

e-Nothi Impact Study



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This study reflects a shared commitment to modernizing public administration through inclusive and sustainable digital transformation. It is hoped that the findings will inform policymakers, development practitioners, and public sector stakeholders in advancing the institutionalization of digital platforms like e-Nothi across Bangladesh.

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Executive Summary

e-Nothi, an electronic document management system introduced by the Government of Bangladesh in 2015, has undergone significant institutionalization efforts. This report evaluates e-Nothi's effectiveness and the state of its institutionalization, utilizing survey data from various government offices. A comprehensive survey was conducted among civil service officials from different government offices, categorized into High Use, Moderate Use, and Low Use based on e-Nothi utilization. Data was collected on file transfer efficiency, expense impact, environmental sustainability, institutionalization, office preparedness, and the system's usefulness.

e-Nothi significantly reduced the time for file transfer within and between offices, enhancing efficiency. The system decreased the number of employees incurring expenses for file disposal while increasing mobile/internet costs. Most offices reported a decrease in paper usage and fuel consumption, supporting environmental sustainability. While e-Nothi adoption has increased, challenges remain in fully institutionalizing it, particularly among senior officials. Despite some logistical and training challenges, most offices possess necessary equipment and software for e-Nothi. Users find e-Nothi user-friendly, effective for monitoring, and responsive to citizen needs. The study found a positive correlation between PSM (Public Service Motivation) and efficiency in file transfer/disposal, indicating that higher PSM scores are associated with improved efficiency.

Our findings indicate the following positive trends-

- As an e-Government tool that establishes a government-to-government connection, e-Nothi has been widely accepted by government officials. They acknowledge the usefulness of the tool and consider it as an effective tool for monitoring and to them, it has become an important instrument for being responsive to the citizens.
- Empirical evidence suggests that Time, Cost, and Visit (TCV) have significantly decreased over time, and
- It is effective in supporting environmental sustainability.

However, the following concerns are there-

- Most of the government officials are concerned about security while using and utilizing e-Nothi. They are concerned about the files, especially the sensitive ones as they fear that these can be lost or hacked which may create problems for the entire government. As a result of that, many of them have the tendency of printing out the file or maintain a hardcopy so that it can be physically shared if necessary. This, however, is compromising the utility of e-Nothi.
- The officials are also of the opinion that the use of e-Nothi has not been completely institutionalized within the offices. In addition to security concerns, they have also identified two reasons-

◦ First of all, at the local level, the offices need to work in a coordinated way and often, they need to share information or files with other government offices. The problem is, if the other offices are not well-versed in e-Nothi, it is likely that they ask for information in hardcopy. This creates a problem for the well-performing institutions as in addition to uploading the files in the e-Nothi platform, they also need to have a hard copy ready. This discourages them from fully embracing the platform.

◦ The officials also point out that whereas leadership plays the most important role in institutionalizing e-Nothi within an Office, the senior level officers sometimes lack motivation to orient themselves with the e-Nothi platform. Consequently, this discourages the offices from wholly relying on e-Nothi.

▪ Officers have also mentioned that they do not feel comfortable in using the platform for all types of files. For instance, they mentioned that in case of budget-related files or files that deal with disciplinary issues, they hesitate to use e-Nothi, as they cannot conduct file-work in ‘back-date’. As many officials mentioned, to them the problem with e-Nothi is it is not possible to work in ‘backdate’ and the budgetary or disciplinary issues cannot always be solved within the stipulated time. As a result, they decide not to work e-Nothi platform for these files.

▪ The officials, especially the ones working at the local level point out they have serious logistical concerns. In many offices, the number of laptops is extremely limited forcing them to work on their personal laptop. They are also concerned about the internet speed which often frustrates them while using e-Nothi.

▪ Local level officials are also of the opinion that the training they receive is inadequate and cannot build their capacity properly. They are not happy with the current provision where one official from the local office is selected to train in Dhaka and who then trains the others. They are of the opinion that these trainings should be organized at local level where trainers from the central government would come and train the officials.

Based on the challenges mentioned above, the paper proposes the following recommendations-

First of all, to address the concerns about files’ security and the overall security of the platform, cyber security training should be organized for the officials where they will learn, how to protect the uploaded files, how to identify malware, how to protect their files from hackers. They should also be trained about the processes through which risks associated with the e-Nothi platform can be properly managed.

Secondly, since relatively young officials with training in ICT are relatively more interested and fully embraced the e-Nothi system, in every office these officials should be identified, and they should be put in charge of e-Nothi management.

Thirdly, to further encourage these officials, efforts should be taken to include their proficiency in e-Nothi management within their performance assessment system. One possible way of doing it

is to encourage the senior officials to evaluate the performance of the relatively junior officials based on their ease of using e-Nothi.

Fourthly, to motivate the senior level officials, specialized training can be organized where the focus will be on changing their mindset about technology use, to make them familiar with the tools and approaches. This will be a specialized training that will cater to their specific needs and perceptions which can be arranged after conducting a special training need assessment.

Fifthly, it is important that the government focuses on introducing in-person longer training at the local level where the officials from the central government will go to the local office and hold longer trainings for all the officials. Online training should be phased out.

Sixthly, within the government, there are several closed Facebook pages where only the government officials participate to discuss their issues. In line with that, the central government or a2i may think about facilitating the development of a 'closed Facebook group' where senior officials from the government (including but not limited to the Secretaries of key Ministries) will join and discussions will be held by the e-Nothi users on their problems, prospects, challenges and solutions. This will serve two purposes- at one end, this will encourage peer learning and on the other will allow opportunities for senior government officials to get involved which will lead to institutionalization.

Seventhly, efforts should be taken to encourage government officials to use e-Nothi for budget-related issues. In this case, the experiences of the government offices that have already started using e-Nothi for financial issues can be analyzed.

List of Acronyms

Acronym	Full Form
a2i	Aspire to Innovate
APA	Annual Performance Agreement
CCA	Controller Of Certifying Authorities
DIFE	Department of Inspection for Factories and Establishments
DMTCL	Dhaka Mass Transit Company Limited
DWA	Department of Women Affairs
EDMS	Electronic Document Management System
e-Nothi	Electronic File Management System (used in Bangladesh Government)
G2B	Government-to-Business
G2C	Government-to-Citizen
G2E	Government-to-Employee
G2G	Government-to-Government
G2N	Government-to-Nonprofit
ICT	Information and Communication Technology
TCB	Trading Corporation of Bangladesh
TCV	Time, Cost, and Visit
UNDP	United Nations Development Programme
e-Governance	Electronic Governance
D-Nothi	Digital Nothi
e-Government	Electronic Governance
ID	Identifucation
SMS	Short Message Service
FY	Financial Year
iOS	iPhone Operating System
COVID-19	Coronavirus disease 2019
E-Office	Electronic Office
NIC	National Informatics Centre
NICNET	National Informatics Centre Network
NeGP	National e-Governance Plan
DAR&PG	Department of Administrative Reforms and Public Grievances
KMS	Knowledge Management System
CAMS	Collaboration and Messaging Service
PIMS	Personnel Information Management System
SPARROW	Smart Performance Appraisal Report Recording Online Window
CPRI	Central Power Research Institute
MSC	Multimedia Super Corridor
GOE-EGDMS	Generic Office Environment - Electronic Government Document Management System
MAMPU	Management Planning Unit (
DDMS	Digital Document Management System
EPP	e-Government Entry Points
IDI	In Depth Interview
ISO	International Organization for Standardization
CO2eq	Carbon Dioxide Equivalent
PAS	Publicly Available Specification
CEPI	Confederation of European Paper Industries
ACC	Anti-Corruption Commission
DMTCL	Dhaka Mass Transit Company Limited
DWA	Department of Women Affairs
PSM	Public Service Motivation



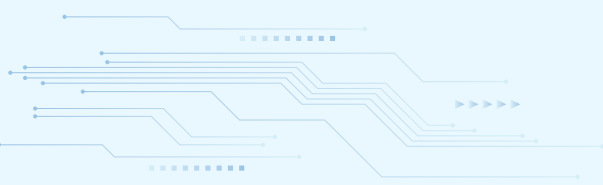
Section 1: Introduction

Since the last decade, initiatives to improve the overall governance scenario of the country had been taken at different levels of the government. Various policies and planning documents to transform the service delivery sector of the country came into implementation. Five-Year Development Plans and other governmental and strategic policies were designed and implemented, highlighting the necessity of digitizing the service delivery sector in the country. This digitization effort is meant not only to improve the quality of service delivered but would also to make the process more effective, efficient, transparent, and accountable. In line with that, the Government of Bangladesh has also introduced different programmatic interventions and initiatives to build a strong connection between citizens and government officials.

It is important to note that in transforming the governance scenario of the country, the government policymakers have significantly emphasized introducing and utilizing the e-Governance tools. To that end, the Aspire to Innovate (a2i) Programme has played a pivotal role. a2i is considered as flagship digital transformation initiative of the Government of Bangladesh and since the very beginning, it has concentrated on reducing inefficiencies in citizens' access to basic public services and improving public sector effectiveness. However, if different initiatives introduced and implemented under the a2i are considered, it becomes quite clear that the intervention does not only focus on easing citizens' access to services or ensuring transparency and effectiveness but also aims at transforming the civil service so that it becomes more citizen-friendly, efficient, and responsive. From this perspective, a2i initiatives aims at affecting the governance domain from two different dimensions- at one end, it aims at empowering the citizens so that they can have a greater voice and accessibility and on the other, it concentrates on transforming the government 'agents' into 'principled agents' so that they can improve their efficiency and responsiveness to be empathetic to citizen's needs (Dilulio, 1994). In both cases, digital technologies have been used to support the initiatives.

In order to create a civil service that would be better equipped and will have a better understanding to deal with the twenty-first-century challenges, initiatives like empathy training have been introduced. e-Nothi is essentially one such initiative that provides documentation and decision-making services to government offices ranging from the field level to ministry offices. It is an electronic document management system that was introduced in 2016 to provide prompt, transparent, and efficient service to the government and to create a paperless environment. By doing so, it directly affects the government officials, helps them in performing their official activities and allows them to perform official functions in an effective and efficient manner. At the same time, the e-Nothi system has an indirect effect on the quality of services received by the citizens as it facilitates quick disposal of pending files, applications and encourages the officials to take quick decision that affects the lives of the citizens.

Even though years have passed since the introduction of e-Nothi, up to this point in time, no comprehensive, detailed study has been conducted to understand its impact on both the officials and the citizens. At the same time, we have limited understanding regarding the challenges that the officials or citizens face in availing services through this initiative and how these can be overcome. The one study that was conducted in 2019 provides some limited insights about the





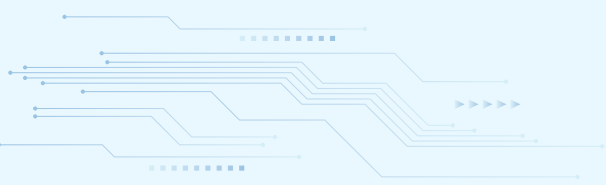
effect and impact of e-Nothi and also highlights some challenges. However, the scope of that study was limited in nature, and it did not provide adequate insight about how it is affecting different dimensions of productivity of the officials or how it is helping (or hindering) them in maintaining a work life- family life balance. At the same time, it did not make any significant effort to understand how the challenges were originating, how they were influencing both the officials and the citizens, and how they could be overcome. This study makes an effort to fill in this gap. At the same time, since the Government of Bangladesh is currently making a transition from e-Nothi to D-Nothi (an advance version of e-Nothi), it is high time to understand the existing challenges and opportunities so that the new initiative can embrace the learning from the earlier one. However, before into the discussion on specific research objectives, questions and methods, it is important to understand where the e-Nothi system stands within the current focus on governance and e-Governance.

