with e-services, significantly improving the efficiency, accessibility, and transparency of public service delivery. In Bangladesh, some instances of e-services include:

- Digital Birth and Death Registration: The Bangladeshi government has implemented a digital birth and death registration system, allowing residents to record births and deaths online. The technology has shortened the registration procedure and made birth and death certificates more accessible to residents.
- Online Passport Application: The Bangladesh government has implemented an online passport application system that enables residents to apply for passports from anywhere using digital devices. The technology has shortened processing times and provided transparency in the passport application process.
- E-Taxation: Bangladesh's National Board of Revenue (NBR) has implemented e-taxation technologies to allow taxpayers to pay their taxes online. The e-taxation system has simplified tax payment and decreased tax administration time and expense.
- E-Procurement: To expedite the purchase of products and services for the public sector, the government of Bangladesh has created an e-procurement system. The method has improved procurement transparency, efficiency, and competitiveness.

- Online Land Records: The Bangladeshi government has implemented an online land records system that enables residents to obtain information on property ownership, transfer, and other relevant concerns. The system has decreased the time and cost of providing land-related services while increasing openness and accountability in land management.

In Bangladesh, these e-services have altered the way people engage with the government, significantly improving the efficiency and transparency of public service delivery. Yet, obstacles such as poor digital literacy and access to technology must to be solved in order for all residents to have access to e-services.

iv. E-Governance in Bangladesh

Bangladesh's government has put in a lot of work to make e-governance work so that public services are better, there is more transparency, and there is less corruption. Some of the notable e-governance initiatives in Bangladesh are:

- Digital Bangladesh: The Digital Bangladesh initiative was launched in 2009, with the aim of transforming Bangladesh into a knowledge-based society by leveraging information and communication technologies (ICTs) (ICTs). The initiative includes a number of projects, such as setting up digital centres in rural areas, making a national ICT policy, and starting e-governance projects. The Digital Bangladesh initiative is a plan to turn Bangladesh into a digital economy over a long period of time.
- National Portal: Bangladesh's National Portal is a place where people can go to get online access to government services and information. The portal is a one-stop shop for citizens to use e-services like applying for a passport or visa, registering a birth or death, or filing taxes. The National Portal has made it easier for people to use government services and cut down on the time and money needed to do so.
- Online Land Record System: The government of Bangladesh has set up an online land record system that lets people look at land records and other information about property online. The system has made it easier and cheaper to get information about land and made land management more open. People can now access land records from anywhere, so they don't have to go to government offices as often.
- E-Procurement System: The government of Bangladesh has set up an e-procurement system that lets businesses bid online on government contracts. The system has made government contracts more open and has made it easier for small and medium-sized businesses to get government contracts. The e-procurement system has cut down on the time and money needed to bid on government contracts, making it easier for businesses to do so.
- Digital Payment System: Bangladesh's government has set up a digital payment system that lets people pay for government services and taxes online. The system has made cash transactions less common, which has cut down on the chance of corruption and made it easier for the government to provide services. The digital payment system has made it easier for people to pay for government services, saving them time and money.

These e-governance projects in Bangladesh have helped improve public services, make the government more open, and cut down on corruption. The initiatives have also helped the government use technology more and make it easier for people to use government services.

v. E-Information in Bangladesh

E-Information in Bangladesh refers to the use of digital technology to improve access to information and dissemination of information among the citizens. Some of Bangladesh's most important e-information projects are:

- Bangladesh National Digital Architecture (BNDA): The BNDA is a platform that aims to be a one-stop shop for all government data and information. Through a single interface, it gives people access to data and information from different government agencies and departments.
- National Web Portal: Bangladesh's National Web Portal (https://bangladesh.gov.bd/) is a central hub where people can find information, services, and resources from the government.
- Bangladesh Government Press Release: The Bangladesh Government Press Release (http://www.pressinform.gov.bd/) is an online platform that provides timely and accurate information about government policies, decisions, and activities.
- e-Library: The e-Library (http://www.elibrary.gov.bd/) is a digital library where you can find books, journals, and research papers.
- Digital Archive of Bangladesh: The Digital Archive of Bangladesh (http://www.archive.gov.bd/) is a digital collection of historical documents, photographs, and other materials related to the history and culture of Bangladesh.
- Bangladesh Open Data Initiative (BODI): BODI is a government-led effort that intends to make government data open and accessible to the public. The programme allows users to access a variety of data sets, including demographic, economic, and social information.
- National Digital Archive of Monuments and Sites (NDAMS): The National Digital Archive of Monuments and Sites (NDAMS) is an online repository that archives and maintains the country's cultural heritage. The repository contains images, films, and other multimedia information about monuments, archaeological sites, and other locations of cultural heritage in Bangladesh.
- Bangladesh National Digital Library (BNDL): The Bangladesh National Digital Library (BNDL) is a digital library that gives access to a broad variety of resources, including books, journals, research papers, and other items. The library is free to use and available from anywhere with an internet connection.
- The Digital Bangladesh Portal (https://www.digitalbangladesh.gov.bd/) is a single portal that enables access to numerous government services, information, and resources linked to Bangladesh's digital transformation.
- The National Telemedicine Network is a digital health programme that delivers remote healthcare services to persons living in rural regions. Patients may communicate with physicians and healthcare workers through video conferencing and other digital communication methods thanks to the network.

vi. E-Security in Bangladesh

E-security is an important part of Bangladesh's digital transformation because the country is still facing cyber threats like cybercrime, cyber espionage, and cyber terrorism. Here are a few of Bangladesh's e-security projects:

- Bangladesh Computer Council: The Bangladesh Computer Council (BCC) is a government organization that is in charge of promoting and regulating the growth of the ICT sector in Bangladesh. BCC has been working to improve Bangladesh's

cybersecurity ecosystem. They have done things like pass the National Digital Security Act and set up the Bangladesh Computer Emergency Response Team (BDCERT) to keep an eye on cyber incidents and respond to them.

- Cyber Threat Intelligence Sharing Platform: The Cyber Threat Intelligence Sharing Platform (CTISP) is an effort by the BDCERT to help government agencies, private sector organisations, and academic institutions share information. CTISP gives its members threat intelligence, analysis, and response to incidents in real time.

- Information Security Awareness Program: The Bangladesh Bank, which is the country's central bank, started the Information Security Awareness Program (ISAP). ISAP wants to make people more aware of the risks to information security and the best ways to stay safe online. The programme gives government agencies, financial institutions, and other groups training and awareness materials.

- Cybercrime Investigation and Training Institute: The Bangladesh Police set up the Cybercrime Investigation and Training Institute (CITI) as a specialized training centre to help law enforcement agencies investigate and prevent cybercrime. CITI has a number of training programmes and workshops on different cybercrime-related topics.

- These e-security projects are making Bangladesh's cybersecurity ecosystem stronger and making the country more resistant to cyber threats.

vii. Online Education and Training in Bangladesh

Online education and e-learning have gained significant momentum in Bangladesh in recent years. Here are a few of Bangladesh's e-learning projects:

- The Access to Information (A2i) programme is an effort by the government to make it easier for people to get information and services by using technology. The A2i Digital Education Program gives students, teachers, and parents digital resources for education, such as online textbooks, multimedia resources, and online tests.

- e-Learning for Kids Bangladesh: e-Learning for Kids Bangladesh is an initiative of the Bangladesh Association of Software and Information Services (BASIS) aimed at providing free online learning resources for children. The platform has a variety of courses in math, science, and English, among other subjects.

- Robi-10 Minute School: Robi-10 Minute School is an online learning platform that gives Bangladeshi students free access to educational content. The platform offers video lessons, interactive quizzes, and other resources for students in primary, secondary, and higher secondary levels.

- Bangladesh Open University: The Bangladesh Open University (BOU) is the country's largest public university that offers distance education programmes. The university has a variety of undergraduate and graduate programmes, such as courses for teachers and programmes to help people get jobs.

- These e-learning programmes are helping to close the digital divide and give more people in Bangladesh access to good education.

viii. E-Healthcare in Bangladesh

E-healthcare has grown a lot in Bangladesh in the past few years, especially after the COVID-19 pandemic. Here are a few of Bangladesh's e-healthcare projects:

- Telemedicine is an important part of e-healthcare in Bangladesh because it lets patients talk to doctors from a distance. Several groups and hospitals in Bangladesh have started telemedicine services to help people in rural areas get health care.
- mHealth, or mobile health, is another important e-healthcare project in Bangladesh. Bangladesh has made a number of mobile apps that help with health care, such as making appointments, keeping track of prescriptions, and checking on people's health.
- e-Health Card: The government of Bangladesh has started a programme called e-Health Card to give all citizens digital health records. The e-Health Card has important health information like a medical history, prescriptions, and test results that healthcare providers can access.
- Healthline is an e-healthcare project started by the government of Bangladesh. Its goal is to give citizens of Bangladesh information and advice about health care. Through a toll-free hotline, the Healthline service gives people access to doctors, nurses, and other health care professionals.

ix. E-Taxation in Bangladesh

E-taxation is an important part of Bangladesh's e-governance efforts. Here are a few of Bangladesh's e-taxation projects:

- Electronic Taxpayer Identification Number (e-TIN): In Bangladesh, the e-TIN system is used to register taxpayers and give out TIN certificates. Taxpayers can apply for TIN certificates online, and the certificates are sent to the taxpayers electronically.
- Online Tax Filing: The National Board of Revenue (NBR) has made it possible for taxpayers to file their tax returns online by launching an online tax filing system. Taxpayers can submit their tax returns and pay their taxes online through a system that is easy to use.
- Online Payment System: The NBR has also set up a way for people to pay their taxes online through an online payment system. There are several ways to pay with the system, such as credit cards, debit cards, and online banking.
- Mobile Tax Service: The NBR has started up a mobile tax service that lets taxpayers use their cell phones to get tax information and services. The service gives information about tax rates, tax forms, and tax deadlines. Taxpayers can also use their mobile phones to send in their tax returns and pay their taxes.

These e-taxation projects are making it easier to collect taxes in Bangladesh and getting more people to pay their taxes.

x. E-Commerce in Bangladesh

Bangladesh's e-commerce business is growing quickly, and the country is home to a number of e-commerce platforms. Here are some of Bangladesh's most popular online shopping sites:

- Daraz is one of the biggest e-commerce sites in Bangladesh. It has a wide range of products, including electronics, clothes, home appliances, and groceries. The platform also offers various payment options, including cash on delivery, credit cards, and mobile banking.

