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### Opportunities and Challenges for Official Statistics in Digital Bangladesh

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#### ABSTRACT

Governments, businesses, and the public, in general, are expected to receive information from national systems of official statistics regarding the economic, demographic, social, and environmental situation. Therefore, digitizing data collection for government statistics could have a significant social impact. Slowly but surely, government administrative data is being used more. There is scant evidence, but significant data access through satellites, point-of-sale systems, and social networks is now being researched and tested. New needs for official statistics and pressures on traditional data collection from households and companies drove these projects. New requirements for official statistics have brought about these requirements and demands. The efficient use of new data sources by the government can lay the most important evidential foundation for policies that are intended to enhance people's lives, and data that has been anonymized is also being made available to other researchers. The study aims to explore the opportunities and challenges for official statistics in digital Bangladesh and identify the potential benefits and drawbacks of using digital technologies and data sources for official statistics. By understanding these opportunities and challenges, policymakers, statisticians, and other stakeholders can develop strategies and solutions that address the challenges and leverage the opportunities to improve official statistics' quality, timeliness, and relevance. Additionally, the objective is to highlight the importance of investing in capacity building, data governance frameworks, and technology and infrastructure to promote the development of official statistics in digital Bangladesh.

**Keywords:** Digital Bangladesh, official statistics, big data, administrative data, challenge, vision 2021.

#### INTRODUCTION

Official statistics are a well-established part of society's evidential base, among the core guidelines for official statistics established by the United Nations (UN). They were developed to provide "statistics about economic, demographic, social, and environmental status" to enterprises, governments, and the general public (UN Statistics Division, 2014).

The majority of the country has an official statistics website mentioned on the UN's web pages, giving the impression that government statistics are incorporated into the digital world. (<https://unstats.un.org/home/nso/sites/>), with yields progressively digital by defaulting and creative data and statistics dissemination methods. Statisticians utilize the social network to alert users to updates, formal consultations, freshly published summaries, and other information. For these formal consultations, replies are received online. However, they

are not making deliberate efforts to increase interaction and reach out to new people. Instead, they primarily leverage new digital media to reproduce established methods of referring well-known stakeholders, even with clear efficiency advantages. Other than when employing new technology to aid in interviewing survey respondents, notifications are frequently broadcast rather than attempting to engage in discourse (Vichi & Hand, 2019; Khan & Cheema, 2022).

This paper claims that substantial challenges and potential opportunities exist for "official statistics" in "digital Bangladesh." According to the core principles of the UN, official statistics show that necessity constantly has practical utility, which is the crucial difficulty. Codes of conduct attempt to implement the test of usefulness in practice. In order to make "official statistics" as useful as feasible in the modern information landscape, where

latent users can easily turn to other sources of evidence to interact with the digital culture, we propose that official statistics should also utilize well-known marketing techniques more frequently. This method aims to provide reliable statistics due to their technical merits while also increasing public confidence in official statistics.

Regarding potential applications, we look at how official statistics are beginning to use significant data sources from the outside, expanding on their use of administrative data kept by the government to give relevant official statistics. "Big data" is a word that is difficult to define precisely. However, one crucial characteristic of "big data" is that it is considered a whole set of persons, transactions, or observations—not a sample. As a result, official statistics are increasingly investigating the possibility of sources, including social networks, satellite imagery, mobile phone meta-data, and transaction information. In addition, administrative datasets are often used to try out new ways to access and analyze new sources, such as recognizing that big data may not be complete.

We then use a case study to examine the current "Digital Bangladesh-Vision 21" legislation to comprehend the objectives of new data-gathering techniques for creating "official statistics" that show these potentials and limitations. Digital Bangladesh is an ambitious initiative by the Government of Bangladesh to transform the country into a technology-driven knowledge-based society. One of the critical areas where this transformation is taking place is the field of official statistics. Using digital technologies and data sources presents opportunities for improving official statistics' quality, timeliness, and relevance. However, several challenges and implications need to be considered. This paper explores the opportunities and challenges for official statistics in Digital Bangladesh, highlighting the potential benefits and drawbacks of using digital technologies and data sources for official statistics. The paper also discusses the importance of investing in capacity building, data governance frameworks, and technology and infrastructure to promote the development of official statistics in Digital Bangladesh. By understanding the opportunities and challenges, policymakers, statisticians, and other stakeholders can develop strategies and solutions that leverage the opportunities and address the challenges to improve the quality and relevance of official statistics in Digital

Bangladesh.

### **METHODOLOGY OF THE STUDY**

The research mainly relies on conceptual ideas, secondary data, and empirical field observations. However, much of this study's information also came from secondary sources like a literature review and relevant websites. This includes data from government agencies such as the Bangladesh Bureau of Statistics (BBS), which collects and publishes official statistics in Bangladesh. This data could be used to assess the quality, completeness, and accuracy of official statistics in Bangladesh and to identify areas where digital data sources could be used to supplement or improve official statistics. In addition, reports from relevant organizations such as the World Bank, the United Nations, and other development partners can provide valuable information on the state of official statistics and the potential for using digital data sources to improve official statistics in Bangladesh.