Governance, e-Governance, and e-Nothi: In Search of a Framework

From Governance to e-Governance

Before evaluating the impact of e-Nothi in bringing about positive change in the overall governance scenario of the country, it is necessary to develop a conceptual framework that would link governance, e-Governance, and e-Nothi. Governance, as a concept, though gained popularity in the late '90s, it is as old as human civilization. In its simplest form, governance means the act of governing or ‘...decisional processes and related systems that are typically administered by the government policies and strategies’. However, over the years, especially after the advent of New Public Management, governance as a concept has embraced a new meaning. As public policy problems faced and addressed by the government have many dimensions, governance now points out that it is no longer possible for a single government entity to work alone and take the initiative to solve policy problems and support the citizens. Government agencies are still the key actors, but they need to work with and in partnership with the private sector, the non-profit sector, and the civil society organizations to identify the needs of the citizens and these sectors and co-produce public goods to help the citizens and citizen groups. In governance, the end goal is producing tangible and measurable outputs and outcomes that will show how the citizens, citizen groups, or private sector entities are receiving services effectively and efficiently. However, more importantly, governance indicates a systematic or procedural change where public service needs to be more aware, more responsive, and accountable and should show more empathy in identifying and understanding citizens’ needs and demands while taking effective measures to address them. A link between input and output/ outcome is necessary and this is why government agencies need to collaborate with the non-government actors. For this very reason, UNDP (2012) defines governance as the “...exercise of economic, political and administrative authority to manage a country’s affairs at all levels” and this is generally comprised of “...mechanisms, processes and institutions through citizens and groups articulate their interest, exercise their legal rights, meet their obligations and mediate their differences”.

Implementing governance initiatives, therefore, means a simultaneous focus on improving the capacity of both the supply and demand side actors where initiatives have to be taken by the government agencies. In other words, from a demand-side perspective, this means that different

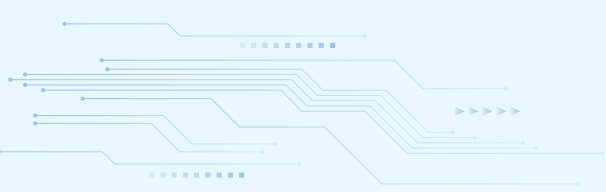
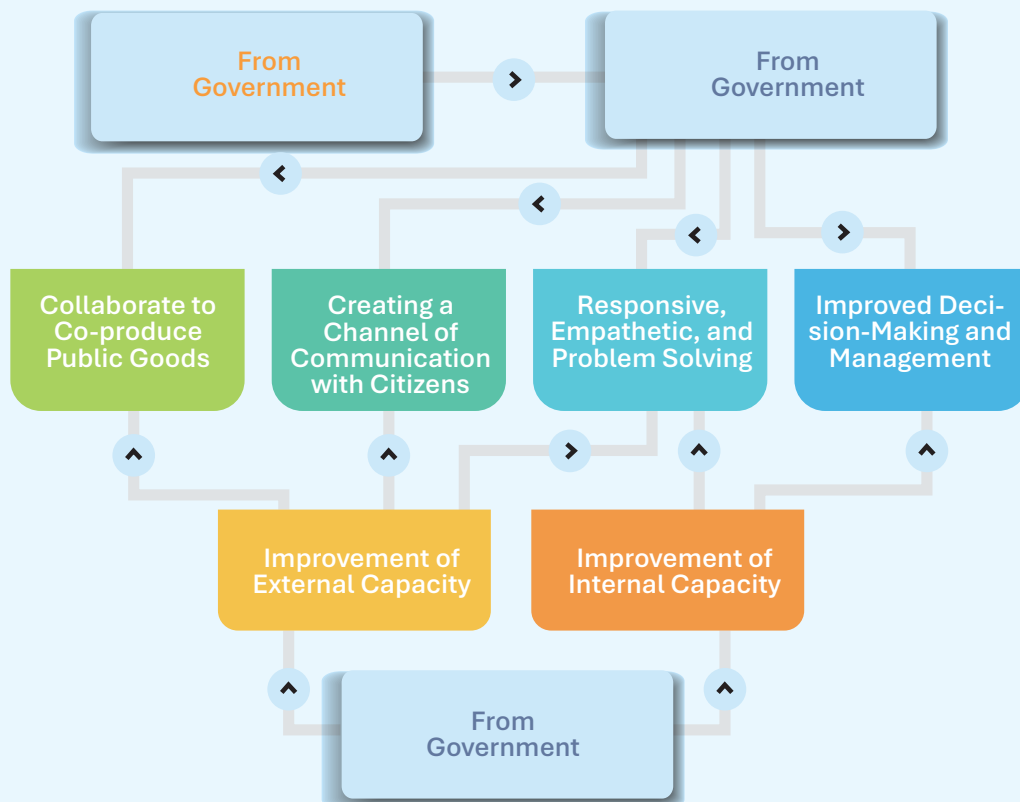




channels of communication and service delivery mechanisms have to be introduced which would allow the citizens and different groups to be aware of their rights, to convey messages to government agencies, to receive services effectively and efficiently and to hold the government agencies and agents accountable for the services received. Whereas discussion on governance mostly concentrates on the demand side, it is necessary to understand that the capacity of the supply side needs to be enhanced significantly to reach a point of equilibrium.

In reaching that point of equilibrium, government agencies throughout the world have relied on applying ICT tools to “...streamline processes, enhance accountability, create knowledge base and ensure transparency and fair conduct in the government business” and these agencies have adopted a viable strategy through utilizing ICT that at one end makes the activities and process of government institutions known to the people and encourages the government to focus on developing newer ways to deliver public services responsively and responsibly (Charag & Mufeed, 2014; Backus, 2001). e-Governance, from this perspective, is defined as “... the application of electronic means in the interaction between government and citizens and government and businesses, as well as internal government operations to simplify and improve democratic, government and business aspect of governance. Whereas the term interaction stands for delivery of government products and services, exchange of information, communication, transactions, and system integration.” As the definition above indicates, e-Governance, therefore, attempts to improve government services from two dimensions- externally, i.e., by creating a channel of communication between citizens and government, and internally, i.e., increasing the efficiency of internal government operations. The following figure shows that-

Figure 1 Scope of e-Governance





Where does e-Nothi fit in?

While discussing the concept of e-Governance, it is important to remember that this concept is closely related with e-Government. Roughly defined, “e-Government systems are those designed and built by government departments for the purpose of managing data, services and communication within and among departments”. From this perspective, e-Government is the procedural step that is being taken to ensure an effective e-Governance system where the explicit goal is to provide services to citizens. In Fact, in case of e-Governance, focus shifts from internal, within-organization users to a wide range and variety of users who use ICT to gain access to government services (De & Bandyopadhyay, 2020).

The fact that e-Government sets the foundation for e-Governance becomes clear if we consider the following characteristics of e-Government-

- Ensures the use of ICT to improve the process of government (Gordon, 2002).
- Uses information and communication technology to change the structure and process of government organizations aiming at performance improvement (Lenk, 2012; Nurdin, 2021; Lindergen, Melin & Sæbø, 2021)
- Provides good conditions and technical support for the government to build a service-oriented government
- Uses the most innovative information and communication technologies, particularly web-based applications to provide citizens and business with more convenient access to government information and services (Fang, 2002)

Since e-Government focuses on improving performance of government, it aims at identifying how different relevant actors interact with the government and as such, usually four types of interactions are found within e-Government

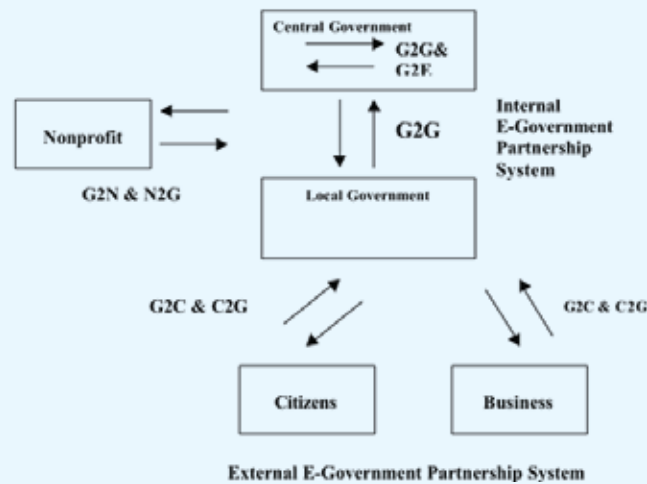
- Government-to-Government (G2G)- involves the sharing of information, files, documents, data and other resources between government agencies. At this stage, resources can be shared from the central to local government or within the central and local government agencies.
- Government-to-Employee (G2E)- includes a platform where the government employees use ICT tools to electronically receive salaries and other benefits from their respective offices.
- Government-to-Business (G2B)- dedicated platform for the business sector that allows that to have access to different electronic resources necessary for interacting with the government.
- Government-to-Citizen (G2C)- online platforms for citizens so that they can gain access to different types of services without visiting the government offices.
- Government-to-Nonprofit (G2N)- dedicated platform for the non-profits for their interaction with relevant government agencies.





Important to note that the advent of e-Governance means combining all these e-Government tools so that the government agencies are connected with the all the relevant development and coproduce public goods to serve the citizens. The following figure shows how e-Government mechanisms produce a networked interaction-

Figure 2 e-Government Producing a Networked Interaction (Adapted from Layne & Lee, 2001)



The figure above is important for various reasons-

First of all, it clearly shows how different dimensions of e-Government interactions are contributing towards e-Governance. If, for instance, governance means the collaborative partnership among government agencies, private sector and NGOs, e-Government indicates how different platforms can be utilized to form the pattern of desired partnership.

Secondly, it also identifies that within the e-Government system, Government-to-Government (G2G) partnership is an important area of focus, and it essentially lays the foundation for the other types of interactions. In fact, the figure above shows that if the government agencies are electronically connected with each other and can successfully share resources, eventually the interaction of other stakeholders with all the government agencies becomes easier and this affects citizens' access to services.

However, the key question for the purpose of this paper is- where does e-Nothi fit into this framework? As indicated earlier, e-Nothi is basically an electronic documents management system that allows the government officials to use ICT-based tools or apps in providing documentation and decision-making services to government offices. It is essentially an electronic file disposal system aims at accelerating government administrative works. The fast and foremost purpose of e-Nothi is to allow the government officials to take faster administrative decisions. In the e-Nothi system, all the information like letters, notes, decisions, issuing letters, different accepted Nothi, Nothi's reference, registry etc. is stored in information databases allowing government officials to instantly examine and verify information while disposing Nothi. Therefore, time required for nothi approval can be reduced drastically. From this perspective, e-Nothi plays an important role in improving the internal capacity of government offices by using ICT. It aims at enhancing the capacity of the government officials with the expectation that they will eventually be more responsive, efficient and effective in improving the experiences of the citizens in gaining access to and receiving services.