- Ajkerdeal is another popular e-commerce site in Bangladesh that sells a wide range of products, such as electronics, clothing, beauty products, and health products. The platform lets you pay with cash on delivery or online.
- Bagdoom is the most popular e-commerce site in Bangladesh. It has a wide range of products, such as electronics, clothing, beauty products, and home appliances. The platform offers cash on delivery and online payment options.
- Evaly: In Bangladesh, Evaly is a fast-growing e-commerce site that sells a wide range of products, such as electronics, clothes, and groceries. The platform offers various payment options, including cash on delivery, credit cards, and mobile banking.
- Chaldal: Chaldal is a popular online grocery store in Bangladesh that offers a wide range of products, including fresh fruits and vegetables, meat, fish, and other grocery items. The platform lets you pay with cash on delivery or online.
- These e-commerce platforms are making it easier for people in Bangladesh to buy a wide range of products and are helping the e-commerce industry grow.

## xi. E-Justice in Bangladesh

E-justice is a new field in Bangladesh, and the government is taking steps to set up a system that is both modern and effective. The goal is to make sure that everyone can get justice and that the legal system is open and works well. Among the things that have been done in this direction are:

- Setting up e-Court: In 2018, a project called e-Court was started to digitise court processes and procedures. The goal of the project is to simplify court procedures, cut down on wait times, and make the justice system work better. It has features like the ability to sign up for a case online, pay fees, and keep track of how the case is going.
- Online case management system: The Supreme Court of Bangladesh has set up an online case management system so that people can check on the status of their cases online. This system has made the court system more open and easier to understand.
- Digitizing land records: The government is digitising land records to make them easier to find and more open to the public. By digitising land records, there will be less corruption and land disputes will be settled quickly.
- Setting up legal aid centres: The government has set up legal aid centres in different parts of the country to help poor and marginalised people with their legal problems.

5. Practical Part

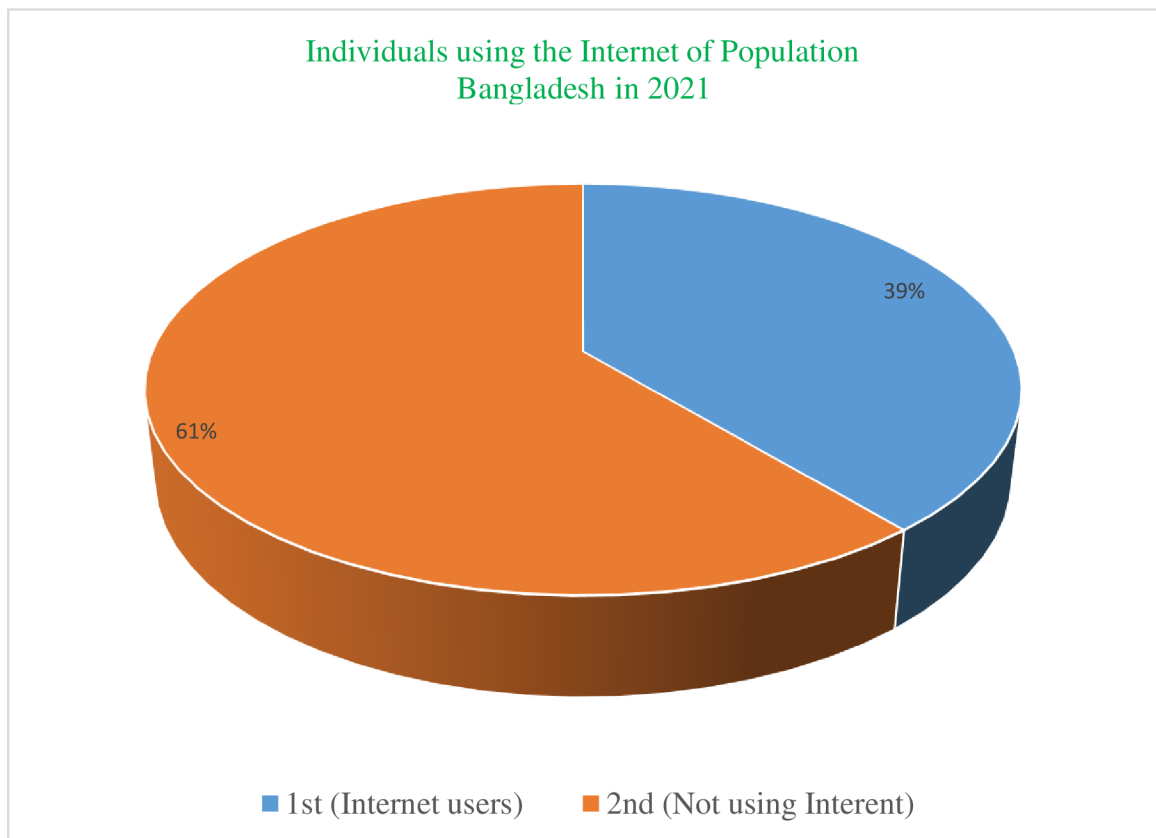### 5.1 Comparison of E- Government facilities in UK and Bangladesh

Figure 20: Internet users in the United Kingdom

Source: https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=GB
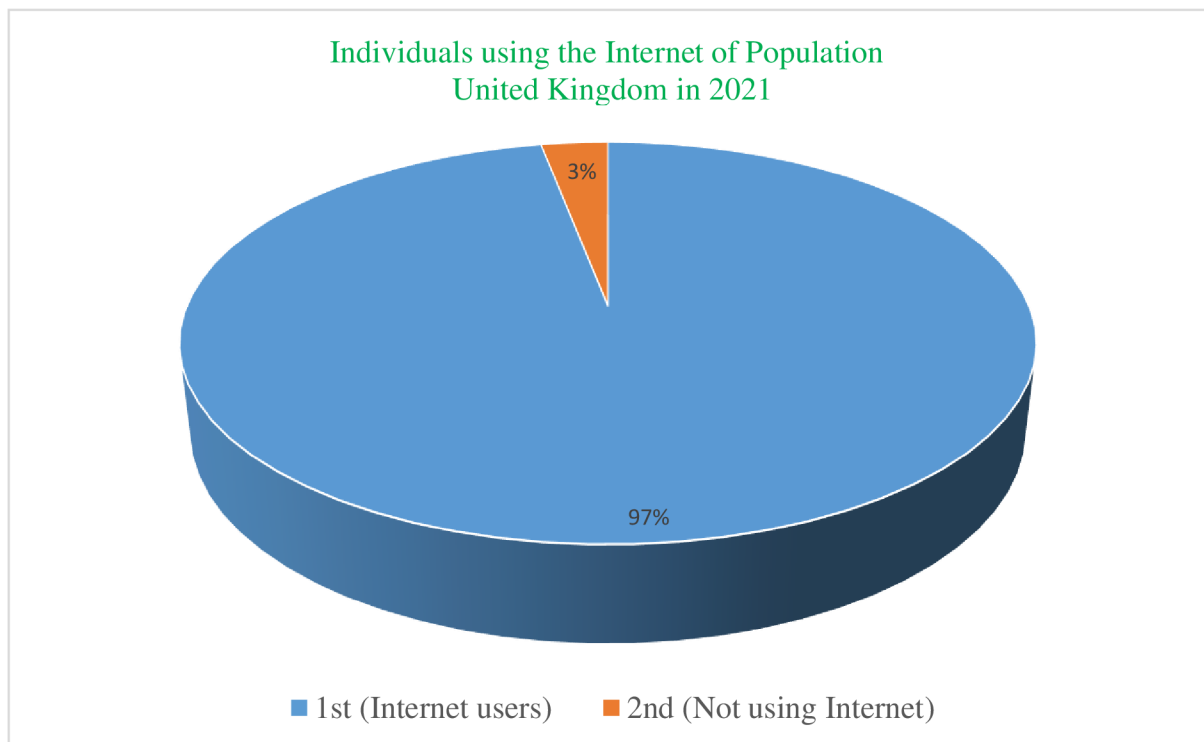
The pie chart illuminates that the internet infrastructures are very strong in the UK and covering all over the country, that is why the internet using percentage of population is very high which is most important to provide e-government services to all people.

Figure 21: Internet users in Bangladesh

Individuals using the Internet of Population
Bangladesh in 2021

39%

61%

■ 1st (Internet users)   ■ 2nd (Not using Interent)