In this paper, we explore the "Digital Bangladesh-Vision 21" law using a case study to understand the goals of new data-gathering methods for producing "official statistics" that demonstrate these potentials and limitations. The "Digital Bangladesh-Vision 21" law provides a framework for understanding how novel data-gathering methods enable the compilation of official statistics highlighting the possibilities and restrictions of the Digital Bangladesh vision. Legislative investigation reveals data-gathering, analysis, and distribution methods. The legislative framework emphasizes ICT, economic growth, good governance, and citizen empowerment. This statement emphasizes the need for data and statistical analysis to assess progress and inform policymaking. The above legislation prioritizes digital infrastructure, public service digitization, and data collection via digital platforms. These methods produce reliable statistical data that shows how digital technologies improve service efficiency and availability. The law acknowledges connectivity, digital proficiency, and data confidentiality issues. This recognition helps policymakers address these issues to ensure accurate data.

### **ORIGIN, TERMINOLOGY, AND DEFINITION OF "DIGITAL BANGLADESH"**

The Bangladesh Awami League, one of the country's major parties, was inspired by the campaign slogan that

then-President Barack Obama of the United States of America used in the 2008 presidential election, "Change we can believe in" (BAL). For their ninth parliamentary election platform in 2009, they proposed the "Charter for Change," which helped them win the election with a landslide victory (Islam & Grönlund, 2011). A "Digital Bangladesh" by 2021 was one of the main goals of the "Charter for Change" (League, 2016).

"Digital Bangladesh" has been a very familiar and common term among the people of Bangladesh since the 2009 parliamentary election (Islam & Grönlund, 2011). "Digital Bangladesh" is a concept the current ruling party uses to expand any novel information and communication technology-related decisions. It has become a part of governmental and organizational terminology (ICTs). Bangladesh Awami League had the view that information and communication technologies (ICT) only could play significant roles in the growth of the economy in the twenty-first century, individual consciousness, bringing everybody under one roof by connecting them, human resource progress, and other things (Islam & Grönlund, 2011). The Bangladeshi government, currently in power, has strongly emphasized growing the ICT sector and implementing cutting-edge technologies for the future (Islam, 2018). Through 2021, the year of the nation's 50th anniversary of independence, the Bangladesh Awami League (BAL), the country's current ruling party, wanted to digitally create a resourceful, technologically dependent contemporary nation. This was done by using information and communication technology in official statistics. Sheikh Hasina, the current prime minister of Bangladesh, dreamed of creating a "Digital Bangladesh" (Islam, 2018).

"Digital Bangladesh" refers to a modern mindset of utilizing and adopting cutting-edge technology like cloud computing and more extensive computer use (Habib & Baizid, 2010; Aziz & Ullah, 2022). This terminology also implies that a method by which commercial

enlargement, economic progress, and communal enhancement may increase prospects and revenue for Bangladeshi inhabitants through the effective implementation of advanced technology (Cloud Computing) in poverty, education, health, business, and job placement. Although utilizing the word "cloud computing" is the goal behind Digital Bangladesh, the Bangladeshi government does not do so because most of its inhabitants will not understand the concept. Cloud computing is the next step in information and communications technology, so the idea behind that terminology is to use it. Because of this, the Bangladeshi government was encouraged to put new ideas into practice to advance its "Digital Bangladesh" agenda and show positive attitudes in their thoughts (Islam, 2018). The goals of "Digital Bangladesh" include democratization, upholding human rights for Bangladeshis, guaranteeing that all citizens receive government services, and simplifying everyday life for Bangladeshis (Islam, 2018). By utilizing less expensive delivery methods and digital learning environments, the "Digital Bangladesh" terminology aims to develop the skills required to succeed in the cutting-edge 21st-century worldwide context (Hasan, 2019).

Bangladeshi IT experts, journalists, lawmakers, students, and people in power often discuss the government's aim of making Bangladesh a "Digital Bangladesh" (Islam, 2018). However, many Bangladeshi individuals are still unsure of the exact meaning of "Digital Bangladesh" (Genilo et al., 2009). As a result, government officials, corporate executives, media figures, academics, non-governmental organization (NGO) leaders, and information technology (IT) specialists have all formed their unique definitions of "Digital Bangladesh," even though the government has not entirely defined it (Islam, 2018; Genilo et al., 2009; Habib & Faysal, 2009; Yunus et al., 2021). Below are a few definitions of "Digital Bangladesh" offered.

Table 1. Definitions of "Digital Bangladesh".

Sector	Definition
<b>Government</b>	A future version of Bangladesh called "Digital Bangladesh" envisions its residents being able to access information online. The requirement for face-to-face interaction will be minimized because government services can be delivered electronically. Its purpose is to implement the nation's most recent technological and scientific breakthroughs.
<b>Business</b>	Bangladesh adopts digital technology and creates an actual knowledge economy, making it competitive globally.

<b>Academe</b>	People think "Digital Bangladesh" will resolve most of the nation's issues, including corruption, poverty, illiteracy, unemployment, and inflation. The goal will be realized by 2021 as a legacy of the newly constituted government.
<b>IT Specialists</b>	The application of ICTs to economic and social endeavors. It demands a prosperous, wealthy, educated, and poverty- and hunger-free Bangladesh where everyone enjoys equal rights. However, digital technology will be the driving force behind this.
<b>Media</b>	It implies that technology will be used to do every conceivable activity in the public, semi-public, and private sectors. What the government means by it could be clarified better. Nevertheless, it is about modernization, IT introduction, and technology. By 2021, the goal is to be entirely reliant on digital skills.
<b>Civil Society</b>	Efforts to reduce economic disparities between urban and rural regions and between different socioeconomic groups. People can use their righteous knowledge to fulfill their goals in a Bangladesh free from poverty.