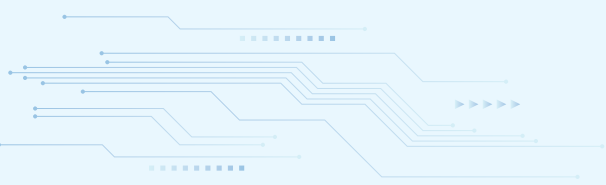
e-Nothi in Bangladesh: What We Know and Do Not Know

As mentioned above, the main goal of e-Nothi or digital/electronic filing system is to expedite the decision-making process by quickly disposing of the pending files and dealing with civil affairs and complaints faster to provide services more efficiently. Launched in 2016 under the Cabinet Division, e-Nothi connects the central and local governments. It uses, "...a digital guard file (a file security component), unique user ID, official seal, soft signature, and digital signature. The supporting mobile app is available on both Android and iOS smartphones. Its main features include multiple searching options, SMS and email notification, single sign-on, multi-role access, citizen's corner as well as a combined view of note and Potro, note writing and editing, flagging, and linking references, guard file, and attachment." It is expected that the use of e-Nothi would ensure transparency, accountability, and dynamism in work and reduce bureaucratic backlogging.

Important to note that e-Nothi was first included in the APA of FY2016–17 of ministries/ divisions and directorates/agencies against the strategic objectives relating to functional procedure and improvement of service delivery. In 2018, for implanting the e-Nothi system properly, the following steps were initiated:

- Government-to-Government (G2G)- involves the sharing of information, files, documents, data and other resources between government agencies. At this stage, resources can be shared from the central to local government or within the central and local government agencies.
- Government-to-Employee (G2E)- includes a platform where the government employees use ICT tools to electronically receive salaries and other benefits from their respective offices.
- Government-to-Business (G2B)- dedicated platform for the business sector that allows that to have access to different electronic resources necessary for interacting with the government.
- Government-to-Citizen (G2C)- online platforms for citizens so that they can gain access to different types of services without visiting the government offices.
- Government-to-Nonprofit (G2N)- dedicated platform for the non-profits for their interaction with relevant government agencies.

In 2019, the e-service team of a2i conducted an initial assessment study of e-Nothi use. According to that study, as of February 2019, 4564 government offices were using e-Nothi system where the number of total users was 69,290. According to that study, the system was working quite effectively, and the government officials were gradually getting habituated to use the system in managing their files. On an average, 72% of the total official activities were performed through e-Nothi. 59% of the e-Nothi users found it useful to use the mobile apps and more than 50% of the users regularly visited the e-Nothi Facebook page. The regular users of the e-Nothi system found it useful and commented that it made file disposal easier, allowed them to access files from 'anywhere at any time' and made it easier to track the files. They were also of the opinion that the system had increased inter-departmental communication and significantly reduced procrastination. At the same time, they also identified several challenges and issues they faced-





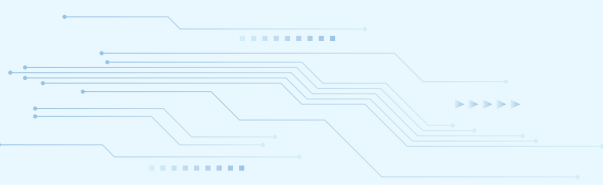
- Not all types of files could be used or disposed through the e-Nothi system.
- There were concerns regarding file's security. In other words, there was a fear that files could be lost.
- Frequent server problems reduced the efficacy of the programme.
- The elderly officials were unwilling to use the system.
- Lack of encouragement or pressure from the top created a sense of inertia regarding the use of e-Nothi

It is important to note that since that study, the users of e-Nothi system has increased significantly. According to current estimate, more than 19,000 government offices are using this. Moreover, during the lockdown and limited lockdown periods in Covid-19 pandemic, most of the government offices ran through an e-Nothi system allowing officials to “work from home” that provides efficient delivery of services as well as ensures the safety of the government officials from infections of the viruses by reducing human contacts in official file movements.

Whereas the study findings are important, there exist significant knowledge gaps-

- First of all, with an increase in e-Nothi users, there is a lack of adequate knowledge regarding their current experiences. In effect, it is not known whether the problems identified in that rapid study were solved and whether new problems/ challenges have emerged.
- Secondly, clearly the Covid pandemic has significantly encouraged the government officials to use the e-Nothi system. Therefore, it is important to understand the post-Covid reality.
- Thirdly, the earlier study was largely qualitative in nature, and it used a very limited sample to understand the status of e-Nothi usage. As a result, the findings produced in that study need to be revisited.
- Fourthly, there is still limited idea about the factors that may or may not influence the utilization of e-Nothi. At this stage, it is important to identify these factors.
- Fifthly, given that the performance of the government agencies varies regarding the use of e-Nothi, up to this point in time, there is limited data and understanding regarding the reasons behind this variation.
- Lastly, there is a limited understanding about the impact of e-Nothi on the citizen's access to services.

The current study is an attempt to find out the impact of e-Nothi system in performing responsibilities by the public officials and service recipients' accessibility to the public services. The study is structured in the following ways- in the next section, a brief overview of different countries' experiences on using e-filing system has been described. The specific focus is on the experiences of India and Malaysia as their experiences can be compared with Bangladesh's context. The third section explains the research questions, objectives of the study and discusses the methodology followed. The fourth section provides an overview of the findings of the study as per the research questions. The fifth section discusses the findings, and the final section provides concluding observations.



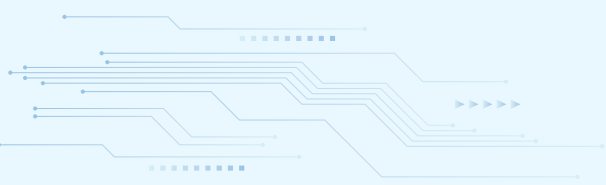


Section 2: E-Filing Management in Other Countries

Understanding the significance of e-Nothi

As the global technological landscape has been shifting at a rate faster than ever, governments all over the world are being challenged to keep up the pace (Manoharan et al., 2020). Governments are required to adapt to the changing environment and transform their systems to deliver efficient and cost-effective public services to their citizens. This change in the government has culminated in the form of e-Governance, which can be defined as the use of digital technology to improve the delivery of public services and enhance the overall effectiveness of the government (Torres et al., 2006). Another different but closely related term is e-Government, which can be simply described as the use of information and communication technology to enhance government processes (Signore et al., 2005). Although there is some overlap between these two ideas, each of them is different from one another in focus and scope. e-Governance is a broad idea that encapsulates the digitalization of all governmental and non-governmental factors and relationships that relate to the service delivery and policy-making functions of public institutions (Saxena, 2005). e-Government, on the other hand, is a relatively narrower concept relating to digitized government processes. Despite being used interchangeably in some instances; these two terms represent different interrelated ideas that are connected through a shared history of evolution and development.

The advent of information technology has transformed traditional government structures, leading to the evolution of e-Government and e-Governance. While changes in government systems are not a new event, the rapid transformation brought on by globalization and technological advances in the last few decades is much more drastic and impactful. As per Schwester (2009), the concept of e-Governance progressed from the dissemination of information to online operation and eventually resulted in a participatory framework involving citizens. Although there are debates as to when e-Government was introduced, most authors agree that it emerged with the rapid advancement of information and communication technology in the late 20th century. This transformation can be traced back to the late 1960s when the birth of the internet through the Advanced Research Projects Agency (ARPA) revolutionized information technology (Rogers & Kingsley, 2004). After ARPANET became openly available in the 1970s and 1980s, it opened the doors for e-Government to arrive (Garson, 2006). By moving from an internal-facing to an open structure, this event paved the way for tools of digital information and communication to establish themselves in the daily operations of the government. In the 1990s, when the technology bubble boomed and the internet blossomed, governments witnessed a shift toward digitization, marking the emergence of e-Government. It started with information and communication technology revolutionizing government procurement (Calista & Melitski, 2007). Moreover, the emergence of e-Government in the 1990s coincided with the growing popularity of New Public Management, which provided an encouraging environment (Katsonis & Botros, 2015; Navarra & Cornford, 2012). Early manifestations of e-Government focused on streamlining administrative tasks, enhancing efficiency, and reducing bureaucratic red tape by adopting computerized systems for internal processes (Moon et al., 2014).





Since the early 2000s, government agencies have been increasingly relying on web-based technologies and the Internet to conduct internal operations and to reach out to the citizens (Fang, 2002; Finger & Pécoud, 2003). Some mark this period as a shift from e-Government to e-Governance, which emphasizes a citizen-centric model. Governments began to recognize the importance of engaging citizens in decision-making processes, fostering transparency, and increasing accountability (Ali et al., 2018). Afterward, the integration of Web 2.0 technologies enabled two-way communication, fostering collaboration and participation. Social media platforms became tools for citizen engagement, challenging traditional top-down communication models (Mahmood, 2021). As e-Governance matured, the concept of open government gained prominence. Governments started adopting transparency measures, releasing datasets for public scrutiny, and leveraging technology to promote accountability (Gritzalis et al., 2019). Some authors believe that pursuing enhanced public services, improved government operations, citizen engagement, and administrative and institutional reform created more democratic forms of e-Governance (Dawes, 2008; Navarra & Cornford, 2012). e-Governance today emphasizes inclusive decision-making processes, with crowdsourcing, participatory budgeting, and online consultations being integral components (Baxter, 2017). The integration of emerging technologies such as artificial intelligence, predictive analytics, and blockchain-based systems are contributing to more efficient and responsive governance structures and have given rise to the concept of smart governance or e-gov 4.0 (Valle-Cruz & Sandoval-Almazán, 2014).

Different authors propose differing views regarding the evolution and relationship between e-Government and e-Governance. For example, as per Gil-Garcia & Martinez-Moyano (2007), e-Government evolved into e-Governance through the addition of technological and organizational sophistication, driven by pressures from public managers and stakeholders related to performance and accountability. According to Brown (2005), this evolution occurred by combining technology, management concepts, and the government itself, focusing on citizen-centered service, information as a public resource, and new skills and working relationships. Some authors assert that e-Government and e-Governance progress together interchangeably and linearly through uniform phases (Layne & Lee, 2001; Moon, 2002). Janowski (2015), in his paper, proposed a four-stage digital government evolution model where increased engagement and contextualization move governments from electronic government to electronic governance. In contrast to this view of placing both of these concepts within the same trajectory, some believe that e-Government and e-Governance deploy similar technologies while possessing unique missions. Calista & Melitski (2007) further add that they do not belong to the same upward spiral, but they generate curvilinear trajectories that converge twice. This leads to the idea that both have different but supporting roles to play, with e-Government digitalizing government structure and process to improve performance, and e-Governance supporting the citizens in the most effective and interactive manner.



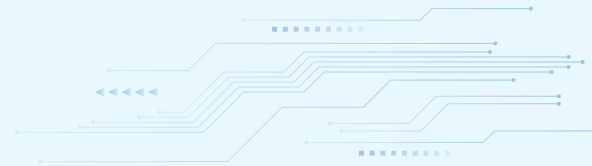


Electronic Document Management System (EDMS) within e-Governance

The advancement and extensive development of e-Government has increased the volume of electronic documents that serve as essential tools and authentic records for e-Government operations. As a result, governments seeking to enhance management efficiency, safeguard crucial data, reduce management costs, and improve effectiveness require an electronic document management system (EDMS) to effectively manage these electronic documents. Sprague (1995) defined it as “the application of technology to save paper, speed up communications, and increase the productivity of business processes”. An electronic document management system can also be defined as “an automated system used to support the creation, use, and maintenance of electronically created documents to improve an organization’s workflow” (Johnston & Bowen, 2005). The online filing of electronic documents is considered one of the most crucial technological ingredients of e-Government services by many authors (Müllner & Grimm, 2004; Steyaert, 2004). Haider et al. (2015) compared electronic document management systems to the bloodstream of e-Government because of how crucial it is for managing valuable information resources. Fang (2002) describes the many kinds of partnerships and connections that are built through e-Government, out of which, government-to-government (G2G) and government-to-employee (G2E) partnerships are of utmost importance in this case. The government-to-government partnership refers to the internal exchange of information and advancement of cooperation between different government departments through an online database or communication system. Similarly, government-to-employee (G2E) partnerships facilitate internal communication between government employees and transform the system into a paperless one (Fang, 2002; Khan & Javed, 2017). To ensure that both of these functions of e-Government are operating with utmost effectiveness, a properly designed and implemented electronic document management system is crucial.

