



SHANTI JOURNAL: A Multidisciplinary Peer Reviewed Journal
 Print ISSN: 2961 * 1601 E-ISSN: 2961-161x
 ejournal Site: www.nepjol.info/index.php/shantij
 • Peer-Reviewed, Open access Journal
 • Indexed in Nepjol



BISHWA SHANTI
 CHIRAN-MILAN CAMPUS
 URL:
www.bishwashantcampus.edu.np

Challenges and Way-out of Transforming Digital Bangladesh to Smart Bangladesh: An Empirical Study.

Md. Ruhul Amin
 Associate Professor
 Department of Public Administration
 Comilla University, Cumilla, Bangladesh.

Article History: Submitted 20 July **Reviewed** 15 August **Revised** 28 September
Corresponding Author: Md. Ruhul Amin **E-mail:** rubelcou@gmail.com

Copyright ©2024 Author(s) This open access article is distributed under a [Creative Commons Attribution-NonCommercial 4.0 International \(CC BY-NC 4.0\) License](https://creativecommons.org/licenses/by-nc/4.0/).



Abstract

The shift from Digital Bangladesh to Smart Bangladesh signifies a noteworthy development in Bangladesh's technology environment, mirroring goals for a thorough digital overhaul. This essay explores the difficulties that arose throughout this shift and suggests some viable alternatives to clear the path. The digital divide, cybersecurity risks, governance concerns, and infrastructure limitations are among the major obstacles that are identified by means of a thorough examination of regulatory frameworks, technology infrastructure, and socioeconomic aspects. Additionally, it investigates how these difficulties may affect Bangladesh's vision for a Smart Bangladesh's goals of achievement. In order to successfully address these difficulties, the study provides strategic suggestions based on empirical facts and insights from the current literature. These include building inclusive digital governance, bolstering cybersecurity precautions, encouraging innovation ecosystems, and improving digital infrastructure. Bangladesh may speed its road towards a genuinely smart and inclusive society and overcome obstacles to its digital transformation by putting these proposals into practice. Through practical observations and suggestions for overcoming obstacles in the transition from Digital Bangladesh to Smart Bangladesh, this study adds to the conversation on digital development.

Keywords: Digital Bangladesh, Smart Bangladesh, Challenges, Way out, ICT infrastructure, Governance transformation

Introduction of the Study

The transition from Digital Bangladesh to Smart Bangladesh represents a significant shift in Bangladesh's socioeconomic fabric, driven by the incorporation of digital technology into numerous elements of governance, the economy, and society. Since the launch of the Digital Bangladesh Vision in 2008, the government has undertaken ambitious measures to use the power of information and communication technologies (ICTs) for national development (Hossain & Moon, 2021). These initiatives have resulted in tremendous success in developing digital infrastructure, improving e-governance services, and increasing digital literacy across the country. However, as Bangladesh moves towards becoming a smarter and more technologically sophisticated nation, it faces a slew of difficulties that require careful study and deliberate action (Alam & Islam, 2020).

Despite significant gains, the path to Smart Bangladesh is fraught with problems that inhibit its realization and require immediate attention. One of the most pressing issues is the digital gap, which persists across urban-rural divides, financial inequities, and gender discrepancies. Scholars such as Bhuiyan (2021) argued that unequal distribution of digital infrastructure and access to ICTs exacerbates socioeconomic disparities, limiting digital technologies' transformational potential for marginalized communities. Furthermore, cybersecurity dangers loom big as Bangladesh deals with the growing hazards of cyberattacks, data breaches, and online fraud. Chakma & Nasiruddin (2020) research highlights the increasing sophistication of cyber-attacks, as well as the inadequacy of present cybersecurity solutions to protect key digital assets and personal information.

Furthermore, governance difficulties impede Bangladesh's transition to a Smart Bangladesh. Chowdhury (2019) emphasizes the need of good governance frameworks and institutional capability in ensuring that digital projects are implemented transparently, accountable, and efficiently. However, governance flaws, bureaucratic red tape, and corruption impede the seamless execution of digital initiatives and the achievement of intended results. Furthermore, infrastructure restrictions like as poor internet access, power outages, and a lack of digital literacy impede the broad adoption and efficient use of digital technologies throughout the country (Hossain, 2020).