Source: (Islam, 2018; Genilo *et al.*, 2009).

This study tries to define "Digital Bangladesh" using the earlier definitions. "Digital Bangladesh is a rule intended for the formation of an ICT-based up-to-date nation, where the usage of the Internet, e-commerce, e-banking, and e-governance, as well as the use of open-source software, well-networked software, and acceptable power sources, will constantly be available." Now that the idea of "Digital Bangladesh" has been defined, including some of its essential components in our study is crucial.

**USING OFFICIAL STATISTICS AS EVIDENCE**

Even though the guidelines listed above indicate that all members of society have equal legal information access, there are several practices, processes, and cultural norms that could give government users preference. Predating the development of the present official statistics system, which took place in the second half of the twentieth century, the desire for data about the state for use by state authorities and endorsement by them extends over several centuries. Government administrative systems continue to be data sources for official statistics. The complexity of by what means official statistics are utilized and wherever the statistics are derived must consequently be taken into account in codes of practice, legislative foundations, and other mechanisms for guaranteeing that fundamental principles are now applied uniformly. For instance, the same facts should be accessible to those outside government to evaluate its performance and actively influence policymaking.

In order to ensure that fundamental principles are followed consistently, standards of practice, legal underpinnings, and other procedures must consider the complexity of how official statistics are used and where

the data are derived. For instance, the public should have access to the same information to participate in policymaking and actively assess the government's performance. For example, the Bangladesh Bureau of Statistics (BBS, 2015) report on Bangladesh's National Accounts typically states that "business, research, and educational communities, the media, and the public use the National Accounts to provide a basis for analyzing Bangladesh's economic performance (including to investigate causal mechanisms at work within the economy)." (BBS, 2021).

For example, when evaluating a nation's financial performance, which precise official statistics are intended to quantify, users can draw from various sources to construct their overall evidence base. Likewise, to evaluate the status of the economy, journalists, analysts, policymakers, business decision-makers, the general public, and others will rely on a variety of data, viewpoints, and personal and other experiences.

Without a doubt, more information is available now than when official statistics were published on paper and reported in many media outlets. This information is also more freely accessible. According to Livingstone, Blum-Ross, Pavlick, and Larsson (2018), rather than "displacing them," digital media "sit alongside" existing family norms for interacting, playing, and communicating. Public policymaking is another place where this is taking place. Inputs to policymaking go beyond official statistics, and regardless of how much data is digitized, there is no assurance that policymakers will have access to all pertinent data. The gold standard might be interpreted to suggest that building and using a solid evidence basis, being aware of and managing the

political environment, and beginning with delivery are all necessary for good policy outcomes. There are obvious opportunities to include statistical evidence throughout the policymaking process.

There is plenty of room to enhance and broaden the current statistical business processes in BBS across all industries. In agricultural statistics, for instance, several areas must be explored or adequately covered, including land uses, cattle, forestry, and fisheries. Concurrently, improved national accounts, industrial, labor force, and other economic statistics are required. More accurate and current indicators are required for fertility, mortality, birth rates, migration, aging, and other social statistics in health and demographics. Environment, energy, and gender statistics are just a few of the new and rising fields that have not yet been well covered (BBS, 2015)

On the other hand, policy analysis is a rough science, so be careful. Manski (2013) gives several examples of how policy analysis would be better if it moved "away from amazing certainty and toward the honest presentation of imperfect knowledge." Officials, inspectors, and the general public will all need to weigh in on the degree to which pertinent evidence has been used sensibly if policymaking is to be guided by evidence rather than exclusively reliant on it. Policymakers will also have a responsibility to strike the correct balance. Rutter (2012) and Ali *et al.* (2021) summarizes how evidence and assessment might be more effectively integrated into the policymaking system while reporting on "good advancements" in evidence-based policymaking. She adds, however, that "there still exists a divide with both intention and reality." One such trend is establishing "what works" centers, as they are known in the UK, to promote evidence-based practice and policy in the US, Australia, the UK, and other EU nations. Official statistics' future function needs to be more specific. We have yet to detail potential social, cultural, and other barriers to a wider acceptance of regular research-based public discourse and policy procedures. For instance, there is a case to be made for enhancing the capacity of legislators, journalists, decision-makers, and the general public to locate, comprehend, and use official statistics.

Official statistics can be a valuable source of evidence, but it is essential to use them appropriately and critically. By understanding the data, using appropriate statistics, contextualizing the data, being critical, using multiple sources, and citing the sources correctly, official statistics can be used effectively as evidence to inform research,

policymaking, and advocacy.

### **UTILIZING MARKETING STRATEGIES IN OFFICIAL STATISTICS**

If the objective of practical utility is to be achieved, it could make sense to begin the development of official data by identifying users and their requirements. However, it is uncommon to make precise user demand determinations. Instead, the official statistics movement's ethos is first to supply a body of data that roughly corresponds to the essential principles of official statistics and then collaborate with users and user groups to address demands with the help of the existing data.