The activities of e-Government involve the establishment of strategic connections between government departments, communication across different government levels, and the facilitation of policies, operations, transactions, and strategy implementations (Heeks, 2002). These initiatives necessitate the digitization of government daily transactions, procurements, operations, and resources to enhance cost-effectiveness and provide convenient service quality (Ebrahim & Irani, 2005). In contrast to traditional governance reliant on paper-based documents, e-Government services rely on electronic document management systems (EDMS). The important role of electronic document management systems in enhancing government services has been acknowledged by researchers since the 1990s (Sprague, 1995). The shift to electronic modes of document management was necessitated by the problems of traditional filing systems. The paper-based manual file system was characterized by inefficiency, poor administration, low productivity, delayed processing, prolonged review, poor check & balance, lack of timed accountability, and vulnerability to undue interference and corruption (Khan & Javed, 2017). The use of electronic document management systems has become more and more prominent due to relatively easier processing, storing, and executing, compared to paper documents. Researchers have asserted that electronic document management systems provide many benefits such as saving time and cost, supporting decision-making, maintaining regulations and legislations, providing organizational memory, improving organizational efficiency, and easier search of





organizational records (Björk, 2006; Saffady, 2021; Smith & McKeen, 2003; Zantout & Marir, 1999). Newly developed technology is also facilitating the development of electronic document management systems. For example, using cloud computing technologies, cloud storage, and cloud security can enhance an electronic file management system to achieve cohesive, dependable, and secure administration of electronic files (Han et al., 2020).

Electronic Document Management Systems (EDMS) in Different Countries

E-office in India

E-office, the primary electronic document management system of India, was introduced in 2008-09 to modernize the way government offices handle administrative tasks, document management, and communication. However, India's journey towards e-Governance began much earlier, in 1970, with the creation of the Department of Electronics (Singh, 2014). A significant step followed in 1977 when the National Informatics Centre (NIC) was established, bringing information and communication to the forefront. NIC started the District Information System program with a vision to make government services more accessible through technology (Kumar & Bhandi, 2012). In 1987, NICNET, a satellite-based computer network, was established which extended to all quarter headquarters by 1990. The National Task Force on Information Technology and Software Development was set up in 1998, followed by the creation of The Union Ministry of Information Technology in 1999. The year 2000 marked a turning point with the passage of the Information Technology Act, giving legal recognition to digital signatures and digital records. This laid a strong foundation for secure digital transactions and paved the way for future document management systems (Chakraborty, 2013). Many e-Government initiatives, such as the Right to Information Act, tender notice information system in 2002, grievances and appeal registration and monitoring system in 2004, and electronic clearance system in 2004, etc. have been undertaken regularly (Paul, 2007). In 2006, the National e-Governance Plan (NeGP) was launched to make government services accessible to everyone. With a holistic view of e-Governance, it stresses the importance of services being effective, transparent, trustworthy, and affordable (Nazir et al., 2014). The "Digital India" initiative, launched on July 1, 2015, focused on improving online infrastructure and increasing internet connectivity. This initiative was a commitment to using technology to make government services available to citizens electronically, marking a step towards a more connected and digitally inclusive future (Singh, 2014).

The Department of Administrative Reforms and Public Grievances (DAR&PG) initiated the project 'E-office' to create an integrated system for record and file management. The primary objective of this project was the introduction of electronic files (e-files), rule-based file routing, flexible workflows, and the incorporation of digital signatures for authentication. These measures collectively aimed to ensure transition towards a paperless environment (Nazir et al., 2014). The National Informatics Centre (NIC) developed the e-Office software in 2009 and it was subsequently piloted and rolled out starting in 2010. The 'e-Office' software application facilitates the creation of a virtually 'paperless' office environment by eliminating paper files. In cases where both the sending and receiving offices adopt the 'e-office' application, electronic communication between them becomes feasible (Edara, 2019). The government envisioned enhanced efficiency,





consistency, and effectiveness in its responses through the implementation of these measures. The anticipated benefits include a reduction in turnaround time, minimization of processing delays, and the establishment of transparency within the system (Nazir et al., 2014). The e-office package has several applications that considerably enhance office management in government offices.

- The **e-file** application is one of the most crucial applications of e-office, which stores physical files and electronic files in text formats such as Word and PDF. This allows for archiving documents and potential retrieval in case physical files are damaged or lost (Satish et al., 2022). The e-file system can help many government offices make tactical and strategic decisions since decision situations having similar contexts are repeated frequently in e-file (Ahlawat, 2023).
- Knowledge Management System (KMS) within e-office is a web-based document management system that allows users to generate and keep track of e-documents. This acts as a central repository of documents and users can access it from any department or ministry. It has a flexible process workflow, meaning that the document's position in the process can be tracked (Satish et al., 2022).
- Collaboration and Messaging Service (CAMS) is the part of the e-office that is used for efficient interactions with people, systems, and departments. This allows for effective communication not only with internal users but also with long-distance departments (Satish et al., 2022).
- Personnel Information Management System (PIMS) is another application of e-office that stores every component of employee records and employee personal data. This workflow-based real-time system helps top management develop employee-related policies (Satish et al., 2022).
- Smart Performance Appraisal Report Recording Online Window (SPARROW) allows the maintenance of an online-based performance appraisal dossier for each employee. This assists officials by making it easier to fill out performance appraisal reports (Satish et al., 2022).

Users of the e-office can also apply for leave online using the e-leave function of the e-office application. E-office is used to assist with the efficient planning of travel and tours in government agencies (Satish et al., 2022).

While certain central and state government offices have embraced the 'e-Office' applications, the implementation in a standard government office is a relatively expensive undertaking since each office must acquire it from the National Informatics Centre Services Incorporated (NICSI) using their regular funds. The cost of the basic package ranges from 5 to 10 lakh Indian rupees, which is a large barrier to implementation despite the government's encouragement for the adoption of 'e-Office.' Consequently, the implementation in each government office relies on the initiative of the respective department and the availability of funds. Even in offices utilizing the 'e-Office' package, communication with other offices often requires traditional methods such as post, fax, or email, unless the receiving office also operates on 'e-Office.' As a result, the widespread





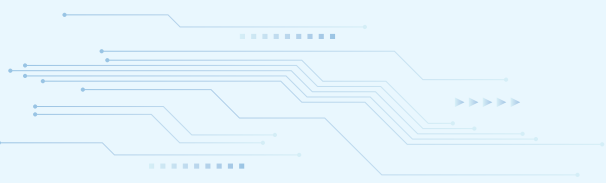
implementation of 'e-Office' or similar integrated software applications targeting paperless files and electronic message exchange in all government offices across the country may take several more years (Edara, 2019).

However, e-Office has reportedly been implemented in a large number of offices according to Ahlawat (2023). This paperless electronic workflow environment facilitates a collaborative workspace for the Government employees. Satish & Rizwana (2020) assessed the implementation of the e-office in the "Central Power Research Institute" (CPRI), which is an autonomous body for research and development under the Ministry of Power, Government of India. They found that employees perceived the usage of e-office to be highly beneficial and practical. The automated workflow and real-time data exchange across government departments through the e-office have allowed digital transformation to reach an advanced stage in India (Ahlawat, 2023).

EDMS in Malaysia

The growth and development of the electronic document management system in Malaysia is rooted in the historical development of e-Government initiatives. Since the introduction of e-Government as one of the seven key initiatives of the Multimedia Super Corridor (MSC) in 1996, Malaysian e-Government has improved the quality of services and information provided to citizens (Ramli, 2017). Key objectives of the e-Government initiative included the development of a knowledge-based society, heightened efficiency, improved service convenience, accessibility, and reliability, as well as faster turnaround, enhanced information flow, and multi-channel delivery (Abdullah et al., 2013). Through this, the government strategically shifted its focus towards cultivating a knowledge-driven economy by harnessing ICT as a pivotal catalyst for enhancing the country's competitiveness (Muhammad, 2013). The establishment of the Multimedia Super Corridor also aimed to create a competitive cluster of local ICT companies and foster a sustainable partnership between the government and the private ICT sector (Kaliannan et al., 2007). After facing challenges during the post-1997 Asian Financial Crisis recovery, the Malaysian government embarked on a systematic reinvention, embracing the digital economy from the year 2000 onward. The evolution of ICT in the Malaysian public sector transitioned from computer usage at government service counters in the 1970s to the adoption of web portals in the early 2000s (Abdullah et al., 2013). The Malaysian government's vision of e-Government underscored collaboration among the government, businesses, and citizens for the collective benefit of Malaysia. It aimed to enhance service delivery, making the government more responsive to citizens' needs (Yatin et al., 2015).

Under the e-Government Flagship, eight projects were launched, all leveraging ICT and multimedia technologies to transform government operations, coordination, and enforcement (Kaliannan et al., 2007). Among these projects, the Generic Office Environment - Electronic Government Document Management System (GOE-EGDMS) was a project focused on record-keeping and document management. Employed by the Malaysian Administrative Modernization and Management Planning Unit (MAMPU), the Prime Minister's Office, and the Ministry of Finance from 2002-2003, GOE-EGDMS was developed to meet user needs and align with public organizations' filing management processes (Yatin et al., 2015). This project aimed to introduce a fully integrated, distributed and scalable office environment that leverages the use of





multimedia information technology to enable efficient communication, allowing collaboration across all workers, and ensuring the right information reaches the right people on time (Ahmad & Othman, 2006). The GOE-EGDMS primarily consisted of three modules, which are:

- Enterprise-wide Communication Management System: This allowed for easier communication with one another and makes it easy to send and receive documents through routing and e-mail (Yatin et al., 2015).
- Enterprise-wide Document Management System: This provided a universal interface for users to manage, find, store, access, retrieve and compose the documents that they need for their day-to-day operations (Ahmad & Othman, 2006).
- Enterprise-Wide Collaboration Management System: This enabled users to collaborate in a group to perform work functions, as well as improve the sharing and dissemination of information through meeting management (Yatin et al., 2015).

The system also facilitated an accelerated mail register (incoming and outgoing mail), document register (meeting minutes, paperwork, circulation, etc.), meeting management (including member appointment, facility booking, notices and cancellations), preparation of meeting minutes with action item identification, announcements (bulletin board) and discussion forum (Yatin et al., 2015). This provided a new paradigm of working in a collaborative environment where government agencies communicated, interacted and shared information (Kaliannan et al., 2007). As per Yatin et al. (2015), GOE-EGDMS proved to be beneficial for public organizations, enhancing service quality, and document control, reducing costs, and boosting overall efficiency.