Source: https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=BD

The pie chart illuminates that the internet infrastructures are poor in Bangladesh and not covering all over the country, that is why the internet using percentage of population is very low which is most important to provide e-government services to all people.
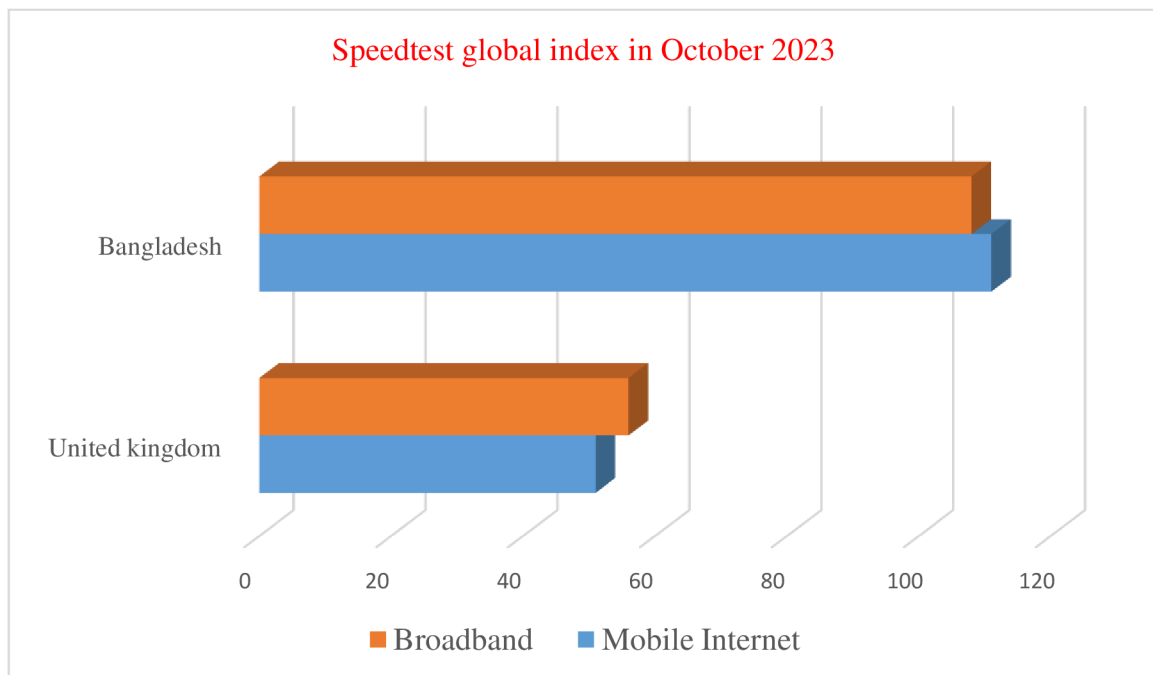
Figure 22: World e-government development Ranking
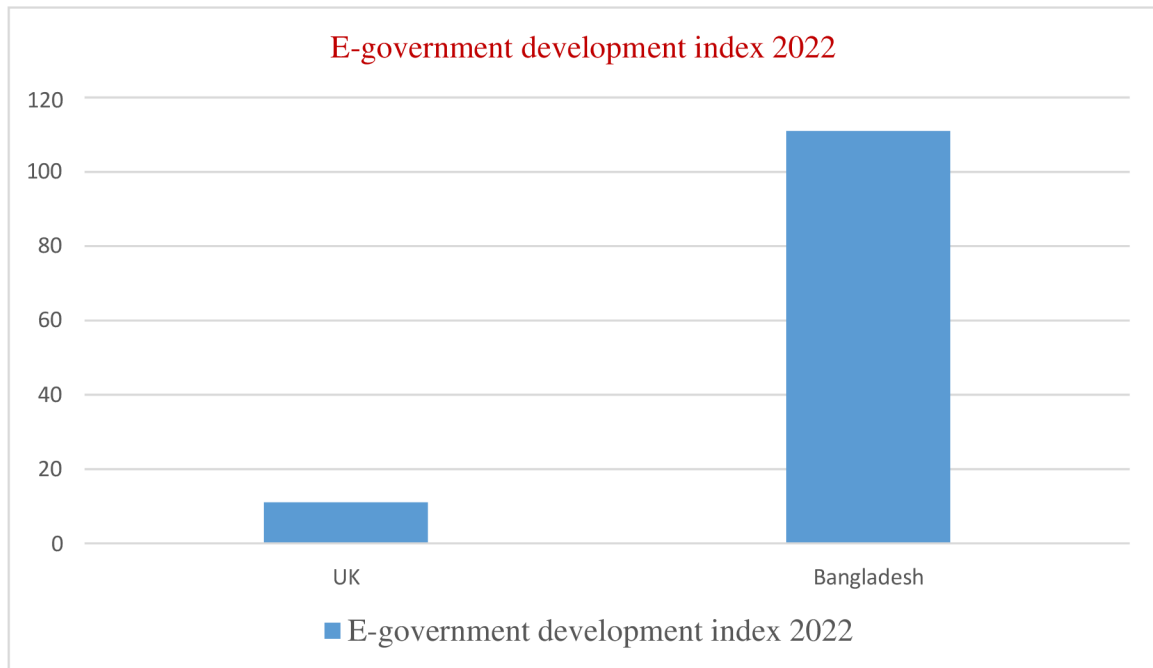
E-government development index 2022

Source: https://publicadministration.un.org/egovkb/en-us/Data-Center

The graph depicts that the position for each country in E-government development index in 2022, UK is in very strong position which is 11th and Bangladesh is in very poor position which is 111th, so people of Bangladesh are not getting that much e-government services comparatively to the UK.

Figure 23: Internet speed ranking for the UK and Bangladesh

Speedtest global index in October 2023

Source: https://www.speedtest.net/global-index/bangladesh ,
https://www.speedtest.net/global-index/united-kingdom#mobile

The graph depicts ranking based on mobile and broadband internet speed in the world. The lowest numbers indicate the highest speed which is 56 & 51 res pectively for broadband and mobile internet in the UK, whereas for broadband download speed 84.93 mbps, and upload speed 24.58 mbps and for mobile download 47.65 mbps , upload 7.24 mbps.

The graph also depicts ranking for Bangladesh respectively 108 for broadband and 111 for mobile internet. Speed for broadband, download 38.65 mbps and upload 39.91 mbps and Speed for mobile internet, download 20.66 mbps and upload 10.06 mbps.

Table 2: Comparison of E-Democracy in UK and Bangladesh

Aspects	E-Democracy in UK	E-Democracy in Bangladesh
Development	Well-established	Still in early stages
Challenges	Ensuring accessibility to all citizens	Lack of access to technology or internet
Participation rates	The UK has seen high levels of participation in online consultations and petitions	Participation rates in online platforms in Bangladesh are lower than in the UK, but have been increasing in recent years
Digital literacy	The UK has a relatively high level of digital literacy which is 78% among its citizens, which facilitates e-democracy.	Bangladesh faces challenges related to digital literacy, particularly among rural and disadvantaged populations,84.9% of the youth lack of digital literacy in the country.
Access to information	In the UK, citizens have access to a wealth of information about government policies and decisions through online platforms and freedom of information requests	Access to information can be more limited in Bangladesh, particularly in rural areas
Political culture	The UK has a long-standing tradition of democracy and political participation, which has facilitated the adoption of e-democracy initiatives	Bangladesh has a more recent history of democratic governance, and political culture can sometimes be a barrier to e-democracy initiatives. Since the beginning of democracy political conflict has been a common issue in the country.

Source: http://infosarker3.bcc.gov.bd/, https://petition.parliament.uk/, https://www.gov.uk/, https://www.dhakatribune.com/ , https://bangladesh.gov.bd/index.php , https://www.gbnews.com/politics/ https://digital.nhs.uk/about-nhs-digital/corporate-information-and-documents/digital-inclusion/what-digital-inclusion-is#:~:text=11.9m%20people%20(22%25%20of,essential%20digital%20skills%20for%20life , https://bdnews24.com/opinion/comment/kuexj6ahg5

Table 3: Comparison of E-Participation in UK and Bangladesh

Aspects	E-Participation in UK	E-Participation in Bangladesh
Online platforms	The UK has a range of online platforms for e-participation, including	Bangladesh has also implemented several online platforms for e-participation, including citizen

	social media, online consultations, and petitions	complaint portals and online voting systems
Citizen engagement	The UK has seen high levels of citizen engagement in e-participation initiatives, with many consultations and petitions receiving significant numbers of responses	Citizen engagement in e-participation initiatives is still relatively low in Bangladesh, although participation rates have been increasing in recent years.
Scope of initiatives	E-participation initiatives in the UK tend to be broad in scope, covering a wide range of policy areas and issues	E-participation initiatives in Bangladesh tend to be more focused on specific issues or projects, such as infrastructure development or local governance
Level of government involvement	E-participation initiatives in the UK are often led or supported by government agencies or departments, although civil society organizations and other stakeholders may also play a role	In Bangladesh, e-participation initiatives are often initiated by government agencies or departments, but civil society organizations and other stakeholders may also be involved
Use of technology	The UK has well-established infrastructure and technological capacity to support e-participation initiatives, including high-speed internet and digital communication tools	Bangladesh faces challenges related to technological infrastructure and connectivity, which can limit the reach and effectiveness of e-participation initiatives
Transparency	The UK has a strong tradition of government transparency and open data, which supports e-participation by enabling citizens to access information about government activities and decision-making processes.	Bangladesh has made some progress in increasing government transparency, but there are still challenges related to access to information and the release of government data.
Challenges	Challenges facing e-participation in the UK include ensuring that initiatives are accessible to all citizens, maintaining trust in government, and balancing the needs of different stakeholders	Challenges facing e-participation in Bangladesh include limited resources, technological infrastructure and connectivity, and cultural barriers to citizen participation in governance

Source:Welcome to GOV.UK (www.gov.uk), https://www.gbnews.com/politics/ ,
Petitions-UK Government and Parliament, http://infosarker3.bcc.gov.bd/ , https://www.dhakatribune.com/,

a2i – Aspire to Innovate , CPTU| Central Procurement Technical Unit, https://bangladesh.gov.bd/index.php
https://involve.org.uk/resource/e-petitions , https://www.petitions.net/bd/ ,
https://mycouncil.surreycc.gov.uk/mgEPetitionListDisplay.aspx?RPID=60756012&HPID=60756012&VM
=2

There are some similarities in the use of e-participation initiatives in the United Kingdom and Bangladesh; however, there are also significant differences in terms of the scope, level of government involvement, technological infrastructure, and other factors that affect the reach and effectiveness of these initiatives. In general, the UK and Bangladesh use e-participation initiatives in somewhat different ways.

Table 4: Comparison of E-Governance in UK and Bangladesh

Criteria	UK	Bangladesh
Digital identity system	GOV.UK Verify	National Identity Card (NID) system
E-participation	Established mechanisms for public consultation and engagement	Early stages of e-participation initiatives
E-governance infrastructure	More developed ICT sector, higher internet penetration rate, and better digital literacy	Less developed ICT sector, lower internet penetration rate, and lower digital literacy
Focus of e-governance initiatives	Improving efficiency and effectiveness of government services	Providing basic services to geographically dispersed citizens with limited access to traditional government services
Mobile governance	mySociety platform for mobile apps and services	There is no portal for mobile apps and services
Online payment system	GOV.UK Pay	bKash
E-health	NHS Digital providing digital health services	Telemedicine initiatives to provide healthcare services to rural areas, but always not accessible.

Source:Welcometo   GOV.UK   (www.gov.uk),   https://www.mysociety.org/about/   ,
https://www.payments.service.gov.uk/ , https://digital.nhs.uk/ , Insider Intelligence ,
United Kingdom Internet Usage Stats and UK Telecom Reports (internetworldstats.com) , a2i – Aspire to
Innovate https://www.nidw.gov.bd/,http://infosarker3.bcc.gov.bd/,
https://www.btrc.gov.bd/content/telemedicine-bangladesh,https://www.bkash.com/,
http://www.btrc.gov.bd/, CPTU| Central Procurement Technical Unit ,
 Symptom Checker, Health Information and Medicines Guide | Patient, https://bangladesh.gov.bd/index.php

However, the level of implementation and adoption differs, with the UK making significant progress in digital transformation and Bangladesh facing challenges in infrastructure, implementation, and adoption.