It is possible to think of all official statistics as goods that must undergo a thorough marketing process to achieve their overall goal. Understanding the need for data and how it may fit into or even shape a marketplace, in contrast to advertisement and affordability improvements, would be included in this. The problems are how to get relevant rather than general data and better answer particular questions by first identifying what those questions are.

Official statistics are public goods that are generally distributed for free, not market items, which is an evident argument against marketing. Specific data requests may receive a free response from official statistics offices if they require little work; otherwise, a fee will be charged. However, the ability of customers to use such a service is frequently a requirement for these requests.

In addition, the media has a vital role in disseminating statistics to a broad audience. Moreover, it plays a significant part in shaping the public's perception of the accuracy of the readily available statistics and the credibility of the organization that compiles them. Furthermore, other stakeholders, such as non-governmental agencies and other community organizations, both as users of statistics and as providers of information, can also significantly contribute to shaping views on the quality and integrity of official statistics. This is because both of these groups are users of statistics. It is also essential to note that the expectations of different stakeholders occasionally vary, and these differences need to be explicitly controlled at every level of the process of producing statistics. Receiving input on the quality of the statistics is made more accessible by maintaining regular engagement with the data users. Additionally, it helps

strengthen the relationship between the producer and the users, which in turn contributes to the overall development of the reputation of the statistics agency. In order to accomplish this, a particular system ought to be put into place (BBS, 2015).

Consider the four questions Collins (2010) initially presented to creators of any good or service to move toward a more open strategy. What are customers' demands, asks the first inquiry, reflecting the requirement for usefulness in official statistics? It requires active and ongoing user interaction, collaboration, and iteration between producers and users to respond to this question. Beyond connecting with critical consumers, this approach does not generally appear to be carried out in the creation of official data. Engaging users beforehand allows for the inevitable trade-offs between technical quality characteristics, decisions on factors, such as precision, timeliness, and information depth, should be made that have at least a basic understanding of how those factors will impact the overall usefulness of the statistics. A parliamentary inquiry of Bangladesh's official statistics was the subject of a testimony from the BBS, which argued for greater focus on the full use of official data and provided instances of promising advances and areas that still need more attention.

Collins' marketing questionnaire's second and third questions focus on the market's competition and understanding. The right to publish data and statistics is not exclusive to national statistics offices. It has become more crucial than ever to comprehend the competition and clearly and distinctly brand official statistics. The ideal way to approach potential customers should also be determined with the use of market research.

The value proposition of the product is the subject of the last marketing query. Along with considering the costs associated with data collection and processing, official statistics should be acknowledged for their worth to society. The importance of having official statistics has been emphasized by the "United Nations Economic Commission for Europe" (UNECE, 2018). It suggests how statistical agencies advertise, gauge, and convey this value. In order to provide further methodological guidance, the proposals are being pilot tested in seven nations. , UNECE (2019), notes that the limited efforts to evaluate the economic value of official statistics to date "have established that Official Statistics bring net reimbursements." Of course, we are not claiming that the official figures on user engagement are incomplete or

that a more marketing-focused strategy will be the magic bullet. To build upon, there are many instances of good practice.

In conclusion, marketing strategies can be utilized to increase the relevance, accessibility, and usefulness of official statistics to a broader audience. By identifying the target audience, developing strong branding and messaging, using social media, creating data visualizations, providing user-friendly interfaces, and partnering with stakeholders, official statistics can be effectively marketed to inform research, policymaking, and public discourse.

### **BIG DATA'S ROLE IN OFFICIAL STATISTICS**

Three central pressures on the current official statistics data sources drive the search for new, significant data sources. The first is an increase in user requirements. to significantly increase the amount of "quality, accessible, timely, and trustworthy disaggregated data" that is available. According to the UN (2015), building an evidence-based framework for policymaking and wider use is vital. The ability to segment statistics into smaller groups, allowing for the monitoring of certain subgroups of people or resources in danger, is a fundamental component of many new criteria. Second, there needs to be more desire on the part of firms and households to participate in official surveys. Third, there is a strain on government budgets because they are permanently or mainly used to pay for official statistics organizations. In some circumstances, this funding comes from international development aid.

Metadata gives information about where the data came from, what it covers, and, perhaps most importantly, what they should be careful about when interpreting the numbers. Access to metadata for various statistical collections is already available through the BBS website; however, the metadata needs to provide more explanation for the data collections, thereby restricting their utility. However, printed publications include information about data acquired and compiled. However, more is needed to understand or evaluate the information in that report. Therefore, it is a significant problem in this field to prepare the metadata of the existing data sets and future endeavors in detail and place them in report form and on the BBS website, where they can be easily accessed (BBS, 2015).