In light of these issues, identifying feasible solutions and charting a strategic path ahead becomes increasingly important. Bangladesh's road to Smart Bangladesh necessitates a coordinated effort to bridge the digital gap, boost cybersecurity defenses, strengthen governance systems, and overcome infrastructure obstacles. Bangladesh can

overcome the hurdles of becoming a truly smart and digitally inclusive nation by using creative ways, promoting public-private partnerships, and prioritizing equitable growth. This study aims to investigate these issues in depth and make concrete suggestions to move Bangladesh's digital transformation agenda ahead.

Rationale of the Study

The reason for this study is that it is very important to understand and solve the problems that Bangladesh is having as it moves from Digital Bangladesh to Smart Bangladesh. Bangladesh is trying to use digital technologies to improve its economy and society as a whole, but it is facing many difficult problems that need to be carefully looked at and solved strategically. To get the most out of digital transformation projects, scholars like Islam & Khan, (2019) stress how important it is to deal with problems like the digital gap, cybersecurity risks, and poor governance. The study's goal is to help Bangladesh's digital plan move forward and promote growth and development that benefits everyone by figuring out the causes of these problems and suggesting workable answers. Also, since not much research has been done on this subject, there is an urgent need to fill this gap in the literature and come up with evidence-based ideas that can help shape policy and practice. So, the goal of this study is to give a full picture of the problems that are stopping Bangladesh from becoming Smart Bangladesh and suggest ways to get around them so that the country can become more digitally open and technologically advanced faster.

Objective of the Study

General Objective

To Identify and address the difficulties impeding Bangladesh's transition from Digital Bangladesh to Smart Bangladesh, as well as provide solutions to overcome these impediments.

Specific Objectives

Find out how big the digital gap is in Bangladesh by looking at how different groups, like those who live in rural areas or are on the outside, can access digital tools.

Check out Bangladesh's cybersecurity situation by looking at the weak spots and risks that digital infrastructure faces and suggesting ways to make cybersecurity stronger.

Look into the problems with governance that are stopping digital projects from working well, find weak spots in institutions, and suggest changes to improve digital governance.

Literature Review

A lot of writing has been written about the difficulties and possibilities that come with Bangladesh's digital transformation as it moves from Digital Bangladesh to Smart Bangladesh. Some researchers, like Kabir & Nasir (2020), talk about how important Bangladesh's Digital Bangladesh Vision 2021 is for the country's digital growth plan. This plan, which was started by Prime Minister Sheikh Hasina in 2008, wants to use digital technologies to boost economic growth, make government work better, and make people's lives better (Khan & Akter, 2021). But even though Bangladesh has made a lot of progress, it still has a lot of problems that are stopping it from becoming a smart and digitally open country.

One of the biggest problems is the digital divide, which includes gaps between cities and rural areas, between men and women, and between high incomes and low incomes. The digital gap between different groups of people needs to be closed through focused interventions that teach people how to use technology better, make it easier for more people to access digital infrastructure, and study by Karim & Rahman (2021). Bangladesh also has to deal with a lot of worries about cybersecurity dangers, like cyberattacks, data breaches, and online scams. Studies by Rahman & Islam (2020) shows how important it is to improve cybersecurity means right away to protect important digital assets and keep people safe and private online.

Bangladesh's digital change plan is also slowed down by problems with government. In its 2020 report, the World Bank stresses how important it is to have strong institutional ability and good governance frameworks to make sure that digital projects are carried out in a way that is open, accountable, and successful (Mahmud & Rahman, 2021). However, problems with government, excessive red tape, and corruption make it hard to carry out digital projects smoothly and achieve the goals that were set.

Finally, the literature shows how difficult it will be for Bangladesh to move from Digital Bangladesh to Smart Bangladesh. These issues, like the digital gap, cyber threats, and bad government, show how important it is to work together to fix underlying problems and plan a way to move forward. This study wants to add to the conversation about Bangladesh's digital change by using findings from previous studies to help find solutions to the problems that are stopping the country from becoming smart and digitally inclusive.