Table 5: Comparison of E-Services, E-Information in UK, and Bangladesh

E-Information	UK	Bangladesh
Access to Information	High access to a range of online resources, including e-books, journals, articles, and academic databases.	Limited access to online resources due to low internet penetration, low digital literacy, and limited availability of online content in local languages.
Online News and Media	High adoption rate with a wide range of online news and media platforms available, including newspapers, TV channels, and social media.	Limited adoption rate with low accessibility to online news and media due to low internet penetration, low digital literacy, and limited availability of online content in local languages.
Online Government Information	High availability of online government information with a range of resources available, including government websites, portals, and social media channels.	Limited availability of online government information due to low internet penetration, low digital literacy, and limited investment in e-government infrastructure.
Online Education Resources	High availability of online education resources, including online courses, tutorials, e-books, and academic databases.	Limited availability of online education resources due to low internet penetration, low digital literacy, and limited investment in e-learning infrastructure.
Online Health Information	High adoption rate with a range of online health information resources available, including government websites, health portals, and social media channels.	Limited adoption rate with low accessibility to online health information due to low internet penetration, low digital literacy, and limited availability of online content in local languages.
Online Legal Information	High availability of online legal information, including government websites, legal databases, and social media channels.	Limited availability of online legal information due to low internet penetration, low digital literacy, and limited investment in e-justice infrastructure.
Online Business Information	High availability of online business information, including government websites, business directories, and social media channels.	Limited availability of online business information due to low internet penetration, low digital literacy, and limited investment in e-business infrastructure.
Online Cultural Information	High adoption rate with a range of online cultural information resources available, including museums, art galleries, and heritage sites.	Limited adoption rate with low accessibility to online cultural information due to low internet penetration, low digital literacy, and limited investment in e-culture infrastructure.

	High availability of online environmental information, including government websites, environmental organizations, and social media channels.	Limited availability of online environmental information due to low internet penetration, low digital literacy, and limited investment in e-environment infrastructure.
Online Environmental Information		

Source: United Kingdom Internet Usage Stats and UK Telecom Reports (internetworldstats.com) , https://www.gov.uk/ , https://www.gbnews.com/politics/ , http://infosarker3.bcc.gov.bd/,http://www.btrc.gov.bd/,http://elearningforkids.org.bd/about, a2i–AspiretoInnovate, https://www.bou.edu.bd/ , 10 Minute School - The largest online classroom of Bangladesh, Online Tutoring - Affordable high quality online tutors - MyTutor Symptom Checker, Health Information and Medicines Guide | Patient, https://bangladesh.gov.bd/index.php, https://bdnews24.com/opinion/comment/kuexj6ahg5 , https://digital.nhs.uk/about-nhs-digital/corporate-information-and-documents/digital-inclusion/what-digital-inclusion-is#:~:text=11.9m%20people%20(22%25%20of,essential%20digital%20skills%20for%20life, https://www.gov.uk/browse/business https://www.culturalwednesday.co.uk/museums-with-virtual-tours/ https://www.artscouncil.org.uk/culture-heritage-capital

A comparison of e-information services in the United Kingdom and Bangladesh reveals that the United Kingdom has a high acceptance rate and availability of e-information in a variety of areas, including health, business, culture, and the environment. This is owing to widespread internet access, digital literacy, and investments in e-infrastructure. In contrast, owing to poor internet penetration, digital literacy, and investment in e-infrastructure, Bangladesh has a low acceptance rate and availability of e-information. Therefore, access to internet material is restricted in a variety of areas in Bangladesh, including health, business, culture, and the environment.

Table 6: Comparison of E-Security in UK and Bangladesh

Aspect	UK	Bangladesh
Legal Framework	Data Protection Act 2018, GDPR	Digital Security Act 2018
Cybercrime	More advanced measures in place to tackle it.	Lack of capacity to deal with cybercrime.
Internet Infrastructure	Highly developed with widespread access to high-speed broadband and 4G/5G mobile networks.	Internet access is still relatively low with slow and unreliable connections in the rural area. Although 4G network is available, but slow in rural area due to lack of covering capacity.
Cybersecurity Awareness	Generally higher among businesses and individuals.	Lack of awareness about the risks of cybercrime and the importance of e-security. In June and July 2023 more than 50 million Bangladeshi citizens data were unauthorised exposed due to weakness of data protection practice and infrastructure.
Government Initiatives	CyberFirst programme to encourage young people to pursue careers in cybersecurity. Nation cyber crime reporting unit name is	Establishment of a national computer emergency response team (CIRT) to deal with cyber threats. They accept claim over the phone call and e-mail for non-stop.

	Action fraud, they provide non-stop service over the phone call and online reporting.	

Source:
https://www.gov.uk/government/publications/national-cyber-strategy-2022/national-cyber-security-strategy-2022
CyberEssentialsscheme:overview-GOV.UK(www.gov.uk),
https://www.bb.org.bd/en/index.php/about/deptdtl/78,Cyber-Security-
বাংলাদেশকে শিকারি উটার

কাউন্সি

ল (বিব শি শ বি শি শ ব)-গণপ্রজাতন্ত্রী
বাংলাদেশ কম্প শি শ ব রকার (bcc.gov.bd) ,
https://bangladesh.gov.bd/index.php ,Data Protection Act 2018,
https://wwwex.ilo.org/dyn/natlex2/natlex2/files/download/110029/BGD110029.pdf,
https://www.moneysavingexpert.com/mobiles/guide-to-5g/#networks ,
https://www.ncsc.gov.uk/cyberfirst/overview ,
https://www.actionfraud.police.uk/ , https://www.cirt.gov.bd/

Because of its highly developed internet infrastructure, legislative framework, and government efforts, the United Kingdom generally has more sophisticated e-security safeguards in place than other countries do. The e-security infrastructure, regulatory framework, and general knowledge of the dangers posed by cybercrime in Bangladesh are still in the process of being developed.

Figure 24: Cyber safe country

Source: https://www.comparitech.com/blog/vpn-privacy/cybersecurity-by-country/
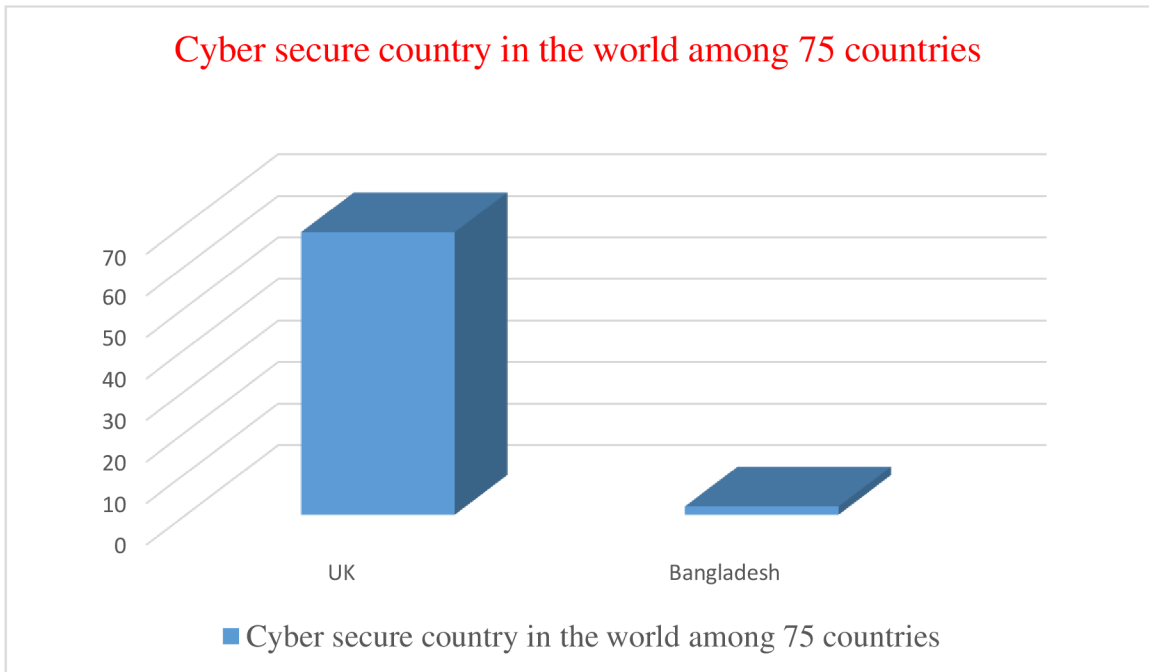
The graph shows the highest level of the cyber security-based country whereas the Uk is situated on the top level of security which is 68 and Bangladesh is the bottom number 2 in the world, according to the Comparitech research.

Table 7: Comparison of E-Healthcare in UK and Bangladesh

Aspect	UK E-Healthcare	Bangladesh E-Healthcare
Government support	The National Health Service (NHS) provides free healthcare services, including e-consultations and digital health records.	The government has launched several initiatives to promote e-health, including the Bangladesh Telemedicine Project which is still in primary level.
Types of services	E-health services in the UK include online appointments, remote monitoring, and telemedicine.	E-health services in Bangladesh include telemedicine, e-prescriptions, and online consultations.
Healthcare infrastructure	The UK has a well-developed healthcare infrastructure with extensive hospitals and clinics that can provide support for e-health services.	Healthcare infrastructure in Bangladesh is limited, particularly in rural areas, which can limit access to e-health services.
Healthcare workforce	The UK has a large healthcare workforce with extensive training in digital health, which can support the development and implementation of e-health services.	The healthcare workforce in Bangladesh is relatively small, and there are limited resources available for training healthcare professionals in e-health.

Source: http://www.mohfw.gov.bd/ , Electronic Prescription Service - NHS Digital ,
http://infosarker3.bcc.gov.bd/,a2i – Aspire to Innovate, http://www.btrc.gov.bd/ ,
Symptom Checker, Health Information and Medicines Guide | Patient,
United Kingdom Internet Usage Stats and UK Telecom Reports (internetworldstats.com) ,
https://bangladesh.gov.bd/index.php,
https://old.dghs.gov.bd/index.php/en/home/84-english-root/ehealth-eservice/490-telemedicine-service

The UK has a high level of internet connectivity, access to technology, and a well-developed healthcare infrastructure, which supports the implementation of e-health services. The UK also has strict laws governing patient privacy and a large healthcare workforce with extensive training in digital health. In contrast, internet connectivity in Bangladesh is low and a significant portion of the population does not have access to digital devices. Healthcare infrastructure in Bangladesh is limited, particularly in rural areas, and the government has launched initiatives such as the Bangladesh Telemedicine Project. E-health services in Bangladesh include telemedicine, e-prescriptions, and online consultations, but there are limited resources available for training healthcare professionals in e-health.