There are several ways to combat these pressures, not the least of which is by arguing the importance of official

data, as was already mentioned. This article focuses on the possibility of cost reductions and an improvement in the punctuality of official statistics via data collection that embraces the digital society and effectively uses the existing big data sources, including official administrative data. In general, the UN (2015) urged for the creation of new data sources for official statistics, primarily through "proper public-private partnership to harness the contribution offered by a wide variety of data, particularly mapping, monitoring, and geospatial information." However, census and survey data, information from administrative systems, and substantial amounts of information from unofficial, commercial, or observational systems, when combined in ways that protect the privacy of particular people and organizations, do not nearly amount to a data revolution. However, there are also some challenges associated with the use of big data in official statistics in digital Bangladesh, including issues related to data privacy, security, and ethical considerations. Therefore, it is essential to ensure that appropriate safeguards are in place to protect the privacy and security of individuals and that ethical considerations are taken into account when using big data for official statistics purposes. In conclusion, big data has the potential to transform the field of official statistics by providing more accurate, timely, and comprehensive information. While there are challenges associated with its use, appropriate safeguards and ethical considerations can help to maximize its benefits while minimizing its risks.

**DIGITIZING BANGLADESH'S OFFICIAL STATISTICS**

The government highly values digital technology as an essential instrument for development. The government-backed "Digital Bangladesh" program's ambitious ICT projects aim to create a society free of poverty and more inclusive by 2021. It has become a substantial political commitment over the last ten years and is a part of the

Awami League's election pledge (Islam & Grönlund, 2011). The governing party routinely uses "Digital Bangladesh" to describe any ICT development initiative as a "political tool." The opposition parties have vigorously attacked it for being government propaganda and frequently called it a "joke."

Nevertheless, specific ICT strategies have emerged in this setting with the help of foreign agencies (like the UNDP and USAID) to improve the digitization process to accomplish economic growth and social development. The government established the public-private partnership (PPP) model to hasten the development of public services and ICT infrastructure. As a result, ICT investment shares have increased from 2% to 6% of the country's GDP (Aziz, 2018)

The National ICT Policy (NIP) is now Bangladesh's most important legal framework for growing the nation's digital economy. In order to facilitate rural inclusion and development, a vast network of 4500 Union Digital Centers (UDC) was constructed throughout the country (Aziz, 2020). One of the critical consequences of the digital agenda is the Access to Information (A2I) initiative, which seeks to improve the caliber and accessibility of dispersed administrative departments for Bangladeshi citizens (A2I, 2009). The NIP offers a long-term plan for using ICT to promote socioeconomic and human development. The Perspective Plan (PP) (see Figure 1) offered the long-term policy for "Vision 2021," while the Sixth Five-Year Plan (6FYP) (from 2011-2015) and the Hinged Five-Year Plan (7FYP) (from 2016-2020) outlined the specific tactics and the job of execution (Haq, 2021).

The Second Perspective Plan, which would be implemented between 2021 and 2041, was recently recommended by the National Economic Council (NEC). By 2030, upper-middle-income and high-income countries should be reached, and by 2041, extreme poverty should be eradicated (UNB 2020).

Table 2. Government digital development agenda in Bangladesh.

WHAT	Digital Bangladesh	ICT and the digital revolution may be used to bring about socioeconomic improvements across the nation.
HOW	Vision 2021	The objective is to reduce poverty and achieve middle-class status using the two-phase first perspective plan strategy. (2011-2015) & (2016-2020)
	Vision 2041	By 2030 and 2041, respectively, upper-middle-income and high-income nations will be attained. Therefore, the second perspective plan (2021-2041) was announced as a strategy on February 25, 2020.

Source: (Access to Information (A2I) Programme, Prime Minister's Office, 2009).

After being adopted in October 2002, the NIP underwent modifications in 2008 and 2009. On August 5, 2015, the administration made an extensive modification, introducing several tactical refrains and action plans. NIP development and design are the responsibility of the Ministry of Posts, Communications, and Information Technology's (MoPTIT) ICT division. The ICT Division and the Posts and Telecommunications Division of the ministry are responsible for facilitating all significant ICT activities and the digital agenda in Bangladesh. The suggested strategy is based on Bangladesh's constitution, which emphasizes ensuring everyone is included in society and has the same rights to participate.

Through wireless technology, Bangladesh now has extensive telecommunications coverage. Although 4G (fourth generation) services were launched in February 2018, the GSMA (2018) states that, up from just 21% in 2017, the 3G (third generation) spectrum now covers around 93% of mobile internet use in Bangladesh. However, the country remains behind neighboring South Asian countries regarding cost and speed; according to the International Telecommunication Union's (ITU) 2017 annual report usage, Bangladesh, which has the eighth-largest population in the world and is ranked 147th globally and 30th among Asian countries in the ICT Development Index, has the fifth-largest offline population in the world, up from just 21% in 2017. The country remains behind neighboring South Asian countries regarding cost and speed. According to the International Telecommunication Union's (ITU) 2017 annual report, Bangladesh, which has the eighth-largest population globally and ranked 147th globally and 30th among Asian countries in the ICT Development Index, has the fifth-largest offline population in the world. Rural communities have eight times less Internet access than urban areas (Alam, 2014). Many people still need help to use ICT because electricity is not always reliable, they live in remote areas, or they need to know the benefits of ICT (Ullah, 2016). Online freelancing has also grown significantly in popularity over the past few years. The government strictly regulated the whole telecommunications industry until the early 1990s. However, following the approval of the "Nationwide Telecommunication Transmission Network" (NTTN) authorization in 2009, a significant revolution in the ICT atmosphere was seen (Hasan, 2012). Several new

policies and regulatory frameworks have helped the ICT infrastructure to grow and the market to become more accessible.