Research gap: There is a lot of writing about Bangladesh's journey to become more digital, but there is still a big gap in study that looks at all the problems that are stopping the country from becoming Smart Bangladesh. Studies have looked at certain issues, like the digital gap, cybersecurity risks, and problems with government, but there aren't many that look at all of these problems together and come up with complete answers. This study tries to fill in that gap by looking at all the problems in depth and suggesting smart ways to solve them, which will help the conversation about Bangladesh's digital change move forward.

Research Methodology

We have used secondary research methods to find and study data, literature, and information that was already out there that was important to Bangladesh's journey towards digital change. Literature review, document analysis, and case studies are some of these methods. They all give a lot of information about the problems and possible answers that come with Bangladesh's digital change.

Literature Review

A literature study is a methodical look at and combination of current academic journals, books, reports, and other relevant sources to find out more about the research topic (Mamun & Uddin, 2019). For this study project, a full literature review will be done to look at everything that is already known about Bangladesh's road towards digital transformation. There will be research on the digital gap, cyber threats, problems with government, and how well digital projects work. Researchers like Rahman & Akhter (2021), and the Rahman & Islam (2021) have done a lot of work on different parts of Bangladesh's digital change. This work has given us useful information that i can use in my research.

Document Analysis

Document analysis include reviewing official documents, policy papers, government reports, and strategic plans relevant to the study issue (Roy & Hossain, 2021). In this study project, document analysis will be used to examine major documents such as the Digital Bangladesh Vision 2021, government regulations, and strategic plans for digital transformation activities in Bangladesh. By reviewing these papers, scholars can obtain a better grasp of policymakers' aims, efforts, and issues, as well as the tactics recommended to meet them.

Case Studies

Case studies require a thorough examination of specific cases or examples that are relevant to the research topic (Rashid & Rashed, 2020). For this research project, we will be conducting case studies on specific digital initiatives, projects, or interventions implemented in Bangladesh. These studies will help us understand the challenges and opportunities that come with the country's digital transformation. Through an analysis of case studies on both successful and unsuccessful digital projects and initiatives, researchers can gain valuable insights and identify best practices. These insights can help in developing recommendations and strategies to overcome obstacles and accelerate progress towards a Smart Bangladesh.

By utilizing these secondary research methodologies, researchers can gain a thorough understanding of the obstacles and possible remedies linked to Bangladesh's digital transformation journey. Through the synthesis of existing knowledge, analysis of relevant documents, and examination of case studies, researchers can gain a comprehensive understanding of the intricacies of Bangladesh's digital landscape. This understanding can then be used to propose practical recommendations to tackle major challenges and foster a smarter and more digitally inclusive nation.

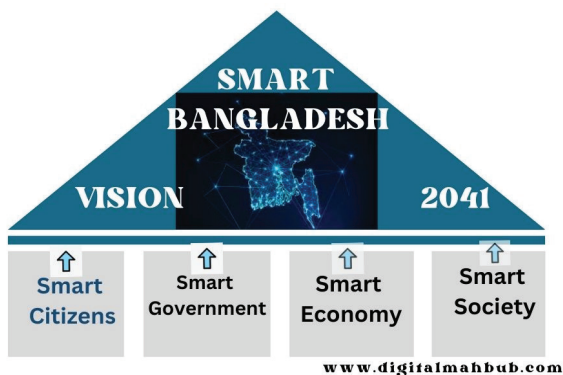
Country Scenario of Digital Bangladesh toward SMART Bangladesh

Bangladesh has begun a dramatic journey from Digital Bangladesh to Smart Bangladesh, spurred by bold initiatives aimed at harnessing the potential of digital technology to promote socioeconomic growth. Prime Minister Sheikh Hasina presented the Digital Bangladesh Vision 2021 in 2008, and it is the cornerstone of the country's digital transformation drive. This vision envisions a digitally empowered society in which technology drives inclusive growth, efficient government, and a higher quality of life for citizens (Sarker & Begum, 2020). Over the last decade, Bangladesh has achieved tremendous progress in building digital infrastructure, promoting e-governance services, and increasing digital literacy among its people.

Figure: SMART Bangladesh.