Currently, the Digital Document Management System (DDMS) stands as the key initiative of the Malaysian government and is working to transition towards a paperless environment. Initiated in 2013 within the e-Government Entry Points (EPP) project, the initiative focuses on elevating service delivery, record-keeping, and government transparency through Information Communication and Technology. DDMS is designed to provide document and records management services, adhering to the electronic records life cycle, covering creation, storage, maintenance, and disposal. This initiative offers a multitude of advantages, including the reduction of paper usage, accelerated public records access, prevention of record loss, and streamlined records transfer to archives. Implementation of DDMS presents potential solutions to enhance the efficiency of public sector electronic records management, improve services, reduce storage space, and eliminate or integrate duplicate work in government offices. The system is safeguarded by government ICT security protocols, ensuring the preservation of government documents and records (Aziz et al., 2020).

Ramli (2017) found that there were multiple challenges in the process of implementing such e-Governance initiatives, including financial constraints, technical infrastructure, the government's role, employee capacity, legislative constraints, and the condition of the organization. One key challenge involves the integration of flagship applications, legacy systems, and various government services across agencies at all government levels. Additionally, the existing e-Government legislation is perceived as lacking sufficient safeguards for information confidentiality and digital signature protocols (Mahbob et al., 2011). Another significant challenge involves the attitudes of government officials as they are accustomed to traditional counter





services and are hesitant to shift to e-Government services. Although attitudes are slowly changing, it will require time and effort to shift government employees' mindsets from traditional practices to accepting e-Government services. Despite significant investments in IT infrastructure, the use of these services is often limited to emails, the internet, and intranet, with less active support for online participation or services (Abdullah et al., 2013). The implementation of DDMS poses challenges for organizations due to a lack of appropriate guidelines or policies guiding the initiative. Consequently, there is a high rate of user rejection of DDMS implementation (Aziz et al., 2017). Another key challenge is the limited IT knowledge among government officials. Agencies need to provide improved IT training to help their staff gain the necessary IT skills, but the shortage of qualified IT trainers restricts the opportunities for government employees to stay updated on IT advancements (Abdullah et al., 2013).

Key Conclusions Drawn from the Experiences of Other Countries

The discussion above on the experiences of using e-filing system by other countries indicate the followings-

First of all, as indicated in the previous section, the use of e-filing system is closely related with the advent of New Public Management practices of the 90s and the introduction of e-Government. Since the 2000, many countries have not only focused on making a transition from government to governance but also concentrated on utilizing ICT tools in making this transition effective.

Secondly, it is important to understand that the use of ICT in government service delivery is an evolutionary process and the countries need to take significant preparatory steps before making a transition. As indicated above, the initial transition in both the countries started in the early 90s but the process sped up in early 2000. In case of e-Governance, both the governments first concentrated on making services available to citizens through online platforms and the e-filing system was introduced at a later stage- in the post 2010 period- to increase the internal efficiency of government agencies.

Thirdly, it is interesting to note that in the case of introducing the e-filing system, both the countries faced similar types of challenges. Initially there were legislative constraints, followed by financial and technological issues. At the same time, in both cases, the biggest challenge come internally as the traditional mindset of the officials hindered the efficacy of the initiatives.

Finally, even though these countries made significant progress over time and succeeded in bringing most of the offices under e-filing system, it has not been institutionalized yet.

The conclusions drawn above are interesting because as we will show later, the challenges faced by the Government of Bangladesh is not so different than the challenges faced by these countries. The table below shows an initial comparison between these three countries-

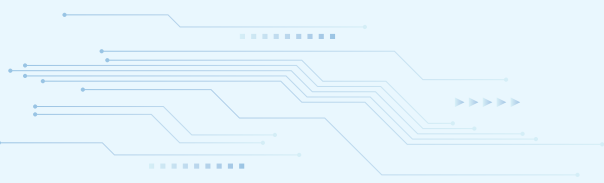
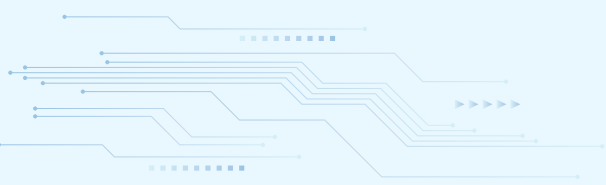




Table 1 Comparison of the Experience of E-Filing System of Three Countries

Countries Focus Areas	India	Malaysia	Bangladesh
Start of Emphasis on E-Filing	2013	2015	2016
Funding Mechanism	Preparing Software and then agencies require to buy that software	Centrally controlled and supplied free of cost to offices	Centrally controlled and supplied free of cost to offices
Acceptance	High	High	To be explored
Institutionalization	Initial difficulties faced but the situation is improving	Initial difficulties faced but the situation is improving	Initial difficulties faced but the situation is improving
Key Challenges	Funding, technology, traditional mindset	Funding, technology, traditional mindset	To be explored
Spread	Slowly spreading	Increased significantly	To be explored

In the remaining parts of the study, we will essentially try to find answers to the ‘to be explored’ areas.





Section 3: Research Methodology

3.1 Research Objectives

This research has the following specific objectives-

- To assess the simplification mechanism for administrative decision-making procedure through the e-Nothi system in regard to faster and more efficient public service delivery
- To assess the effectiveness of the e-Nothi system and to explore the steps that have been taken to institutionalize the system
- To assess the contribution of the system in improving the entire environment of an office and the social life of e-Nothi users
- To assess the impact of the e-Nothi system in introducing citizen-friendly public service delivery
- To measure the TCV status from the users' end
- To identify the challenges of the officials and the challenges in receiving faster and quality services as well as a sustainability mechanism

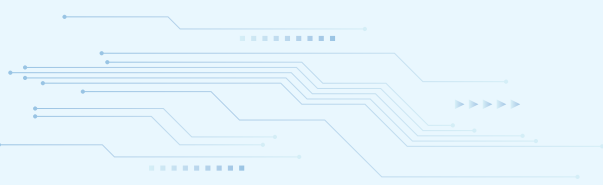
3.2 Research Questions

The key research question that the current paper aims to understand is-

How does the e-Nothi system simplify administrative decision-making procedures to ensure faster and efficient public service delivery?

In order to find out the answer to this overall research question, the paper focuses on addressing issues related to the following four dimensions-

- Effect of the e-Nothi system on administrative decision-making, i.e., whether the use of e-Nothi has significantly reduced time, cost or visit required in making administrative decisions. The underlying assumption is- if the introduction of e-Nothi allows less time, cost or visit in transporting documents, letters and other necessary resources both within the central government agencies or between the central and local government agencies, then it is likely that there will be positive impact in terms of making the decision making process more effective and efficient.
- Effect of e-Nothi on environmental sustainability.
- The level of institutionalization of the e-Nothi system.
- Effect on the Government officials as users, i.e., to understand whether and to what extent the e-Nothi system is user-friendly, has increased efficiency and productivity of the government officials, has affected their work-life balance and has influenced gender relationship within office environment. At the same time, efforts have been taken to identify the existing challenges and suggest remedies.





Therefore, the specific research questions that the paper addresses are-

- What are the steps that have been taken over the years to institutionalize the e-Nothi system? How effective are they?
- Compared to the past, has the introduction of the e-Nothi system improved the efficiency of government servants and faster public service delivery while performing their official responsibilities? How and to what extent?
 - To find answer to this, we have calculated TCV of e-Nothi usage.
- Has the use of e-Nothi system been institutionalized in government offices?
- Compared to the past, has the introduction of the e-Nothi system affected the social life of the officials? How and to what extent?
 - The research team has conducted a perception survey of the officials to find an answer to this.
- How does the e-Nothi system contribute in improving entire environment of an office and is there any linkage with hierarchy, location, and gender dimension in introducing a system like e-Nothi?
 - In regard to this, we have tried to measure the environmental impact of e-Nothi usage. In addition to that, we have measured the perception of the officials to understand their acceptance of the system, the efficacy of this system in ensuring accountability and have also tried to understand how the introduction of e-Nothi has affected their perception of the office environment.
- What are the existing challenges that officials currently face? Are the infrastructural and logistical issues solved for the smooth use of this system? Is there any necessity for an upgraded version related to the sustainability mechanism?
- How has e-Nothi affected the work and social life (Work-family balance, perceived acceptance) of the officials?

3.3 Methodology

To find out the answer to the questions developed above and to fill in the gaps identified in section 1, this paper largely adopts a qualitative approach while relying at the same time on descriptive analysis of survey data. The reason for relying mostly on qualitative approach is the nature of answers that are being sought through this study. As pointed out by several scholars, the purpose of qualitative research is significantly different as instead of providing a generalized finding, it concentrates on providing a deep understanding of human behavior, their perception, values and understanding in different set-ups (Namanji & Ssekyewa, 2012; Cavana et al, 2001). At the same time, it is important to note that qualitative approach of research emphasizes on understanding people's words, actions and behaviors and in doing so try to identify patterns or factors that can explain people's behavior, understanding or acceptance of new technologies. If we consider the research questions mentioned above, it becomes clear that even though some efforts have been taken to measure TCV or environmental impact, in general, answer to these questions largely rely





on the perceptions of the respondents and then identify the reasons, factors or issues that affect their perceptions. Considering all these, we have decided to adopt a qualitative approach of research while relying on descriptive analysis.

3.3.1 Case Selection and Sampling

For the purpose of this paper, the performance of the government agencies regarding use of e-Nothi has been considered. Data stored in the e-Nothi dashboard has been used to explore the performance of the government agencies regarding e-Nothi use and file disposal/ note disposal and based on that, government agencies have been categorized into three groups-

- a. The high users, i.e., offices that usually dispose of more than 50 files/ letters/ reports per month.
- b. The middle-of-the-road users, i.e., offices that dispose of between 11 and 49 files/ letters/ reports per month
- c. The low users, i.e., offices that use less than 10 files/ reports/ letters per month.

The unit of analysis of for this study is ‘government offices’ and we are categorizing them into three groups. What we are doing here is- we have adopted a non-random sampling approach where we have purposively selected the extreme-cases or deviant-cases. In other words, we have categorically selected the best and the worst users (high- and low-end users) and by comparing them, we have tried to identify the factors that cause variation in the performance of these agencies.

In total, 14 government agencies have been selected from three categories- 6 from high user category, 5 from moderate user category and 3 from low user category. To ensure representativeness of the government offices, these 14 offices have been selected from different types of offices- Ministry, Directorate, Department, and Divisional Office. In addition to that, to get the perspective of the field offices, we have reached out to 9 different government agencies while considering the three categories mentioned above. From these offices, we have conducted 9 In-Depth Interviews. Furthermore, we have also conducted 6 in-depth interviews with national level officials who have vast knowledge and experience about e-Nothi.

Survey

Once the 14 government agencies were selected from the three different categories, we then decided to conduct surveys of selected officials from these agencies. Important to note that at the first stage, a2i launched a self-administered survey for civil service officials. 25 officials from different offices responded to the survey. At the second stage, a2i contracted a team of enumerators and they went to different Government offices to collect data.

The research team sent the group of enumerators to 6 offices from the High Use category, 5 offices from the Moderate Use category, and 3 offices from the Low Use category.