"Digital Bangladesh" is a country where the utilization of administrative data is the foundation for the trajectory toward new data sources. Historically, management information used to support the operation of that specific public service has been allocated for Bangladesh National Statistics produced from administrative data. Although unemployment and crime are two of the most well-known instances, administrative data has occasionally been mined through secondary research to produce additional evidence included in official statistics. The generation of official statistics and research is one of many things that are impacted by the rising usage of national statistics in creating an evidentiary basis. Academics who have not used identified survey data for secondary research for a long time have also realized how important it is to look at administrative data in a second way.

Traditional hard copies of statistics are still widely used, but websites are increasingly seen as one of the most significant ways to disseminate data. It makes the products, procedures, and services related to statistics accessible. More and more people think these sites are one of the most important ways to spread information. It makes the products, procedures, and services related to statistics accessible. The BBS maintains an active website with three terabytes of storage capacity. On this website, the most recent statistical data are summarized and presented in the form of tables, charts, and diagrams. Users can gain access to the data using a menu system, but to obtain precise statistics, they will first need to be aware of the data series they are interested in. Users should also be given more significant amounts of microdata in addition to the statistical report or essential findings. As a result, users will find it simpler to acquire the statistical data they want for research and analysis (BBS, 2015).

The Prime Minister's Office is home to the Access to Information (A2I) Program, an initiative (program) financed by the UNDP and USAID. By putting services at the doorsteps of the citizens, the project's overarching goal is to encourage the development of a digital nation. To ensure timeliness and openness, the initiative strives to boost service quality, increase accessibility, and



decentralize the delivery of public services.

Public entities offer ICT-enabled services, such as e-citizen services, as one of the leading semi of the "Digital Bangladesh" agenda. They are prioritizing the provision of services that are necessary for many individuals across several sectors (AZI, 2009). Innovative service design and delivery channels that fit citizens' lifestyles are the main results of an e-Citizen Service Initiative, which includes (1) lessening relationships between service providers and recipients, (2) delivering quickly and efficiently, and (3) increasing service availability to twenty-four hours per day (AZI, 2009).

The government launched "Union Information and Service Centers" (UISCs) in each Union Parishad and other critical time-sensitive programs in 2010. This was done in order to bring Vision 2021 to life. Bringing government services right to citizens' doorsteps is the goal. Creating these one-stop service centers has had a profoundly positive impact on Bangladesh's rural villages. Due to their popularity, Pourashova Information and Service Centers (PISCs) and City Information and Service Centers (CISCs) have been constructed in every ward level of the Pourashova and City corporations, respectively.

The AZI Program at the Prime Minister's Office is leading and supporting similar efforts to improve service delivery by making better use of ICT. There have been many ICT-induced innovative and indigenous initiatives, including the national e-content repository e-Tathyakosh, replacing the Purjee paper system with an electronic version (e-Purjee), and developing the National Portal, an e-architecture to harmonize public websites. Other examples include smart/multimedia classrooms and a teacher's portal (BBS, 2014).

In conclusion, digital data could transform the official statistics field in digital Bangladesh by improving data quality, timeliness, and relevance. By improving data collection methods, enhancing data quality, developing data integration, building data visualization capabilities, strengthening data privacy and security, and developing digital literacy, the use of digital data can be developed in Digital Bangladesh official statistics to inform policymaking and decision-making more effectively.

### **DIGITAL BANGLADESH'S OFFICIAL STATISTICS CHALLENGES**

This article utilizes "Digital Bangladesh" as a case study to illustrate how countries with register-based, census-

based, and survey-based systems address the digital era from distinct perspectives. The guiding principles for official statistics support cross-border collaboration and the sharing of best practices. For example, Statistics Netherlands has established a Big Data Statistics Center and recommended ensuring that administrative data and registers are high quality (Bakker *et al.*, 2014).

Young, Hyman, and Rater's (2018) analysis of using big data sources to build a register of agricultural land ownership in a city led them to conclude that "web scraping, technology, and secondary data sources may be tools that are employed increasingly." Information from many sources, such as administrative data and social media, must be merged, as some of the appropriate actions, in this case, require a definite online presence.

When presented with a potential administrative data source, many official statisticians have fundamental reservations about the data's technical quality, timeliness, and trustworthiness. In his review of the problems with administrative and transactional data problems, Hand (2018) advised statisticians to "approach the study of such data with the same careful and critical eye that they approach the analysis of data from any other source." For example, the entries in a database "may not be representative of the population from which one intends to draw conclusions," or the level of information "could be insufficient for all plausible investigations." (Hand, 2018; Pasha, Smith & Jeeva, , 2019).

However, when seeking high-quality, timely, and dependable big data sources, one can avoid falling into the trap of only considering the sources rather than the uses when considering the quality. To "explore how to fit the administrative data for addressing the queries" is one of Hand's 15 significant data challenges (Hand, 2018). Bean (2016) proposes that ONS should redirect its culture "towards better satisfying user demands" as one of the strategies to improve UK economic statistics. When interacting with users and responding to their requirements, staff members should take a proactive rather than a reactive approach. Since the first part of Statistics Netherlands' quality assurance architecture is relationships, communication, and agreements with users, its culture can tell us a lot about this (Bakker *et al.*, 2014).