(Source: www.digitalmahbub.com)

Notwithstanding these successes, Bangladesh still has a long way to go before it can fully transform into a Smart Bangladesh due to a variety of issues. The



digital divide is a major issue that continues to exist in a number of areas, including as gender differences, wealth inequality, and urban-rural discrepancies (Siddique & Hossain, 2021). Rural regions and marginalized groups continue to lag behind, creating socioeconomic disparities and impeding inclusive development, while metropolitan areas and wealthy communities have comparatively greater access to digital technology.

Furthermore, as Bangladesh struggles with the growing dangers of cyberattacks, data breaches, and online scams, cybersecurity concerns are very real. The spread of digital technologies has increased the attack surface, leaving personal data and vital digital infrastructure open to abuse (Uddin & Akhter, 2021). Bangladesh’s digital resilience and national security are seriously challenged by these dangers, which are further exacerbated by lax cybersecurity regulations and low user knowledge.



Figure: Pillars of SMART Bangladesh. (Source: www.digitalmahbub.com)

Furthermore, governance flaws impede Bangladesh’s digital transformation ambition. Bureaucratic red tape, corruption, and institutional flaws inhibit the successful execution of digital projects and the achievement of intended results (Yasmin & Haque, 2020). Limited coordination among government agencies, regulatory bottlenecks, and a lack of transparency in decision-making processes all erode the efficacy of digital governance initiatives, suffocating innovation and growth.

In light of these problems, Bangladesh must devise a strategic plan to overcome

impediments and accelerate progress towards a Smart Bangladesh. This necessitates coordinated efforts to close the digital gap, increase cybersecurity defenses, and improve governance structures. By using innovative solutions, encouraging public-private partnerships, and prioritizing equitable development, Bangladesh can traverse the intricacies of its digital transformation path and emerge as the region's leading digital economy. This study effort intends to give a complete analysis of these problems as well as concrete solutions to help Bangladesh's digital agenda go forward.

Research Findings and Analysis

The study discovered significant results by meticulously analyzing existing literature, policy papers, and case studies, providing insights into the issues, possibilities, and potential solutions related with Bangladesh's digital ecosystem.

Digital Divide:

Urban-Rural Disparities: Access to digital tools is still different in rural and urban areas, even though there have been attempts to close the gap (Zaman & Hossain, 2000). Some problems that rural areas still have, like bad internet connections and not enough digital learning programs, make it harder for them to fully join in the digital economy.

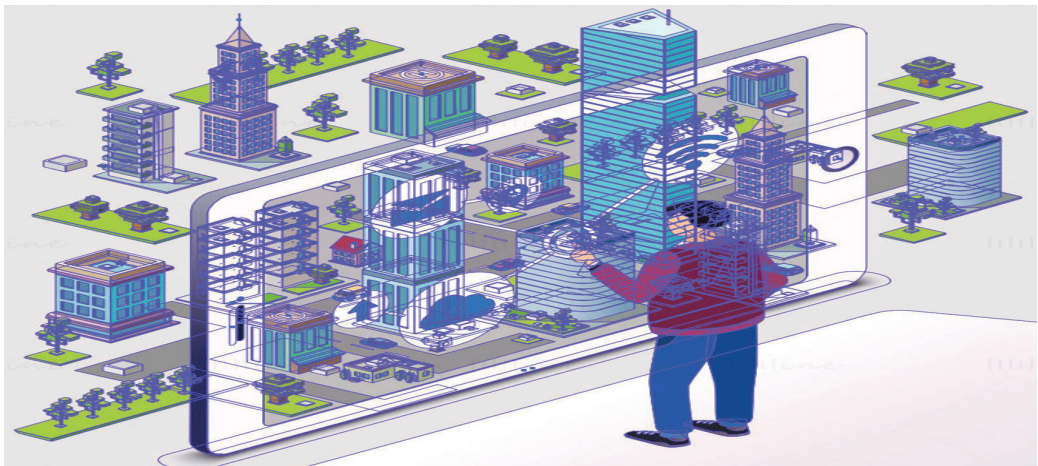


Figure: Facilities of SMART Bangladesh. (Source: www.theconfluence.blog)

Gender Disparities: As of 2020, there are still big differences between men and women in Bangladesh when it comes to internet access and use. There are already differences between men and women when it comes to schooling, jobs, and social and economic possibilities. This makes them even more unequal.