Table 8: Comparison of E-Taxation in UK and Bangladesh

Aspect	UK	Bangladesh
Tax authority	HM Revenue & Customs (HMRC)	National Board of Revenue (NBR)
Types of taxes	Income tax, corporation tax, VAT, excise duty, stamp duty, and more.	Income tax, VAT, customs duty, and more.

E-Filing	Mandatory for most taxpayers	Optional for individuals and mandatory for companies
E-Payment	Mandatory for all taxpayers	Optional for individuals and mandatory for companies
Mobile App	HMRC App available for iOS and Android	NBR App available for iOS and Android, but user review is poor.
Security	Uses secure protocols and encryption	Uses secure protocols and encryption
Support	Provides online guidance and support	Provides limited online guidance and support
Penalties	Late filing and payment penalties apply	Late filing and payment penalties apply
Integration	Integrates with accounting software	Lack of Integration with accounting software.

Sources: Manage an existing benefit, payment or claim - GOV.UK (www.gov.uk), https://nbr.gov.bd/, https://nbr.gov.bd/eservices/1/eng ,Pay your Self Assessment tax bill: Overview - GOV.UK (www.gov.uk) , https://bangladesh.gov.bd/index.php, https://www.gov.uk/guidance/download-the-hmrc-app, https://play.google.com/store/apps/details?id=com.mcc.taxcalculator&hl=en&gl=US&pli=1, https://en.wikipedia.org/wiki/Government_Gateway

The UK and Bangladesh have a tax authority responsible for collecting various types of taxes, including income tax, VAT, and customs duty. E-filing and e-payment options are available in both countries, with the UK having a higher adoption rate of e-filing compared to Bangladesh. Both countries use secure protocols and encryption for online transactions, and penalties apply for late filing and payment. The UK provides better online guidance and support and integrates well with accounting software, while Bangladesh has limited integration.

Table 9 : Comparison of E-Commerce in UK and Bangladesh

Aspect	UK	Bangladesh
Market size	3rd largest e-commerce markets globally	E-commerce market is growing, but still relatively small
Top sites	Amazon, eBay, ASOS, Tesco, and John Lewis	Daraz, Ajkerdeal, Bagdoom, Pickaboo, and Evaly
Online payment	Secure payment options available, including credit/debit cards, PayPal, and Apple Pay.	Limited payment options available, including cash on delivery, credit/debit cards, and mobile banking
Delivery	Fast and efficient delivery, often with same-day or next-day options.	Delivery options are limited in the rural area, with longer delivery times.
Returns	Easy and free returns for most items	Returns policies vary widely by seller
Regulation	Regulated by various bodies, including the Competition and Markets Authority (CMA) and Advertising Standards Authority (ASA)	Limited regulatory oversight, with concerns about counterfeit products and fraud
Cross-border	Many UK sites offer international shipping and	Cross-border e-commerce is still in its early stages and faces challenges in Bangladesh

	have a strong cross-border presence	

Source:

Unlock digital opportunities with the world's most trusted forecasts, analysis, and benchmarks. - Insider Intelligence,
https://www.amazon.co.uk/,
https://www.ebay.co.uk/,
https://www.asos.com/au/men/a-to-z-of-brands/other-uk/cat/?cid=21769,
https://www.tesco.com/
https://www.johnlewis.com/,
https://www.daraz.com.bd/,https://www.ajkerdeal.com/,
https://onlineshoppingbd.org/bagdoom-com/,
https://www.pickaboo.com/,
https://evaly.com.bd/,
https://bangladesh.gov.bd/index.php,
https://www.gov.uk/government/organisations/competition-and-markets-authority/about#:~:text=The%20Competition%20and%20Markets%20Authority,members%20of%20a%20CMA%20panel, https://www.asa.org.uk/ ,
https://www.trade.gov/country-commercial-guides/united-kingdom-ecommerce

The United Kingdom boasts one of the world's biggest e-commerce marketplaces, with leading sites like Amazon, eBay, and ASOS providing a variety of safe payment methods, quick delivery, and simple returns. In comparison, Bangladesh's e-commerce business is expanding but remains modest, with prominent sites such as Daraz, Ajkerdeal, and Bagdoom providing restricted payment choices and lengthy delivery periods in rural. Return procedures differ greatly across sellers, and there is no governmental monitoring, raising worries about counterfeit goods and fraud. Although many UK sites provide international shipping and have a significant cross-border presence, cross-border e-commerce is still in its early stages in Bangladesh and confronts hurdles.

Table 10: Compare E-Justice in UK and Bangladesh

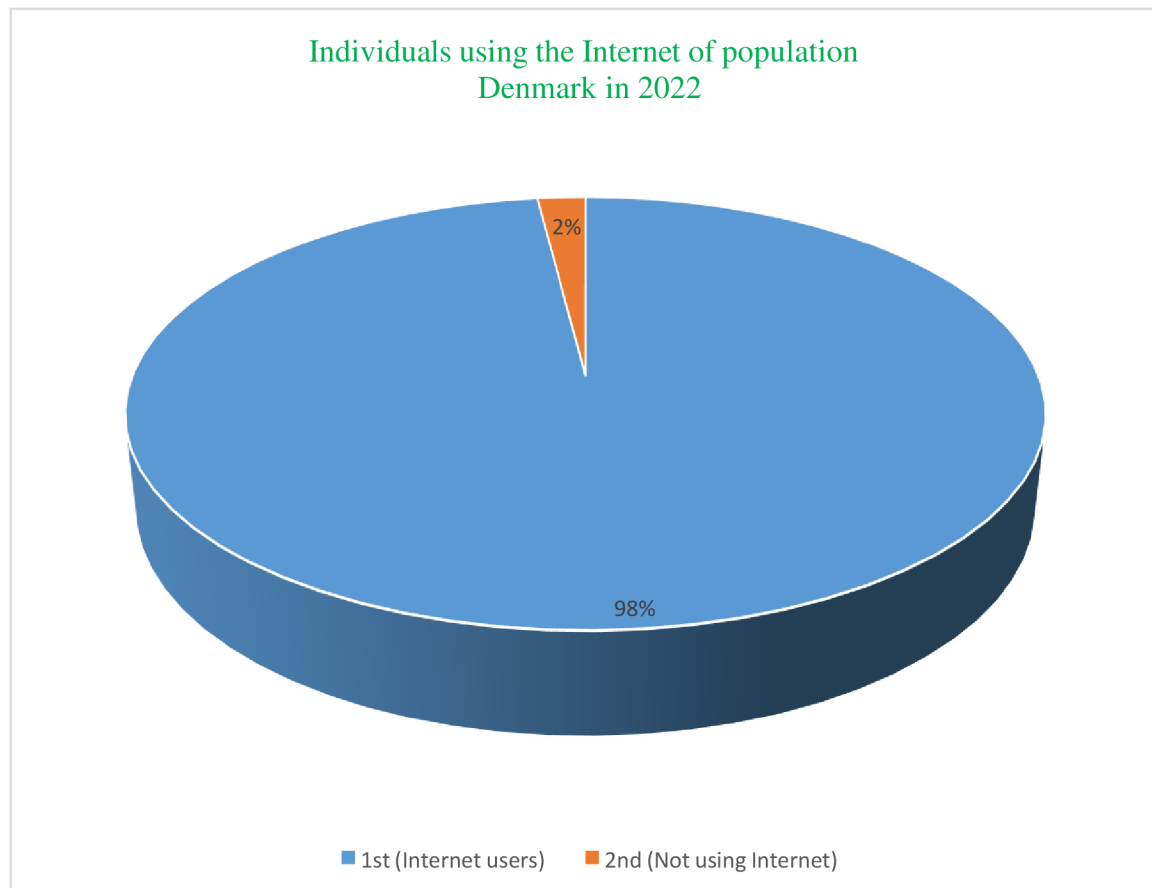| Aspect	UK	Bangladesh
Online courts	HM Courts & Tribunals Service, attendance on summon day is required.	Attendance on summon day is required.
E-filing	Available for some courts and tribunals	E-filing is not available for courts and tribunals
E-payment	Available for some court fees and fines	E-payment is not available for court fees and fines
Online Portal	https://www.justice.gov.uk/, https://www.gov.uk/	https://www.judiciary.gov.bd/en , https://causelist.judiciary.gov.bd/
Transparency	High levels of transparency and accountability	Transparency and accountability are improving
Access	Easy access to information and guidance online	Limited access to information and guidance online
Support	Provides online guidance and support	Provides limited online guidance and support
Security	Uses secure protocols and encryption	Uses secure protocols and encryption

Source:https://www.lawgazette.co.uk/,https://www.legalcheek.com/lc-careers-posts/how-tech-is-transforming-the-legal-sector/,https://www.judiciary.gov.bd/en,http://old.lawjusticediv.gov.bd/,
https://bangladesh.gov.bd/index.php ,
https://www.gov.uk/government/organisations/hm-courts-and-tribunals-service ,

The United Kingdom certain courts and tribunals accept e-filing and e-payment. The web site Justice.gov.uk and gov.uk enable quick access to information and advice, and there is a high degree of openness and accountability. The United Kingdom also offers online assistance and help and works well with case management software. In contrast, Bangladesh is not offering courts and tribunals e-filing and e-payment through the site. But it is only possible to know and download case list from causelist.judiciary.gov.bd website. Transparency and accountability are increasing, but online information and advice is limited.

## 5.2 Comparison of E- Governance in Denmark and Bangladesh

Figure 25: Internet users in Denmark

Individuals using the Internet of population
Denmark in 2022

2%

98%

■ 1st (Internet users) ■ 2nd (Not using Internet)

Source: https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=DK

The pie chart illuminates that the internet infrastructures are very strong in Denmark and covering all over the country, that is why the internet using percentage of population is very high which is most important to provide e-government services to all people.