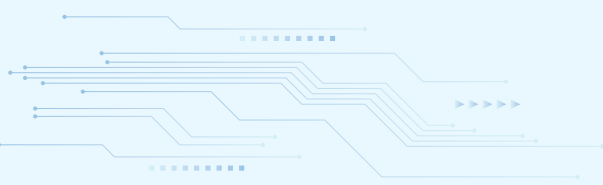




Table 2 Offices and the Number of Respondents

Office Name	Number of Respondents
High Use	58
Anti-Corruption Commission	10
Department Of Inspection For Factories And Establishments	10
Directorate General of Food	10
Directorate of Secondary and Higher Education	9
Information and Communication Technology Division	10
Trading Corporation of Bangladesh	9
Moderate Use	50
Controller Of Certifying Authorities	9
Department of Agricultural Extension	10
Department of Youth Development	11
Dhaka Mass Rapid Transit Company Limited	10
Ministry of Liberation War Affairs	10
Low Use	31
Department of Women Affairs	10
Islamic Foundation	10
Ministry of Railways	11
Grand Total	139

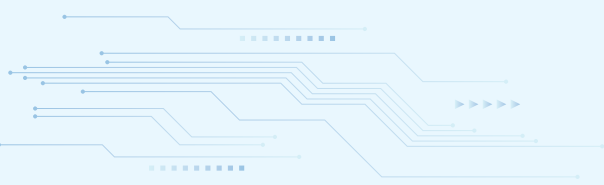
Combining the responses from the first and second surveys, we got a total of 139 responses from the 14 organizations of the 3 categories.

3.3.2 In-Depth Interviews

As mentioned earlier, in total 15 In-Depth Interviews have been conducted by the research team. Of these 9 interviews have been conducted with the government agency officials and 6 interviews have been conducted with national level officials. These IDIs provided insights about the findings of the survey, validated these findings and at the same time, allowed important insights about the existing state of institutionalization and challenges.

3.3.3 A Note on the Validity of the Measurement

The research team asked the respondents to self-report the days it required to complete and transfer files before and after e-Nothi. There can be recall errors and social desirability bias. A more valid measurement would be to collect data on file transfer and completion before and after e-Nothi implementation. Since we do not have data from the time before e-Nothi implementation, we had to resort to self-reporting from the respondents.





3.4 Analytical Frame for Analysis

In the following table, we have tried to show how we have tried to methodologically address the research questions mentioned above

Table 3 Data Collection Approaches and Research Questions Addressed

Theme	Focus	Research Questions Addressed	Approach
Efficiency in Decision-Making	Measuring TCV	Compared to the past, has the introduction of the e-Nothi system improved the efficiency of government servants and faster public service delivery while performing their official responsibilities? How and to what extent?	Survey of Officials
Environmental Impact	Measuring environmental impact	Is there any environmental impact of using e-Nothi?	Calculation of survey data
Work Environment and Social Life	Work life-Social life balance Gender Dimension (whether it has positively affected women officials) Efficiency within offices File tracking and accountability	Compared to the past, has the introduction of the e-Nothi system affected the social life of the officials? How and to what extent? How does e-Nothi system contribute to improving entire environment of an office and is there any linkage with hierarchy, location, and gender dimension in introducing a system like e-Nothi?	Survey of officials and IDIs
Institutionalization of e-Nothi system	Acceptability by the officials Attitude of the senior officials Equipment and logistical issue	Has the use of e-Nothi system been institutionalized in government offices?	Survey and IDIs
Challenges	Concerns & challenges regarding e-Nothi	What are the existing challenges that officials currently face? Are the infrastructural and logistical issues solved for the smooth use of this system? Is there any necessity for an upgraded version related to the sustainability mechanism?	Survey & IDIs





Section 4: Findings

4.1 Demographic Information

Gender Distribution of the Respondents: Of the 139 respondents, 37 were female (27%) and 102 were male (73%).

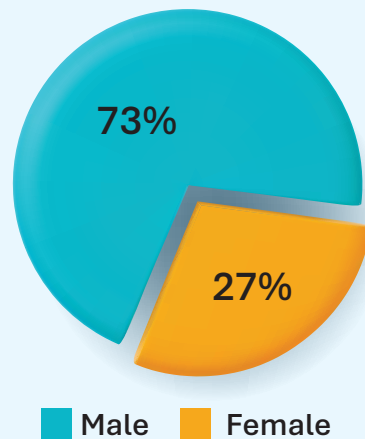


Figure 3 Gender Distribution of the Respondents (%)

Highest Level of Education of the Respondents: 110 respondents had education up to a master’s degree and 21 respondents had a bachelor’s degree. 5 respondents had an HSC, 2 respondents had a Diploma degree, and one respondent had a PhD.

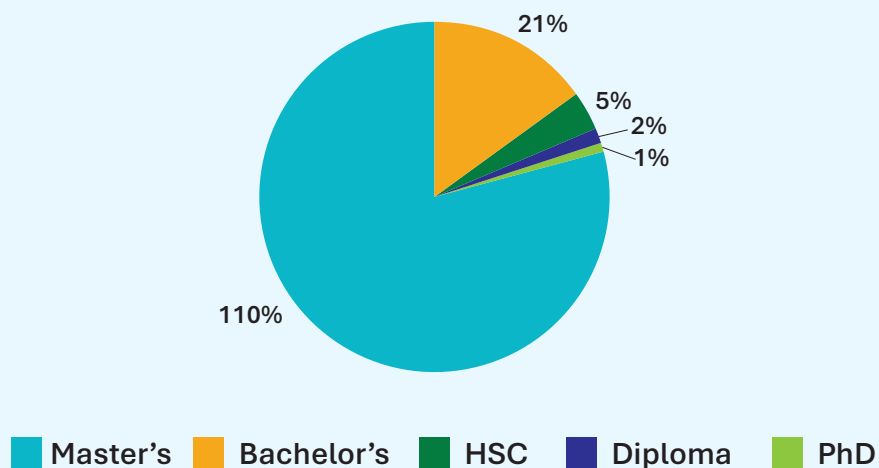
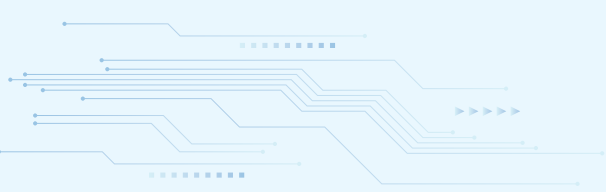


Figure 4 Highest Level of Education of the Respondents (Number)





4.2 Efficiency in Decision-Making

In this section, we will see the impact of e-Nothi on file completion/disposal. In Government offices, a file needs to travel to multiple desks (within the office or in a different office), for the file to be completed/disposed of. As mentioned earlier, to understand the improvement of efficiency in the decision-making process, we have mainly relied on calculating the TCV (Time, Cost and Visit).

4.2.1 Time

Our survey findings indicate that in all categories of offices there was a decrease in the number of days it required to transport nothi to other offices. Across all offices, on average, it used to take 2.27 days before e-Nothi. After e-Nothi, it takes 1.15 days on average. **In other words, there is a 49% decrease in regard to transporting nothi from one office to another.** Our interviewees also confirmed this. They pointed out that in the past, they had to wait for 2 to 3 days to collect all the files that were required to physically transfer from one office to another. The introduction of e-Nothi has changed this scenario as in most cases, they don't need to wait for the files, and these can be transferred electronically.

In High Use, Moderate Use, and Low Use office it used to take 1.48, 2.67, and 3.10 days on average to transport to other offices before e-Nothi. After e-Nothi, it takes 1.31, 1.05, and 1.03 days on average. It's interesting to see that the High Use offices already had a low average time to transport files to other offices. After e-Nothi Moderate Use and Low Use offices benefited more as they had a more substantial reduction in the average number of days to transport the files to other offices.

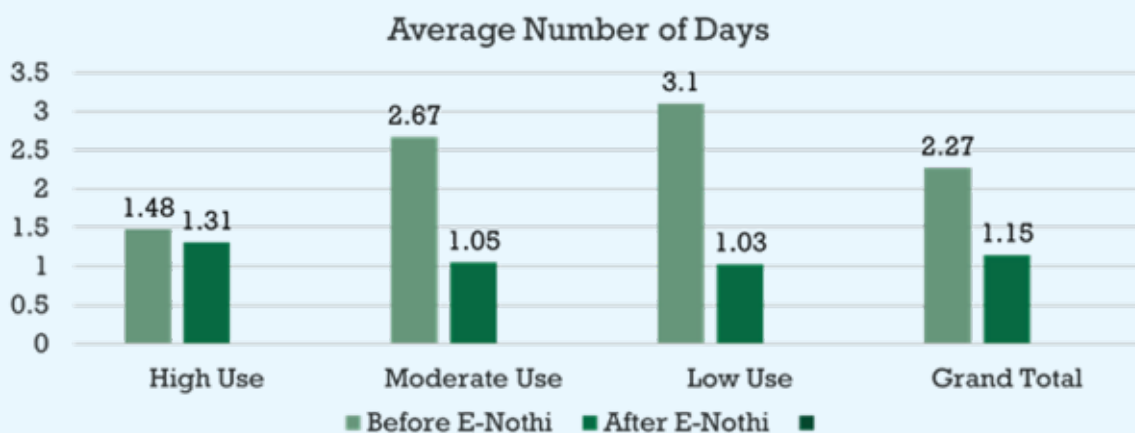
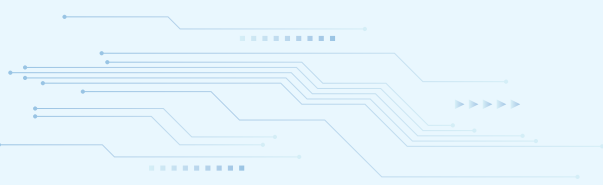


Figure 5 Average Number of Days Required to Transport Nothi to Other Offices

At the same time, it is important to note that the average number of days required to move files within the office were low to begin with. High Use offices took 1.19 days on average to move files within the office. Moderate Use and Low Use offices took 1.73 days on average. After the implementation of e-Nothi, all three types of offices take similar time on average to move files within their offices. Again, Moderate Use and Low Use offices benefited more from the implementation of e-Nothi.



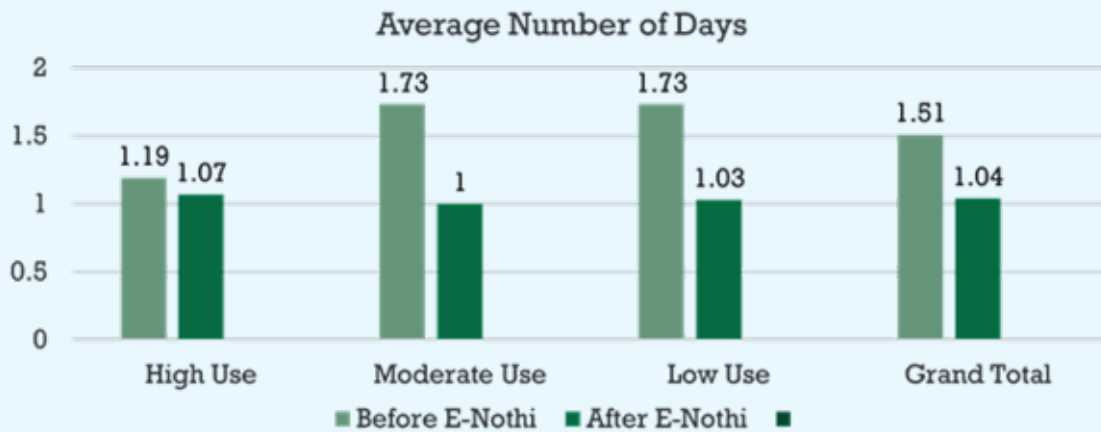


Figure 6 Average Number of Days Required to Move Nothi within Office

When it comes to file completion/disposal, all three types of offices had substantial reduction in average number of days. High Use offices required the lowest number of days on average before e-Nothi and Low Use offices required the highest number of days. After the implementation of e-Nothi, both Moderate Use and Low Use offices require a similar average number of days to complete/dispose a file. All in all, the average number of days required to dispose a file has reduced significantly as perceived by the officials and we have found that **there has been a 59% reduction in case of time-required to dispose a file.**