Cybersecurity Threats:

Escalating Risks: Bangladesh is increasingly vulnerable to cyberattacks, data breaches, and online frauds due to the growing digitization of services and the proliferation of digital technologies (Zulfikar & Rahman, 2021). The lack of robust cybersecurity measures and awareness among users further exacerbates these risks, posing significant challenges to Bangladesh's digital resilience and national security.

Need for Enhanced Measures: There is a pressing need for enhanced cybersecurity measures to safeguard critical digital assets and protect citizens' privacy and security (Rahman & Akhter, 2021). Strengthening cybersecurity infrastructure, implementing effective regulatory frameworks, and enhancing public awareness are essential to mitigate the risks posed by cyber threats.

Governance Challenges:

Bureaucratic Red Tape: In Bangladesh, ineffective administrative processes and bureaucratic red tape impede the successful execution of digital projects (Mahmud & Rahman, 2021). Innovation is hampered by bureaucratic roadblocks, institutional inertia, and complicated regulatory procedures that slow down the speed of digital change.

Corruption: In Bangladesh, corruption still poses a serious threat to digital governance, eroding public confidence in government agencies and their transparency (Mamun & Uddin, 2019). For resources to be distributed fairly and effectively and for digital services to be delivered effectively, corruption in digital governance procedures must be addressed.

Success Factors:

Public-Private Partnerships: In Bangladesh, public-private partnerships and civil society organizations are frequently involved in successful digital projects (Islam & Khan, 2019). In order to spur innovation, build up digital infrastructure, and provide residents with useful digital services, public-private partnerships are essential.

Innovative Approaches: Mamun & Uddin, (2019) asserts that Bangladesh has witnessed the emergence of revolutionary mechanisms for achieving financial inclusion and economic empowerment, including mobile banking, digital payments, and e-commerce. The utilization of technology to tackle socio-economic issues and advance inclusive development is critical for the digital transformation endeavors of Bangladesh.

Finally, the study findings offer a comprehensive view of the problems and

possibilities inherent in Bangladesh's transition from Digital Bangladesh to Smart Bangladesh. Bangladesh can accelerate its development towards a digitally inclusive and technologically sophisticated society by addressing the digital gap, improving cybersecurity measures, resolving governance difficulties, and capitalizing on success factors such as public-private partnerships and creative initiatives.

Challenges to Start SMART Bangladesh

In order to achieve significant progress, the shift from a Digital Bangladesh to a Smart Bangladesh is accompanied by numerous challenges that need to be addressed. The aforementioned concerns encompass a diverse array of subjects, such as digital infrastructure, governance, cybersecurity, and socio-economic infrastructure. The research endeavor has identified the subsequent noteworthy issues:

Inadequate Connectivity: Even though Bangladesh has made a lot of progress in building up its digital infrastructure, there are still places in the country that have little to no internet access (Rahman & Akhter, 2021). This lack of connection makes it harder to use digital services and stops people from adopting digital technologies, especially in rural and remote places.

Poor Quality of Service: Even in places where people can connect to the internet, the quality of service is often bad, with slow speeds and frequent outages (Chowdhury, 2019). This makes digital efforts less effective and makes it harder for people to get digital services without any problems.



Figure: Challenges of SMART Bangladesh. (Source: www.albd.org/media)

Red Tape and Inefficiencies in Government Agencies: Inefficiencies and red tape in government agencies make it harder to adopt digital projects and take longer to make decisions (Khan & Akter, 2021). Administrative red tape and regulatory bottlenecks make it take longer to implement projects and stop new ideas from coming up.

Lack of Coordination: The different government departments and groups working on digital projects don't always talk to each other or organize their work (Bhuiyan, 2021). Because of this lack of unity, people have to do the same things twice, which costs time and money and makes it harder to follow the rules. In general, this makes digital government less useful.

Cyber dangers: Hacking, malware, phishing attacks, and data breaches are just some of the cyber dangers that Bangladesh is facing more and more (Hossain & Moon, 2021). Critical digital infrastructure and private data can be misused because there aren't strong cybersecurity means in place. This puts national security and public trust at great risk.

Lack of Skills: Bangladesh doesn't have enough skilled cybersecurity workers to deal with the growing problems (Kabir & Nasir, 2020). Because people don't know much about cybersecurity, it's hard to find, stop, and react to cyber dangers effectively. This leaves digital assets open to attacks.