Figure 26: World e-government development ranking
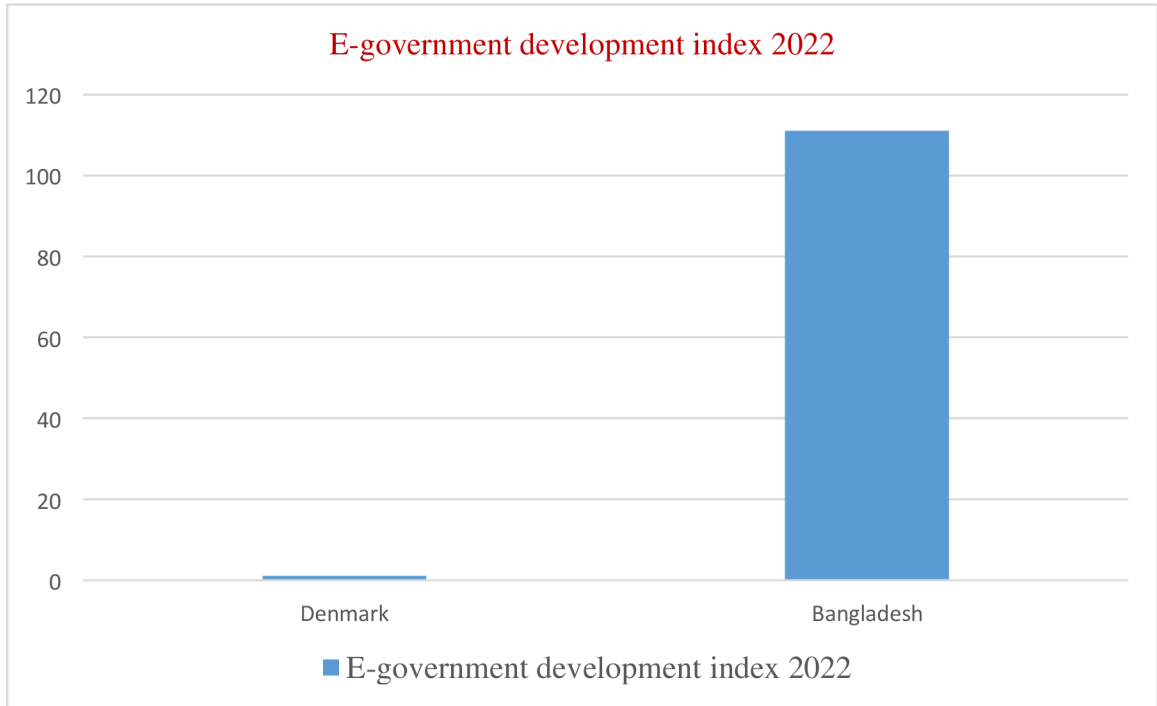
E-government development index 2022

Source: https://publicadministration.un.org/egovkb/en-us/data-center

The graph depicts that the position for each country in E-government development index in 2022, Denmark is in very strong position which is 1st in the world and Bangladesh is in very poor position which is 111th, so people of Bangladesh are not getting that much e-government services comparatively to the Denmark.

Figure 27: Internet speed for Denmark and Bangladesh
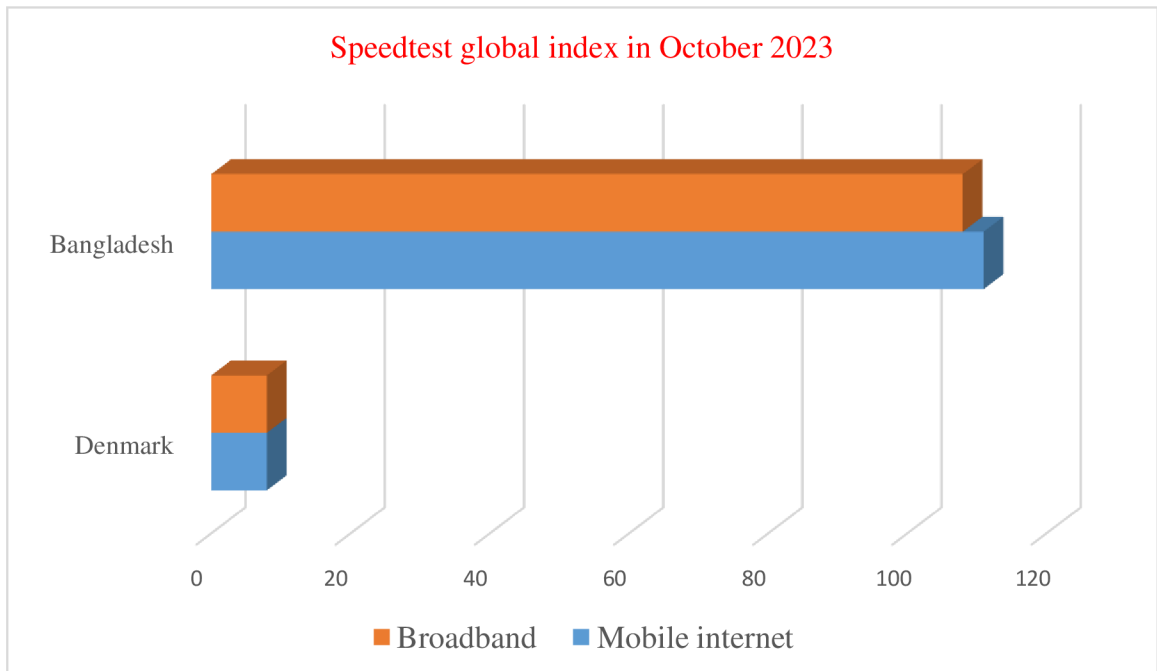
Speedtest global index in October 2023

The graph depicts ranking based on mobile and broadband internet speed in the world. The lowest numbers indicate the highest speed which is 8 & 8 respectively for broadband and mobile internet in Denmark, whereas for broadband download speed 206.80 mbps, and upload speed 114.04 mbps and for mobile download 143.63 mbps , upload 19.73 mbps.

The graph also depicts ranking for Bangladesh respectively 108 for broadband and 111 for mobile internet. Speed for broadband, download 38.65 mbps and upload 39.91 mbps and Speed for mobile internet, download 20.66 mbps and upload 10.06 mbps.

Table 11: Comparison of E-Democracy in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Digital Participation	High levels of digital participation, with extensive use of e-petitions and online forums.	Limited digital participation, with low levels of internet access and limited use of online forums.
Open Government Data	Comprehensive and widely available open government data.	Limited availability of open government data.
E-Voting	Limited use of e-voting.	Limited used of e-voting, but lack of transparency, with potential for introducing e-voting systems in the future.
Online Citizen Services	A wide range of online citizen services, including tax filing, healthcare, and education.	Limited availability of online citizen services, with potential for introducing more services in future.
Social Media Usage	High social media usage for government communication and citizen engagement.	Limited social media usage for government communication and citizen engagement.

In comparison to Bangladesh, Denmark has a more mature and well-established e-democracy infrastructure. Denmark has high levels of digital participation, with widespread use of e-petitions and online forums, extensive and widely available open government data, a wide range of online citizen services such as tax filing, healthcare, and education, and extensive use of social media for government communication and citizen engagement. Bangladesh, on the other hand, has limited digital involvement due to low levels of internet access and limited use of online forums, a lack of accessible government data, a lack of online citizen services, and a lack of social media use for government communication and public interaction. Bangladesh, on the other hand, can introduce e-voting systems and more online citizen services in the future.

Table 12: Comparison of E-Participation in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Digital Tools	A range of digital tools available for participation, including online consultations and public hearings.	Limited availability of digital tools for participation, with some use of social media and online forums.
Online Platforms	Comprehensive online platforms for citizen engagement and participation, including digital town halls.	Limited availability of online platforms for citizen engagement and participation, with potential for introducing more in future.
Civic Education	Extensive civic education programs, with a focus on promoting democratic values and active citizenship.	Limited civic education programs, with potential for introducing more in the future.
Transparency	High levels of transparency, with comprehensive access to public information and active freedom of speech.	Limited transparency, with restrictions on freedom of speech and limited access to public information.
E-Learning Platforms	Denmark has a strong presence of e-learning platforms, such as Coursera, Khan Academy, and Aarhus University's massive open online courses (MOOCs).	Bangladesh has a limited presence of e-learning platforms, with only a few Institutions offering online courses and programs. However, the government has implemented various initiatives to promote e-learning.

Source: https://edu-active.com/study-in-denmark/,
Digital Government Meta Monitor,
https://medarbejdere.au.dk/en/informationsecurity/data-protection/e-learning-course-about-the-rules-for-personal-data , https://em.dk/english/topics/e-government/e-democracy/ , http://infosarker3.bcc.gov.bd/ ,
https://a2i.gov.bd/,http://ecs.gov.bd/ , Study in Denmark ,
The Danish Higher Education System — English (ufm.dk) ,
https://support.khanacademy.org/hc/en-us/articles/360020642472-Det-danske-hold-The-Danish-Team ,
https://www.coursera.org/ucph , https://10minuteschool.com/ , https://bangladesh.gov.bd/index.php ,
https://lifeindenmark.borger.dk/ , https://www.borger.dk/

In comparison to Bangladesh, Denmark has a more mature and well-established e-participation infrastructure. Denmark has a variety of digital tools for participation, including comprehensive online platforms for citizen engagement and participation, such as digital town halls, extensive civic education programmes aimed at promoting democratic values and active citizenship, and high levels of transparency, including comprehensive access to public information and active freedom of expression. Bangladesh, on the other hand, has limited access to digital tools for participation, with some use of social media and online forums, limited access to online platforms for citizen engagement and participation, with the potential to introduce more in the future, limited civic education programmes, with the potential to introduce more in the future, and limited transparency, with restrictions on free speech and limited access to public information.

Table 13: Comparison of E-Governance in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Digital Infrastructure	Well-established digital infrastructure, with high-speed internet,5G networks, and digital public services.	Limited digital infrastructure, with low levels of internet access in rural and limited availability of digital public services.
Government Services	Comprehensive and user-friendly digital government services, including tax filing and healthcare.	Limited availability of digital government services, with potential for introducing more services in the future.
Open Government Data	Comprehensive and widely available open government data.	Limited availability of open government data.
E-Democracy and Transparency and Ethics	High levels of e-democracy and e-participation, with extensive use of digital tools and online platforms. High levels of transparency and ethical standards in government operations.	Limited levels of e-democracy and e-participation, with limited availability of digital tools and online platforms, potential for improvement in future. Limited transparency and ethical standards in government operations, with potential for improvement in future.