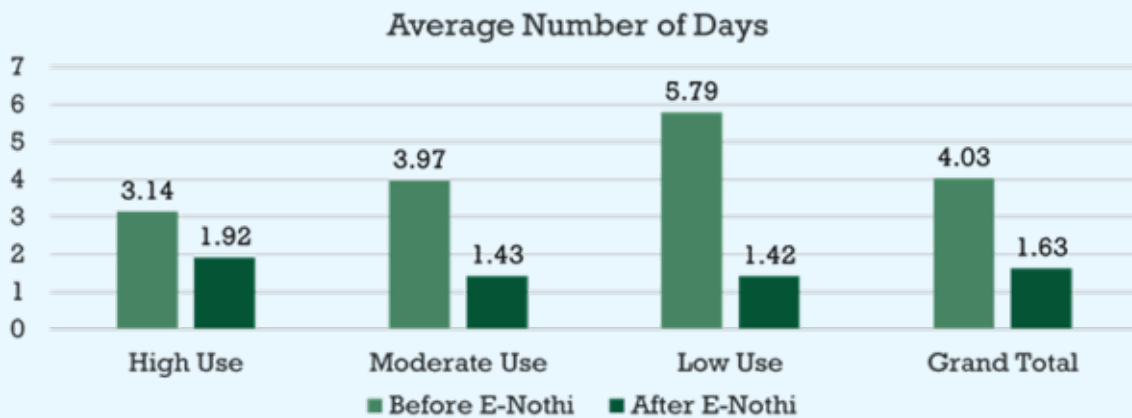
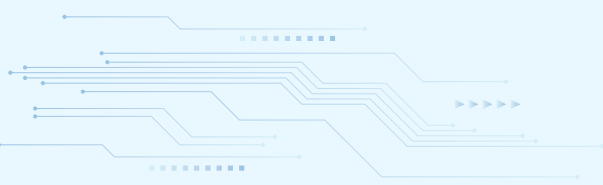


Figure 7 Average Number of Days Required for File Disposal

4.2.2 Visit

When the respondents were asked impact of e-Nothi, across all types of organizations, majority of the respondents agreed with the following statements - “speed of performing official duties has improved”, “Due to e-Nothi, speedy disposal of all types of files is possible”, “The e-Nothi system has made monitoring of official duties easier”, “The e-Nothi system has made government officials more responsive”, and “e-Nothi has made service more accessible to the citizens”.





The average number of office visits required for one file has also decreased. Low Use offices had the lowest average number of office visits and Moderate Use offices had the highest average number. High Use and Low Use offices experienced a decrease of 1 visit on average for a file, while Moderate Use offices experienced 2 fewer office visits on average for one file. **On average, the number of office visits has decreased by 34%.**

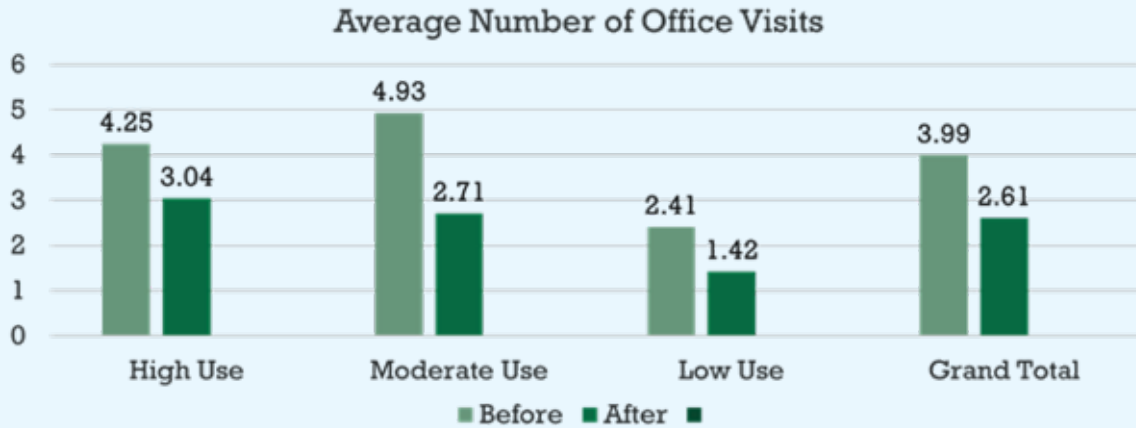


Figure 8 Average Number of Office Visits Required for A File

4.2.3 Cost

After the implementation of e-Nothi, more employees – both Note Approver and Note Initiator - can complete/dispose a file without any additional expense.

Table 4 Number of Respondents who Incur No Expense for File Completion/Disposal

Category of the Office	Note Approver		Note Initiator	
	Before	After	Before	After
High Use	3	4	23	33
Moderate Use	3	6	10	14
Low Use	0	3	3	13
Grand Total	6	13	36	60

The number of employees who have to incur transport costs also decreased in all types of offices. Not many employees needed to pay a help fee for a file, but after the implementation of e-Nothi no one needed to pay any help fee. However, after the implementation of e-Nothi, more employees have to pay for mobile or internet. This is particularly prevalent among Note Initiator - who report a substantial increase in number of employees who incur this cost after their offices started using e-Nothi. It is, however, important to note that whereas transport costs have been reduced for the officials, a new source of cost has emerged as the officials now have to spend money for mobile or internet use.

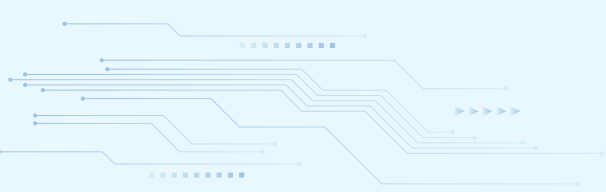




Table 5 Three Tables Presenting the Cost to the Offices before and after e-Nothi

Number of Respondents who Incur Transport Cost for a File				
Category of the Offices	<i>NOTE APPROVER</i>		<i>NOTE INITIATOR</i>	
	Before	After	Before	After
High Use	3	2	22	9
Moderate Use	7	6	23	9
Low Use	4	0	24	6
Grand Total	14	8	69	24

Number of Respondents who Incur Help Fee for a File				
Category of the Offices	<i>NOTE APPROVER</i>		<i>NOTE INITIATOR</i>	
	Before	After	Before	After
High Use	0	0	3	0
Moderate Use	1	0	1	0
Low Use	0	0	1	0
Grand Total	1	0	5	0

Number of Respondents who Incur Mobile or Internet Cost				
Category of the Offices	<i>NOTE APPROVER</i>		<i>NOTE INITIATOR</i>	
	Before	After	Before	After
High Use	1	3	3	9
Moderate Use	5	5	4	16
Low Use	0	1	0	9
Grand Total	6	9	7	34

Based on the discussion above, it is possible to draw the following conclusion about the efficiency of administrative decision-making-

First of all, it is quite clear from the above analysis that officials now require less time if compared with the past (i.e., before the introduction of e-Nothi) in both transporting files from one office to another, from one desk to another and in disposing files. This eventually allows them more time to focus on administrative responsibilities. One respondent made it quite clear-





“The thing is, e-Nothi allows me more time to concentrate on my work. Let me paint you a picture. In the past, I had to move from desk to desk to get a signature or get it approved. Well, in each table, I used to take a cup of tea, chit chat with officials and to be honest, in each desk, I had to waste around 30 minutes. Now, we don’t need to do that. We can upload files and track how it is moving forward. This is a significant saving of time”.

Secondly, several officials applauded the file tracking system allowed through the e-Nothi system and commented that this has encouraged a speedy disposal of files and administrative responsibilities. One official commented,

“This is excellent system for ensuring accountability. I have to admit, in the past files used to stay in one desk for a long while and files were lost sometime. There was no way of tracking and no pressure for timely disposal. That has changed”.

Important to note that this impact of e-Nothi on administrative decision making has also been echoed by the officials working at the local level offices. According to one of them,

“Look now we can work on files even on the road. All you need is just a smartphone or a working laptop. You don’t need to have the officer sitting on his/her desk to dispose a file. You can do it online”.

Thirdly, it has also been identified by the officials that the use of e-Nothi has made them more responsive in performing their responsibilities. All of these indicate that the administrative decision-making process has indeed improved and sped up after the introduction of e-Nothi.

4.3 Environmental Sustainability

In this section, we discuss the impact of e-Nothi on environmental sustainability. The research team asked the respondents in these offices about the number of pages printed, destroyed, and scanned, and use of fuel before and after the implementation of e-Nothi. In this report, we have taken the average of the responses for each office. The responses of TCB are discussed separately at the end of the section which is a High Use organization because the estimates are outliers for the High Use offices.

Most of the offices destroy fewer pages on average every month after the implementation of e-Nothi. TCB (High Use), Department of Youth Development (Moderate Use), DMTCL (Moderate Use), and Department of Women Affairs (Low Use) respondents reported destroying of more pages after the implementation of e-Nothi.



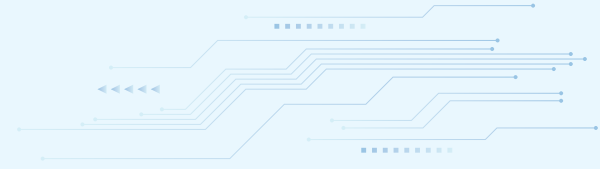
Table 6 Number of pages destroyed before and after e-Nothi (Average of the responses in an office)

Average of number of pages destroyed before and after e-Nothi		
Office Name	Before	After
High Use	564.33	472.56
Anti-Corruption Commission	710.00	402.00
Department Of Inspection For Factories And Establishments	216.00	77.00
Directorate General of Food	275.00	542.00
Directorate of Secondary and Higher Education	1366.67	1277.78
Information and Communication Technology Division	254.00	64.00
Moderate Use	410.78	387.40
Controller Of Certifying Authorities	613.33	255.56
Department of Agricultural Extension	127.00	79.00
Department of Youth Development	168.55	180.64
Dhaka Mass Rapid Transit Company Limited	545.00	1171.80
Ministry of Liberation War Affairs	600.00	250.00
Low Use	1440.32	2188.71
Department of Women Affairs	3630.00	6390.00
Islamic Foundation	560.00	270.00
Ministry of Railways	250.00	113.64
Grand Total	716.58	851.80

Except for DMTCL and Islamic Foundation, all offices reported a decrease in number of pages printed after the implementation of e-Nothi.

Table 7 Average number of pages printed before and after e-Nothi (Average of the responses in an office)

Average number of pages printed		
	Before	After
High Use	10622.78	8145.26
Anti-Corruption Commission	2830.00	2655.00
Department Of Inspection For Factories And Establishments	1397.00	395.00
Directorate General of Food	9010.00	4502.00
Directorate of Secondary and Higher Education	38788.89	32777.78
Information and Communication Technology Division	1088.00	396.50
Moderate Use	1940.07	1461.43
Controller Of Certifying Authorities	2555.56	1188.89
Department of Agricultural Extension	480.00	155.00
Department of Youth Development	2421.82	1204.55
Dhaka Mass Rapid Transit Company Limited	2083.00	3718.70
Ministry of Liberation War Affairs	2160.00	1040.00
Low Use	14466.67	11546.67
Department of Women Affairs	40400.00	33000.00
Islamic Foundation	1000.00	1140.00
Ministry of Railways	2000.00	500.00
Grand Total	8170.33	6359.49



4.3.1 Measuring Carbon Footprint

The research team produces estimate of the change in carbon footprint based on the estimates obtained from the work of Ana Cláudia Dias and Luís Arroja. Through a comparison of the methodologies to estimate the carbon footprint of an A4-sized paper, they listed the carbon footprint of an A4-sized paper. The carbon estimated carbon footprint is 4.64, 4.74 and 4.29 g CO₂eq according to, respectively, the ISO 14040/14044 standards, the PAS 2050 and the CEPI framework (Dias and Arroja 2012). Based on this estimate, we can see that, on average, all types of organizations experienced a reduction in the carbon footprint.