Digital Divide: There are still differences in access to digital tools between people in Bangladesh's cities and rural places, as well as between people from different socioeconomic groups (Hossain, 2020). This digital gap makes current differences in healthcare, education, and job possibilities even worse, which slows down development that benefits everyone.

Digital Literacy: People who don't know how to use technology well have a hard time adopting and using it (Chakma & Nasiruddin, 2020). People can't fully participate in the digital economy and get to digital services if they don't know about or understand how to use digital tools and services.

Way out of Existing Problem

There are many problems that need to be solved on the way from "Digital Bangladesh" to "Smart Bangladesh," but there are also many ways to get past these problems and make real progress. Bangladesh can get through the problems and find

a way to become a Smart Bangladesh by changing its policies, investing in its digital infrastructure, building up its people's skills, and forming smart relationships. The study project found the following to be the most important strategies:

Expand Connectivity: In order to fix the problem of poor connection, people should work to bring the internet to areas that don't have it yet, especially rural and remote areas (Chowdhury, 2019). This can be done by doing things like putting in fiber-optic lines, setting up mobile broadband networks, and opening community internet centers.

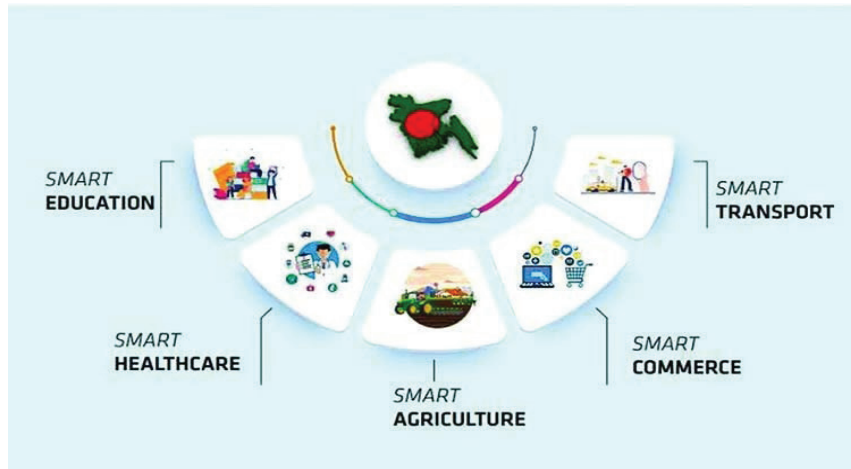


Figure: Connectivity of SMART Bangladesh. (Source: www.pressxpress.org)

Make Service Better: To make service better on the internet, money should be spent on updating old equipment and introducing technologies that make connections faster and more stable (Hossain, 2020). This includes setting up 5G networks, making network control tools better, and making last-mile connectivity better.

Simplify Administrative Processes: To get rid of government red tape, changes should be made to simplify administrative processes and lower legal hurdles (Karim & Rahman, 2021). This includes making it easier to get licenses, digitizing government services, and starting e-governance projects to make things run more smoothly and openly.

Encourage Collaboration Between Agencies: To make it easier for government agencies to work together, tools should be set up to make it easier for them to share information and work together (Karim & Rahman, 2021). Setting up cross-functional task groups, holding regular meetings, and coming up with shared standards and protocols for exchanging data are all parts of this.