Source:https://bangladesh.gov.bd/index.php, https://www.dhakatribune.com/, https://tdcnet.com/5g/ , https://en.digst.dk/ , https://metamonitor.eu/ , https://www.borger.dk/oekonomi-skat-su/NemKonto , https://www.borger.dk/# , https://www.europarl.europa.eu/RegData/etudes/IDAN/2015/565890/EPRS_IDA(2015)565890_EN.pdf , https://www.mitid.dk/en-gb/about-mitid/ , https://lifeindenmark.borger.dk/ , http://infosarker3.bcc.gov.bd/ , https://a2i.gov.bd/ , https://cptu.gov.bd/ , https://www.borger.dk/

Denmark has a more modern and well-established e-governance infrastructure than Bangladesh. Denmark has a well-established digital infrastructure that includes high-speed internet, 5G networks, and digital public services, comprehensive and user-friendly digital government services such as tax filing and healthcare, comprehensive and widely available open government data, high levels of e-democracy and e-participation through extensive use of digital tools and online platforms, and high levels of transparency and ethical standards in government operations. Bangladesh, on the other hand, has limited digital infrastructure with low levels of internet access and limited availability of digital public services, limited availability of open government data, limited levels of e-democracy and e-participation with limited availability of digital tools and online platforms, and limited transparency and ethical standards in government operations with potential for improvement in the future.

Table 14: Comparison of E-Information in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Open Data Policy	Comprehensive open data policy, with high levels of transparency and accountability	Limited open data policy, with low levels of transparency and accountability.
Digital Literacy	High levels of digital literacy, with a focus on digital education and training.	Low levels of digital literacy, with limited access to digital education and training resources.

E-Government Websites	Comprehensive and user-friendly e-government websites, with high levels of public engagement.	Limited availability of user-friendly e-government websites, with potential for improvement in public engagement and participation.
Digital Infrastructure	Comprehensive digital infrastructure, with high-speed internet and advanced technology.	Limited digital infrastructure, with slow internet speeds and outdated technology.
Freedom of Information	Strong legal framework for freedom of information, with high levels of access to information.	Limited legal framework for freedom of information, with low levels of access to information in practice.
Social Media Usage	High levels of social media usage and engagement, with a focus on using social media for news.	Moderate levels of social media usage and engagement, with a focus on using social media for personal communication and entertainment.

Source:https://www.bb.org.bd/en/index.php/about-us/activities/information-securityawareness-progra,for more data following above websites. https://lifeindenmark.borger.dk/, https://www.borger.dk/, https://www.mitid.dk/en-gb/ , https://www.petitions.net/dk/

In comparison to Bangladesh, Denmark has a more extensive and user-friendly digital infrastructure. Denmark has a high internet penetration rate, a thorough open data policy, high levels of digital literacy, comprehensive and user-friendly e-government websites, and a solid legislative foundation for information freedom. Denmark also has extensive cybersecurity safeguards in place, significant levels of social media use, and a concentration on utilising social media for news. Bangladesh, on the other hand, has limited availability and acceptance of digital infrastructure, with room for growth in cybersecurity, freedom of information, and public involvement.

Table 15: Comparison of E-Security in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Cybersecurity Measures	Comprehensive cybersecurity measures, with high levels of protection against cyber threats. Centre for cyber security department, and Police are responsible to accept claims over the phone call and online reporting as well. Sektorcert is responsible for Danish critical infrastructure cyber security.	Limited cybersecurity measures, with potential for improvement in protecting against cyber threats.
Data Protection Laws	Strong data protection laws, with high levels of protection for personal information.	Data protection laws 2018 lack of implementation.
E-Payment Security	High levels of e-payment security, with comprehensive security protocols in place.	Limited e-payment security, with potential for improvement in security protocols and protection against fraud and other security risks.

Digital Identity	Comprehensive digital identity system, with high levels of security and privacy protection.	Limited digital identity system, with potential for improvement in security and privacy protection.
Public Awareness	High levels of public awareness on cybersecurity and best practices.	Limited public awareness on cybersecurity and best practices, with potential for improvement in education and awareness campaigns.

Source:https://www.bb.org.bd/en/index.php/about-us/activities/information-securityawareness-progra,
https://lifeindenmark.borger.dk/,https://www.dataguidance.com/notes/denmark-data-protection-overview,
https://en.digst.dk/strategy/the-danish-national-strategy-for-cyber-and-information-security/ ,
https://politi.dk/en/crimes-against-digital-devices , https://www.cfcs.dk/en/contact/,
https://securityaffairs.com/154156/apt/denmark-critical-infrastructure-record-attacks.html ,
https://sektorcert.dk/ , https://www.datatilsynet.dk/media/7753/danish-data-protection-act.pdf ,
https://wwwex.ilo.org/dyn/natlex2/natlex2/files/download/110029/BGD110029.pdf ,
https://www.borger.dk/

Denmark has a robust e-security infrastructure that includes robust cybersecurity safeguards, data protection regulations, e-payment security standards, and a digital identification system. Denmark also boasts low cybercrime rates, minimal internet restriction, and a high degree of public knowledge about cybersecurity and best practises. Bangladesh, on the other hand, has a limited e-security infrastructure with room for development in cybersecurity safeguards, data protection regulations, e-payment security procedures, and a digital identification system. Bangladesh also has a high rate of cybercrime, limited internet control, and little public understanding of cybersecurity and best practises.

Figure 28: Cyber safe country

Source: https://www.comparitech.com/blog/vpn-privacy/cybersecurity-by-country/
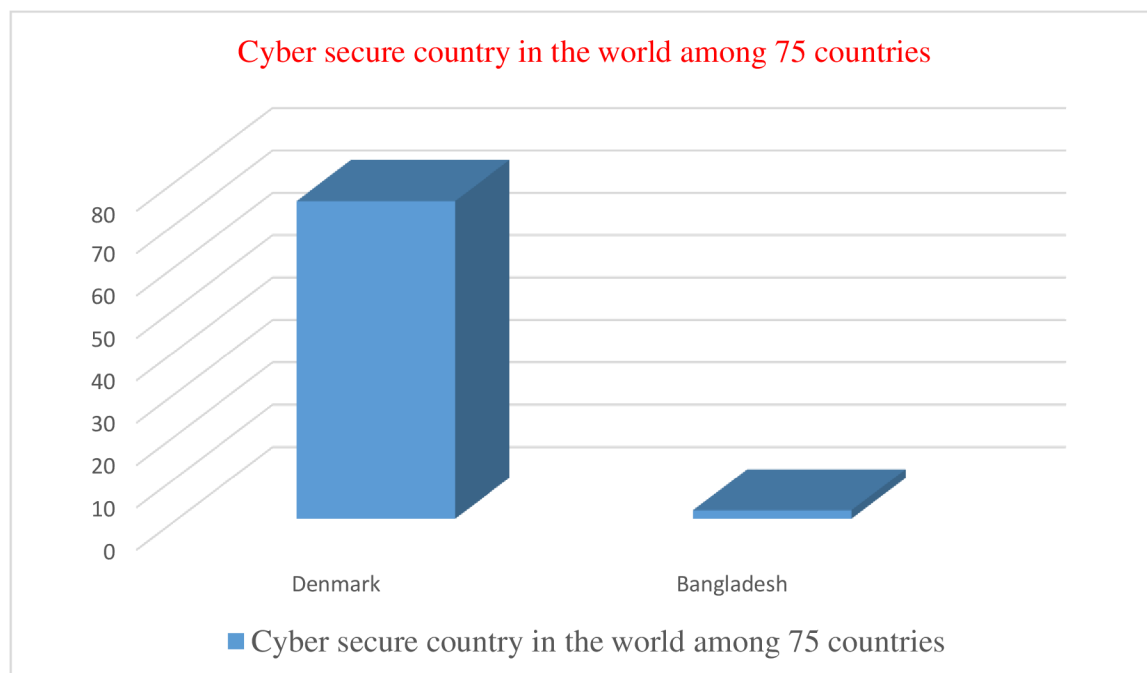
The graph shows the highest level of the cyber security-based country whereas Finland is situated highest level of security which is 75 and Bangladesh is the lowest number 2 in the world, according to the Comparitech research.

Table 16: Hacking and Malware history in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Hacking and malware	22 private energy companies were hacked in May 2023 and they got access within few days through firewall, they disconnected them from the main electric grid.	Bangladesh central bank reserved money US$ 100 million was transferred by hackers through swift network code in February 2016. Bangladeshi citizens' information was hacked from a government website which is around 50 million in June 2023.

Source:https://www.dhakatribune.com/opinion/op-ed/122939/the-great-bangladesh-cyber-heist-shows-truth-is,
https://www.aa.com.tr/en/asia-pacific/personal-data-of-50-million-bangladeshis-leaked-on-government-website/2940505# ,https://sektorcert.dk/ ,
https://therecord.media/danish-energy-companies-hacked-firewall-bug

Table 17: Comparison of E-Healthcare in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Telemedicine	Established with widespread use.	Emerging with limited use.
Electronic	Advanced electronic health records (EHRs).	Developing electronic health records (EHRs).
Health Records	Shared between healthcare providers.	Limited sharing between healthcare providers.
Online Services	Wide range of online healthcare services.	Limited online healthcare services available.
Mobile Health	High adoption of mobile health technology.	Limited adoption of mobile health technology.
Funding	Government funded with high investment.	Limited government funding for e-healthcare.
Infrastructure	Advanced IT infrastructure and internet access.	Limited IT infrastructure and internet access.

Source:https://lifeindenmark.borger.dk/healthcare/the-danish-healthcare-system/how-the-danish-healthcare-system-works, https://www.borger.dk/sundhed-og-sygdom , https://www.mitid.dk/en-gb/about-mitid/ ,
https://www.itu.dk/~slauesen/SorenEHR.html , https://www.borger.dk/,
For Bangladesh, following data from UK-Bangladesh comparison website lists.

Overall, Denmark is much further along than Bangladesh when it comes to e-healthcare. Denmark has advanced electronic health records (EHRs) and a lot of people use mobile health technology. In Denmark, doctors and nurses also share each other's health records. Bangladesh, on the other hand, is still working on its electronic health records and telemedicine services, so there are not as many online health care options. Bangladesh also

doesn't have a lot of money for e-healthcare and doesn't have a lot of advanced IT infrastructure or internet access. But both countries face problems when it comes to improving health outcomes and giving people access to health care.