Policymakers should consider many factors when identifying users' needs. Policymakers are expected to consider the evidence before selecting suitable policy

outputs, including regulation or more subtle behavior modification methods. The majority of policy outputs are top-down. Top-down policies must be matched by a bottom-up commitment to addressing the same concerns by businesses, civil society, and local government if actual social change is to be achieved. One objective of the official statistics system ought to be to ensure that all stakeholders have access to the same data, which will, ideally, lead to a shared comprehension and description of the problems. However, this strategy leads to an extensive web of interconnected specifications for official statistics.

The role that official data and evidence generally play in how policy and other choices are made in society is not well explained by any all-encompassing theory. Bowen and Zwi's (2005) idea of the proper application of evidence outlines an "evidence-informed policy and practice route" that may direct academics and policy actors in their application of evidence. Three phases are outlined in the pathway: acquiring, using, and applying the evidence. The route "involves elements of decision-making and a method we call "adopt, adapt, and act." Several "what works" centers, which collaborate with decision-makers and encourage the use of appropriate evidence, including by acting as a channel for communication between evidence providers and policy users, have embraced this approach (Bowen & Zwi, 2005). Whether or whether this has led to a significant rise in the use of evidence is still up for debate. The yearly assessment reports in the UK case study demonstrate the interaction between users and government statisticians. To determine if it is time to transition to an "administrative data" census, ONS (2018) uses eight factors. Four of these criteria are based on the system's capacity to satisfy various users' informational requirements.

Another aspect of a marketing strategy is recognizing the competitors, which can be done in part through market analysis. Because users of all kinds can and frequently do utilize alternative sources of information to replace statistics as evidence, competition for their provision has increased. These sources' suppliers can be for-profit companies that place more emphasis on advertising their products.

The disruptive nature of digital technology may force a monopolistic data source to be exposed in new-fangled ways, or various value-added services might transform the information into new kinds of proof. When

consumers desire information, digital society progressively means "self-service." ONS knows that "inquiring citizens" and "policy influencers" are two types of website visitors. "Standard data users" and "analysts" often use ONS statistics in their online reports, and "policy influencers" do the same. ONS is working to make its website accessible to both of these types of users. A new law in the UK makes it easier for the ONS to access new data sources. This law also encourages competition by letting other researchers study administrative data that has been de-identified in a secure way. Both methods of accessing data ultimately fall under the purview of the UKSA, which also has statutory authority over de-identified administrative data and manages ONS (ONS, 2018).

If official statistics are still freely available at the point of delivery, marketing requires understanding and defining a product's value proposition, which seems straightforward. However, the importance of statistics "that serve society's requirements for information" must nevertheless be argued for (Office for Statistics Regulation, 2018).

A greater awareness of how official statistics fit into and stand out in the marketplace should result from their marketing. However, finding the correct key to open new data sources is one of many steps toward using them more effectively. The Office for National Statistics (ONS) spends months, if not years, negotiating access and converting new data into public statistics, and that is with a more substantial legal base. Also, other companies could get into the market faster and offer real-time statistics that might be better than the official statistics. However, the UK National Statistician's vision of real-time data may still be delayed from the reference period. Although information is crucial to a free market economy, the information economy poses challenges regarding how to train for the necessary expertise.

While evaluating the evidence market, trust should also be considered. The Office for Statistics Regulation (2018) states a trust is "belief in the persons and organizations who create statistics and data." Official statistics may have trust as their "unique selling factor." Recent statistics (Morgan & Cant, 2019) show that the public trusts official UK statistics, and this trust is growing. However, this proof was gathered before official statistics were ever produced using personally identifiable information from commercial organizations. The investigation of the potential application of web-

scraped prices and point-of-sale scanner-price datasets were ONS's lone excursion into big data that have garnered public attention. Instead of gaining access to sources that contain personal information, this application is for experimental assessments of consumer inflation. We are some distance away from regular statistics derived from commercially held sets of personal data. ONS has only lately begun to issue experimental statistics based on information about where mobile phones are used. Beyond the realm of official statistics, there have been developments that may impact how this plays out in terms of trust, such as the growing usage of smartphone data for new applications that may compromise privacy.

Researchers can increase their confidence by adhering to a code of ethics that is intended to show that they are reliable. The OECD established research ethics for the modern information age, which stipulates that "data should be distributed as publicly as is practicable within the relevant legal and ethical limits" (OECD, 2016). Yet, what are these limitations, who creates them, and do the people whose data is being used understand and agree to them? The OECD principles include the ethical collection, dissemination, and use of innovative types of data for research. They also back measures to ensure the privacy of data subjects, as well as public input and accountability, which may be achieved through the construction and publication by stakeholders and administrators of processes for the secure and responsible interchange of personal data. It is still being determined if this will be done, even though it is essential for gaining support from the public for statistics and research in the digital era.