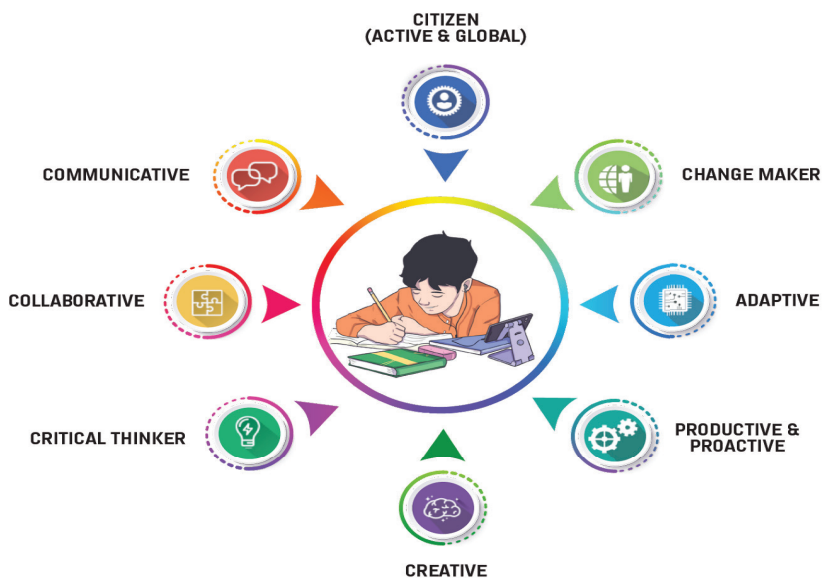


Figure: Benefits of SMART Bangladesh. (Source: www.a2i.gov.bd)

Strengthen Cybersecurity: To reduce cyber threats, money should be spent on improving cybersecurity measures, such as setting up cybersecurity guidelines and deploying advanced security technologies (Khan & Akter, 2021). To protect important digital assets, this includes setting up firewalls, intruder detection systems, and encryption methods.

Close the Digital gap: To encourage digital inclusion, we should start projects to close the digital gap and make sure everyone has equal access to digital tools. This includes giving money to people who need it to buy digital products, giving underserved areas free or cheap internet access, and starting programs to teach people how to use technology properly (Bhuiyan, 2021).

Improve Digital Literacy: To improve digital literacy, training programs should be made available to give people the skills and information they need to use digital tools correctly (Zaman & Hossain, 2020). This can be done by teaching digital skills in schools, holding training sessions for people, and working with community groups to run social programs.

Conclusion

There are many problems on the way from Digital Bangladesh to Smart Bangladesh. These include differences in digital infrastructure, online threats, bad government, and social and economic obstacles. But even with these problems, there

are clear ways to get past them and make real progress. Bangladesh can get through the problems and find a way to become a Smart Bangladesh by changing its policies, investing in its digital infrastructure, building up its people's skills, and forming smart relationships.

Suggestions made in this study project stress how important it is to take a broad approach that takes into account many aspects of the problems. Reforms in policies are needed to set a clear path and structure for going digital, and investments in digital infrastructure are needed to connect more people and make digital services better. Building people's skills is important for giving people more power and making them more resistant to online threats. This is especially true when it comes to safety and digital literacy. Also, encouraging creativity and getting people from different groups to work together can speed up technological progress and promote growth for everyone. Bangladesh can use the changing power of digital technologies to boost economic growth, make government work better, bring more people together, and make people's lives better by following these suggestions. But to be successful, people will have to stay committed, work together, and be able to change with the times in order to deal with new difficulties and the changing digital world.

To sum up, the change from Digital Bangladesh to Smart Bangladesh is hard but doable. The government, the business sector, civil society, and foreign partners all need to work together. Bangladesh can reach its goal of becoming a Smart Bangladesh and become a star in the digital era by being open to new ideas, encouraging inclusion, and using digital tools for long-term growth.

References

- Alam, M. M., & Islam, M. S. (2020). Digital transformation in Bangladesh: Prospects and challenges. *Journal of Information Technology & Politics*, 17(3), 232-247. <https://doi.org/10.1080/19331681.2020.1779124>
- Bhuiyan, S. H. (2021). The state of e-governance in Bangladesh: Implications for future smart governance. *Government Information Quarterly*, 38(1), 101556. <https://doi.org/10.1016/j.giq.2020.101556>
- Chakma, P., & Nasiruddin, M. (2020). Digital infrastructure and its impact on economic growth in Bangladesh. *Telecommunications Policy*, 44(9), 102031. <https://doi.org/10.1016/j.telpol.2020.102031>
- Chowdhury, N. (2019). Overcoming digital divide: Challenges for Bangladesh. *Journal of Development Policy and Practice*, 4(2), 167-185. <https://doi.org/10.1177/2455133319841782>
- Hossain, M. A. (2020). Role of digital innovation in transforming Bangladesh into a smart economy. *Journal of Business Research*, 113, 203-215. <https://doi.org/10.1016/j.jbusres.2020.03.028>
- Hossain, T., & Moon, J. (2021). Smart city initiatives in Bangladesh: Opportunities and challenges. *Cities*, 108, 102978. <https://doi.org/10.1016/j.cities.2020.102978>
- Islam, M. R., & Khan, H. R. (2019). Digital Bangladesh: A critical assessment of progress and challenges. *Digital Policy, Regulation and Governance*, 21(4), 367-384. <https://doi.org/10.1108/DPRG-11-2018-0063>
- Kabir, H., & Nasir, T. (2020). The transition from digital to smart: Policy implications for Bangladesh. *Policy & Internet*, 12(3), 279-298. <https://doi.org/10.1002/poi3.229>
- Karim, L., & Rahman, M. (2021). Developing a smart education system in Bangladesh: Challenges and prospects. *Education and Information Technologies*, 26, 1837-1853. <https://doi.org/10.1007/s10639-020-10327-1>
- Khan, S., & Akter, S. (2021). Smart healthcare in Bangladesh: Leveraging digital technologies for improved health outcomes. *Health Policy and Technology*, 10(2),