Table 18: Comparison of E-Taxation in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Online Filing	Mandatory for all taxpayers.	Optional for individual taxpayers.
Payment System	Advanced online payment system available.	Limited online payment system available.
VAT Refunds	Electronic VAT refunds available.	Manual VAT refunds processed by tax officials.
Tax Returns	Advanced digital tax return submission system.	Developing digital tax return system.
Taxpayer Access	Wide range of taxpayer online services available.	Limited taxpayer online services available.
Taxpayer Support	Advanced digital support and assistance available.	Limited digital support and assistance available.
Infrastructure	Advanced IT infrastructure and internet access.	Limited IT infrastructure and internet access.
Tax Compliance	High compliance rate with efficient tax collection.	Mixed compliance rate with less efficient tax collection.

Source: Borger - skat.dk , https://nbr.gov.bd/ , https://nbr.gov.bd/eservices/1/eng, Bangladesh Bank (bb.org.bd), https://lifeindenmark.borger.dk/money-and-tax, https://www.borger.dk/ , https://www.mitid.dk/en-gb/ ,
For Bangladesh, following data from UK-Bangladesh comparison website lists.

Overall, Denmark has a more advanced e-taxation system compared to Bangladesh. In Denmark, all taxpayers must file their taxes online, and there is an advanced online payment system for taxpayers to use. Denmark also has a digital tax return system, and taxpayers can get a lot of help and services online. In Bangladesh, on the other hand, filing taxes online is not required for individuals, and there are only a few ways to pay taxes online. Tax officials process VAT refunds by hand, and a digital tax return system is being built. Bangladeshi taxpayers don't have much access to online services and help. Denmark also has better IT infrastructure and better access to the internet. Denmark has a high rate of people paying their taxes, and they do it well. Bangladesh, on the other hand, has a lower rate of people paying their taxes, and they do it less well.

Table 19: Comparison of E-Commerce in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Online Marketplaces	Wide range of online marketplaces available.Zalando.dk one of the popular e-shops.	Limited online marketplaces available.
Digital Payments	Advanced digital payment system available.	Limited digital payment system available.
Logistics	Efficient logistics and delivery system.	Developing logistics and delivery system.
Consumer Trust	High level of consumer trust in online shopping.	Lower level of consumer trust in online shopping.
Internet Access	High internet penetration and usage.	Limited internet penetration and usage.
IT Infrastructure	Advanced IT infrastructure.	Developing IT infrastructure.
SMEs Engagement	High engagement of SMEs in e-commerce sector.	Limited engagement of SMEs in e-commerce sector.

Source: https://ecommercedb.com/en/markets/dk/all,
https://ecommercenews.eu/ecommerce-in-europe/ecommerce-in-denmark/ , Digital Government Meta Monitor,
En dansk krypto-politik - Teknologirådet, https://www.privacyshield.gov/ps/article?id=Denmark-e-Commerce, https://www.forbrugerombudsmanden.dk/media/14560/ecommerce-00-pdf.pdf ,
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https://www.mitid.dk/en-gb/ , https://www.borger.dk/ ,
For Bangladesh, following data from UK-Bangladesh comparison website lists.

In general, Denmark's e-commerce system is more advanced than Bangladesh's. Denmark has a lot of different online marketplaces, a modern digital payment system, and strong laws about e-commerce. In Denmark, the logistics and delivery system work well, and people have a lot of faith in online shopping. Denmark also has a lot of people who use the internet and an advanced IT infrastructure. In Denmark, SMEs are very active in the e-commerce market. Bangladesh, on the other hand, has few online markets and a limited digital payment system. Bangladesh is still making changes to its laws about e-commerce, and the logistics and delivery system is still being worked on. People in Bangladesh are less likely to trust online shopping because they don't use the internet as much. The IT infrastructure is also getting better, and there aren't many small and medium-sized businesses (SMEs) in the e-commerce sector yet.

Table 20: Compare E-Justice in Denmark and Bangladesh

Aspect	Denmark	Bangladesh
Digital Case Management	Advanced digital case management system.	Developing digital case management system.
Electronic Filing	Electronic filing system available.	Manual filing system, electronic filing system available for limited purposes.
Legal Aid	Advanced legal aid system available.	Developing legal aid system.
IT Infrastructure	Advanced IT infrastructure supporting e-justice system.	Developing IT infrastructure supporting e-justice system.
Judiciary	Independent and efficient judiciary system.	Developing judiciary system.

Source:https://dk.ecourt.law/,https://domstol.dk/om-os/english/   ,
https://www.thedanishparliament.dk/en/democracy,
https://www.lexology.com/library/detail.aspx?g=7dcc8159-e2e9-4716-9c46-7252733313c4 ,
https://www.borger.dk/politi-retsvaesen-forsvar/Retsvaesen/Advokater-og-retshjaelp/Advokater-og-forsvarere ,
https://www.borger.dk/ , https://www.mitid.dk/en-gb/,
For Bangladesh, following data from UK-Bangladesh comparison website lists.

In general, Denmark's e-justice system is more advanced than Bangladesh's. Denmark has access to a lot of legal information, court proceedings. There is an advanced digital system for managing cases, and there is also an electronic filing system. There are a lot of court services that can be done online, and there is a very good system for getting legal help. The IT infrastructure that supports the e-justice system is modern, and the judicial system works well and is independent.

Bangladesh, on the other hand, has limited access to legal information, court proceedings. The digital system for managing cases is still being worked on, and a manual filing system is also in place. The system for getting legal help is also still changing. The IT infrastructure that makes the e-justice system work is still being built, and so is the judicial system.

5.3. Road map for e-government facilities development in Bangladesh

To improve Bangladesh's e-government services, the following steps can be taken:

- Create a national e-government strategy. This includes defining the goals and objectives of e-government projects, figuring out who the key stakeholders are, and making a plan for how to put the plan into action, including a timeline and a budget.
- Build the necessary infrastructure. This includes investing in broadband connections and building digital infrastructure to support e-government services.
- Create online portals for citizen services. This includes making online portals that are easy for people to use and give them access to government services and information, like paying taxes, applying for a passport, and getting health services.

- Set up a digital identity system. This means making a secure and reliable digital identity system to make e-government transactions easier and to improve the privacy and security of data.
- Set up electronic voting systems. This means putting in place secure and reliable electronic voting systems to make the election process more open and efficient.
- Make it easier for people to get involved. This means creating ways for people to give feedback and take part in how the government makes decisions.
- Build capacity and awareness. This includes training government employees and citizens on e-government tools and technologies and raising awareness of the benefits of e-government initiatives.
- Make sure e-government systems are secure: It's important to make sure e-government systems are secure to protect sensitive data and stop cyber-attacks. This includes setting up security protocols, doing regular risk assessments, and giving government officials training in cybersecurity.
- Increase mobile access: Bangladesh has a high rate of mobile phone use, so it's important to increase access to e-government services from mobile phones. This includes making mobile apps and making websites easier to use on mobile devices.
- Improve data management. E-government projects can't succeed without good data management. This includes setting up rules for data management, making agreements about how to share data, and using data analytics tools to help make decisions.
- Encourage public-private partnerships. When the public and private sectors work together, it's easier to create and implement e-government projects. This includes using the knowledge and skills of the private sector to improve e-government services and come up with new ideas.
- Make a disaster recovery plan. In case of a natural disaster or other emergency, it's important to have a disaster recovery plan so that e-government services can keep running. This includes setting up backup systems, redundancies, and protocols for dealing with disasters.
- Set up digital payment systems: Putting in place digital payment systems can help make transactions and payments with the government easier and safer for citizens. This means making things like online payment gateways, mobile wallets, and other ways to pay online.
- This includes making a system for handling complaints, doing surveys to find out how satisfied citizens are, and setting up ways for people to give feedback.
- Implement blockchain technology. Blockchain technology can be used to make sure that e-government services are secure, transparent, and accountable. This means looking into how blockchain technology can be used for things like managing identities, sharing data securely, and voting systems.
- Develop a data protection law: Creating a data protection law can help protect the privacy and security of personal information about citizens. This includes making rules about how to protect data, how to handle data, and what to do if a data breach happens.
- Help people learn how to use technology. Citizens need to know how to use technology in order to access and use e-government services. This means making programmes to teach people how to use digital technologies, especially in rural areas, and promoting the use of digital technologies in schools.
- Strengthen collaboration between agencies. Collaboration between agencies can help streamline e-government services and make them more efficient. This includes

making agreements between agencies to share data, building platforms for shared services, and promoting the use of common data standards.

- Run pilot projects: Running pilot projects can help test and improve e-government projects before they are used on a large scale. This means finding pilot areas, testing how well e-government services work, and getting feedback from both citizens and government workers.
- Plan for digital inclusion. A digital inclusion plan can help make sure that all citizens can use e-government services. This includes finding communities that aren't getting enough help, making targeted interventions, and encouraging marginalised groups to use e-government services.
- Promote interoperability. Interoperability can help make e-government services more efficient and effective by letting different government agencies share data and work together. This means setting up data standards, making frameworks for interoperability, and encouraging the use of common technologies and platforms.
- Set up a monitoring and evaluation framework. A monitoring and evaluation framework can help you figure out how well e-government projects are working and where they need to be improved. This means making key performance indicators, doing regular evaluations, and giving reports on how e-government projects are going.
- Form partnerships with international organisations. International partnerships can help e-government projects with technical and financial support and make it easier for best practises to be shared. This means working together with international groups like the World Bank, the UN, and other regional and global groups.

Bangladesh can significantly improve its e-government facilities and improve citizen engagement and satisfaction with government services by implementing a comprehensive approach that includes legal and regulatory frameworks, infrastructure, citizen engagement, and capacity building. By implementing these additional measures, Bangladesh can further enhance its e-Government facilities and improve the delivery of government services to citizens.

6. Conclusion

It is necessary for Bangladesh to improve its e-government capabilities in order to promote openness and accountability in governance, as well as to improve the delivery of government services to people. To accomplish this goal, it is necessary to develop a legal and regulatory framework, build infrastructure, encourage citizen participation, establish e-government service delivery centres, put open data policies into effect, encourage digital entrepreneurship, and provide capacity building. These steps are necessary for the success of e-government initiatives because they provide the necessary guidance for the development and implementation of laws and regulations, provide user-friendly platforms for citizens to access government services, conduct citizen surveys, and promote public participation in decision-making. In addition, these steps provide the necessary guidance for the development and implementation of laws and regulations.

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