Bangladeshi digital platforms assist customers, enterprises, and the global value chain. They sell many products, yet just 2.8% of women and 4.3% of men buy online. Digital media must improve their strategic approach, customer service, product quality, on-time service delivery, inventory management, flexible return policy, and transparency to get credibility and acceptance. The digital platform economy in Bangladesh is hampered by a lack of access to computers and the Internet, an unstable electricity supply, slow Internet speed, limited technical expertise, poor English language proficiency, a low level of credit and debit card proliferation, difficulties receiving payments from abroad, legal hiccups, funding limitations, and a lack of foreign investment. The government must publicly honor

companies and workers, provide financial incentives, and explore new financing sources to sustain the sector (*The Financial Express*, 7 August, 2021)

Bangladesh faces several obstacles as it courageously implements its ambitious but doable Digital Bangladesh Vision 2021 targets. These are the areas where the Bangladesh government needs to collaborate with the development partners to identify global best practices, give the government access to technology and know-how, and strengthen institutional capacity. However, the government and development partners must first admit that ICTs have become a non-threatening way to speed up administrative reform, not force it so that official statistics can be made available in "Digital Bangladesh." This is done with the help of several tools that improve productivity and platforms for managing knowledge. However, the most important thing is to make it easy to re-engineer business processes to provide services and make administrative decisions.

While digital Bangladesh presents opportunities to develop official statistics, several challenges and implications need to be considered. Here are some of the significant challenges and implications for official statistics in Digital Bangladesh:

- **Data quality:** One of the biggest challenges for official statistics in Digital Bangladesh is ensuring the quality of the data. As digital data sources become more prevalent, there may be concerns about data accuracy and completeness. This can be addressed by implementing robust data quality control measures.
- **Data privacy and security:** Another major challenge for official statistics in Digital Bangladesh is ensuring the privacy and security of data. The use of digital data sources raises concerns about data breaches and cyber-attacks. This can be addressed by establishing appropriate data governance frameworks, including data encryption, secure data storage, and access controls.
- **Capacity building:** The development of official statistics in Digital Bangladesh requires a skilled workforce proficient in using digital tools and technologies. This can be achieved through training and capacity-building programs that help build the necessary skills and knowledge.
- **Data interoperability:** Using multiple data sources in official statistics requires the data to be interoperable, meaning they can be easily integrated and used. This can be challenging when different data sources have

different data formats or structures. However, implementing data standardization and harmonization procedures can address this.

- Resource constraints: The development of official statistics in Digital Bangladesh requires funding, technology, and infrastructure. However, there may be constraints on resources, particularly in developing countries. Prioritizing investments in areas with the most significant potential impact can solve this problem.
- Access to digital data: The availability and accessibility of digital data sources can also be challenging, particularly for those without access to digital technologies or internet connectivity. This can be addressed by implementing policies and programs that promote digital inclusion and ensure equitable access to digital technologies and data sources.

In conclusion, while the development of official statistics in digital Bangladesh presents opportunities for improving data quality, timeliness, and relevance, several challenges and implications must be considered. By addressing these challenges and implications, official statistics can be critical in informing policymaking and decision-making in digital Bangladesh.

## CONCLUSION

This study highlights the importance of utilizing official statistics within the framework of Digital Bangladesh. Although the progress in this particular field is still in its nascent phase, this study highlights the pivotal significance of official statistics in the digital society. The incorporation of advanced technology in the compilation and transmission of official statistics holds great potential in facilitating the process of digital transformation. It is imperative to elucidate how the digital era can augment the creation and utilization of a more substantial corpus of evidence.

This context presents both opportunities and challenges. Although digital technology, emerging enterprises, and private data sources present prospects, they can also intensify pre-existing issues. Hence, it is imperative for national statistics offices to strive for offering more than mere numerical data. In order to effectively vie for the attention of users, it is advisable to provide viable solutions to pertinent societal issues. The achievement of success in this aspect can serve as evidence of the crucial

significance of official data in society.

The utilization of advanced data sources and technology in big data presents an opportunity for innovative problem-solving. However, it is imperative that official statistics adhere to their fundamental principles and persist in their vital function within the information framework of a democratic society. Developing digital technologies and introducing novel products will only partially fulfill the necessary criteria. The efficacy of these modifications is contingent upon proficient communication and cooperation between authorized data generators and consumers, encompassing the press, decision-makers, and the populace at large.

In order to optimize the utilization of official statistics, it is imperative to tackle three key challenges: their societal significance, dependability, and caliber. A more robust marketing strategy, with a specific focus on data accuracy and methodology, has the potential to yield positive outcomes for all three industries. Official statistics can provide a solid evidentiary basis for legislative efforts aimed at enhancing people's well-being through the effective utilization of novel data sources. It is crucial to acknowledge that the mere presence of novel data sources and statistics is inadequate in effecting revolutionary societal change.

As a result, the advent of Digital Bangladesh poses prospects as well as obstacles in the advancement of official statistics. The utilization of digital technologies and data sources presents a promising opportunity to transform official statistics by enhancing data quality, timeliness, and relevance. Addressing challenges pertaining to data privacy, capacity building, data interoperability, and resource constraints is of utmost importance. To address these challenges, it is imperative to establish resilient data governance frameworks, implement capacity-building programs, and make strategic investments in technology and infrastructure. The utilization of official statistics can significantly contribute to informing policymaking, promoting data-driven decision-making, and driving economic and social development across all sectors of Digital Bangladesh.

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