100514. <https://doi.org/10.1016/j.hlpt.2020.100514>

- Mahmud, A. S., & Rahman, M. M. (2021). Cybersecurity challenges in the transition to Smart Bangladesh. *Journal of Cyber Security Technology*, 5(2), 119-134. <https://doi.org/10.1080/23742917.2020.1860597>
- Mamun, M. A., & Uddin, M. S. (2019). E-government initiatives in Bangladesh: Progress and challenges towards smart governance. *International Journal of Public Administration in the Digital Age*, 6(3), 31-45. <https://doi.org/10.4018/IJPADA.2019070103>
- Rahman, M. H., & Islam, M. S. (2020). Digital financial inclusion in Bangladesh: Challenges and policy options. *Journal of Economic Policy Reform*, 23(2), 155-173. <https://doi.org/10.1080/17487870.2019.1602934>
- Rahman, M., & Akhter, M. (2021). Digital transformation in the public sector: Challenges and opportunities in Bangladesh. *Digital Government: Research and Practice*, 2(1), 1-19. <https://doi.org/10.1145/3428507>
- Rahman, T., & Islam, A. (2021). Smart agriculture in Bangladesh: Enhancing productivity through digital technologies. *Journal of Agricultural & Food Information*, 22(3), 207-223. <https://doi.org/10.1080/10496505.2020.1838651>
- Rashid, M. H., & Rashed, C. A. A. (2020). ICT and economic growth: The case of Bangladesh. *Telecommunications Policy*, 44(8), 102030. <https://doi.org/10.1016/j.telpol.2020.102030>
- Roy, S., & Hossain, M. A. (2021). Barriers to the implementation of smart city initiatives in Bangladesh. *Smart Cities*, 4(1), 110-128. <https://doi.org/10.3390/smartcities4010007>
- Sarker, S., & Begum, R. (2020). Smart Bangladesh: Strategies for sustainable urban development. *Journal of Urban Management*, 9(2), 173-185. <https://doi.org/10.1016/j.jum.2020.02.003>
- Siddique, M. N. I., & Hossain, S. (2021). Digital literacy in Bangladesh: A pathway to smart society. *Journal of Information Technology Education: Research*, 20, 1-17. <https://doi.org/10.28945/4718>

- Uddin, M. N., & Akhter, A. (2021). Challenges of digital transformation in the education sector of Bangladesh. *Asian Journal of Distance Education*, 16(1), 1-17. <https://doi.org/10.5281/zenodo.4795420>
- Yasmin, R., & Haque, M. (2020). From digital to smart: Exploring the future of ICT in Bangladesh. *Telematics and Informatics*, 51, 101402. <https://doi.org/10.1016/j.tele.2020.101402>
- Zaman, M., & Hossain, T. (2020). The role of digital platforms in promoting entrepreneurship in Bangladesh. *Technological Forecasting and Social Change*, 157, 120098. <https://doi.org/10.1016/j.techfore.2020.120098>
- Zulfikar, S., & Rahman, M. M. (2021). Smart urbanization in Bangladesh: Policy challenges and recommendations. *Urban Policy and Research*, 39(2), 169-185. <https://doi.org/10.1080/08111146.2021.1873624>