Table 8 Change in Carbon Footprint after e-Nothi (Average of the responses in an office)

Change in Carbon Footprint (kilograms of CO ₂ eq) in a Month			
	ISO 14040/14044 standards (kilogram)	PAS 2050 (kilogram)	CEPI framework (kilogram)
High Use	-11.50	-11.74	-10.63
Anti-Corruption Commission	-0.81	-0.83	-0.75
Department Of Inspection For Factories And Establishments	-4.65	-4.75	-4.30
Directorate General of Food	-20.92	-21.37	-19.34
Directorate of Secondary and Higher Education	-27.89	-28.49	-25.79
Information and Communication Technology Division	-3.21	-3.28	-2.97
Moderate Use	-2.22	-2.27	-2.05
Controller Of Certifying Authorities	-6.34	-6.48	-5.86
Department of Agricultural Extension	-1.51	-1.54	-1.39
Department of Youth Development	-5.65	-5.77	-5.22
Dhaka Mass Rapid Transit Company Limited	7.59	7.75	7.02
Ministry of Liberation War Affairs	-5.20	-5.31	-4.80
Low Use	-13.55	-13.84	-12.53
Department of Women Affairs	-34.34	-35.08	-31.75
Islamic Foundation	0.65	0.66	0.60
Ministry of Railways	-6.96	-7.11	-6.44
Grand Total	-8.40	-8.58	-7.77

Usually, less printing of files means that officials are directly uploading files to the system instead of scanning them. As such, the successful use of e-Nothi means that offices will scan less documents. However, ACC, Department of Youth Development, DMTCL (Moderate Use) reported that they scan more pages after e-Nothi. All three offices of the Low Use category (DWA, Islamic Foundation, Ministry of Railways) reported that they scan more pages after e-Nothi. All other organizations reduced the number of pages scanned. In other words, the high users of e-Nothi are now scanning less which indicates their adoption of the e-Nothi system.



Table 9 Average of number of pages scanned

Average of number of pages scanned		
	Before	After
High Use	2502.33	2258.79
Anti-Corruption Commission	409.00	525.00
Department Of Inspection For Factories And Establishments	732.00	237.00
Directorate General of Food	2260.00	2146.00
Directorate of Secondary and Higher Education	7166.67	5777.78
Information and Communication Technology Division	662.50	393.00
Moderate Use	904.46	1065.84
Controller Of Certifying Authorities	1945.33	733.89
Department of Agricultural Extension	71.00	26.00
Department of Youth Development	162.27	720.64
Dhaka Mass Rapid Transit Company Limited	1722.00	3250.00
Ministry of Liberation War Affairs	800.00	600.00
Low Use	3078.06	7587.10
Department of Women Affairs	9350.00	22600.00
Islamic Foundation	170.00	760.00
Ministry of Railways	20.00	145.45
Grand Total	2055.96	3018.00

However, this raises an important question- even after the use of e-Nothi has generally increased in offices and the officials are understanding the value of this system, why are they printing (and thereby scanning) more pages? Our interview with the officials shed important insights about that. These interview findings indicate two reasons-

First of all, even though the offices have understood the value of the system, they are still not confident about the safety and durability of the e-Nothi system and often works under the assumption that if files are lost for some reason (within e-Nothi), they would not have anything to show for their work. As a result, the offices prefer to keep a backup and as part of that in addition to working through e-Nothi, they print out the report/ letter or file and preserve it for future.

Secondly, officials working at the local level offices mentioned that the success of e-Nothi system, especially at the local level, relies on the widespread use of this by all the departments within sub-district or district. If only a few offices embrace the system and the others refuse to do so, the agencies will not succeed in reaping the benefit. One local level official explained it in the following way-

“Our office has fully embraced the e-Nothi system, and we work through it. We upload files or reports and then share it with other offices. The problem is, when we meet in the coordination meetings and talk about issues, we find out that they have not gone through it. When we try to understand why, the usual response that we get is- ‘please share with us the hardcopy’. Now, this is frustrating and means that we have to produce the same report in hardcopy. That is not helpful.”



4.3.2 Use of Fuel

On average, all types of offices experienced a reduction in the use of fuel per month after the implementation of e-Nothi.

Table 10 Average Number of Litres of Fuel Use Per Month

Average Number of Litres of Fuel Use Per Month		
	Before	After
High Use	20.41	15.50
Anti-Corruption Commission	62.00	41.11
Department Of Inspection For Factories And Establishments	9.50	0.00
Directorate General of Food	1.00	0.00
Directorate of Secondary and Higher Education	11.11	10.00
Information and Communication Technology Division	32.20	33.33
Trading Corporation of Bangladesh	6.67	8.57
Moderate Use	155.75	132.50
Controller Of Certifying Authorities	568.89	515.00
Department of Agricultural Extension	8.50	0.00
Department of Youth Development	40.91	14.00
Dhaka Mass Rapid Transit Company Limited	4.70	1.00
Ministry of Liberation War Affairs	10.00	5.00
Low Use	23.33	16.67
Department of Women Affairs	0	0
Islamic Foundation	0	0
Ministry of Railways	70	50
Grand Total	58.96	48.43

Overall, our survey findings indicate that the use of e-Nothi has an overall positive impact on environmental sustainability.





4.4 Work Environment and Social Life

To understand the impact of e-Nothi on work environment, the focus has been on the following issues-

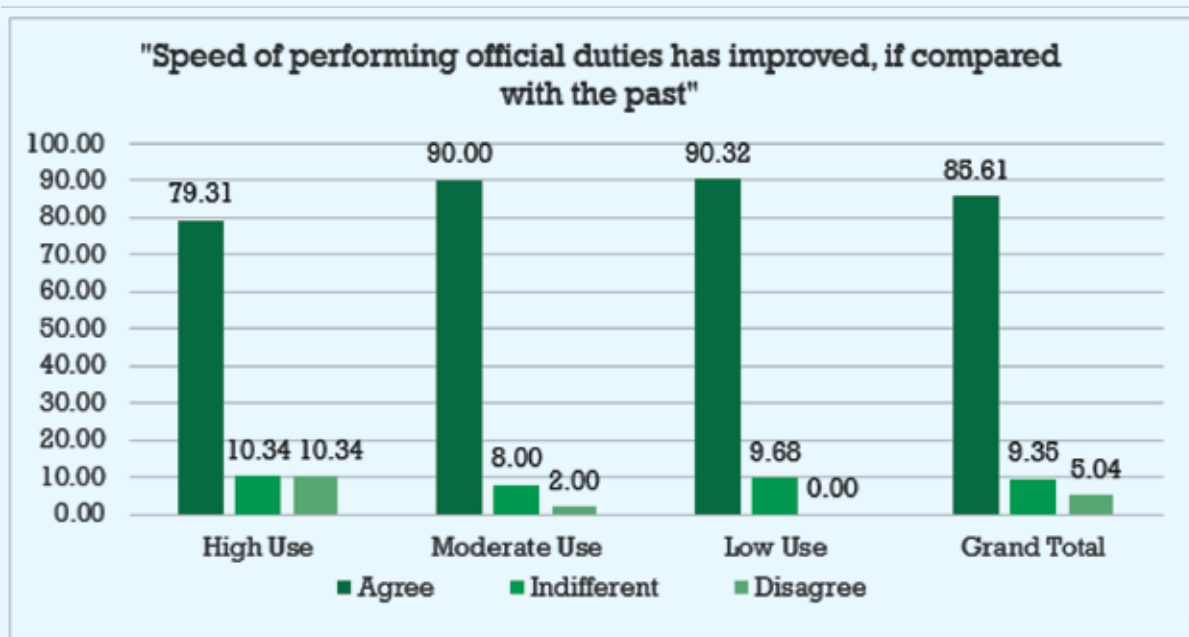
- Whether the officials consider the use of e-Nothi useful and if so, how this has contributed positively to their office environment,
- Whether it has allowed more time for the officials with their family members and whether they are managing to strike a balance between social and work life - to understand the impact of e-Nothi on the officials' social life.

4.4.1 Impact of e-Nothi on Work Environment

Usefulness of e-Nothi

On average, 85.61% of our respondents agreed with the statement that the speed of performing official duties has improved if compared with the past.

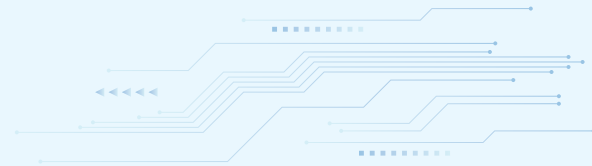
Figure 7 Speed of performing official duties has improved, if compared with the past



While talking to us, the government officials pointed out various reasons behind this-

First of all, one central level government official, who was involved with e-Nothi from the very beginning, mentioned that e-Nothi is working because it is performing and indeed allowing the officials to quickly perform their duties and that is why it has become acceptable. According to him,





“In Bangladesh, no initiative had a smooth start...ever. There are resistances and there will be resistance. The important issue to consider is- is the initiative useful or helping the government officials? If so, they will accept it. That is exactly what happened in case of e-Nothi. Initially people were skeptical. I remember joining meeting at the Cabinet Division where the senior officials did not like that idea and they were not interested. But that has changed. Everyone now understands its value and the same government officials are now pushing for e-Nothi use. I am sure that if you talk to the officials, they will say that they love it, find it useful. Of course, they have issues or complaints. They are likely to talk about servers or logistical issues. But they are doing so not because they don't want but because they understand its value and want to improve it.”

Other officials agreed with that. Several officials both at the central and local level mentioned that there were some issues in the early years of e-Nothi use, but “...those days are long gone”. When we asked why there were issues in the past, one official stated,

“Well, people don't usually like new things, and it takes time to get accustomed to. Furthermore, the push needs to come from the top and if there is no push, there will not be any result”.

Secondly, another important factor that has been highlighted by the officials is the strong political commitment of the top political and administrative leaders. According to them, the push for introducing e-Nothi came from the very top and the decision to incorporate performance regarding e-Nothi within the Annual Performance Agreement has played a major role in popularizing the use of e-Nothi. Moreover, as one official told us,

“In our office, a circular came from the Director that every officials duties have to be performed through e-Nothi. And he was quite clear and told us, if a file is not uploaded in e-Nothi, I will not take a look at that. This particular push played a significant role in institutionalizing e-Nothi in our office.”

Our survey findings show that around 81.29% of the officials are of the opinion that e-Nothi has ensured speedy disposal of all types of files.

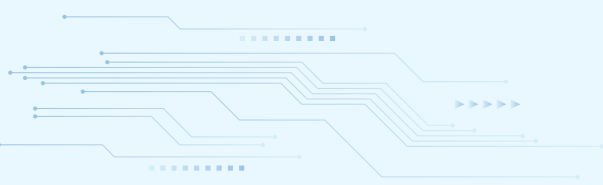
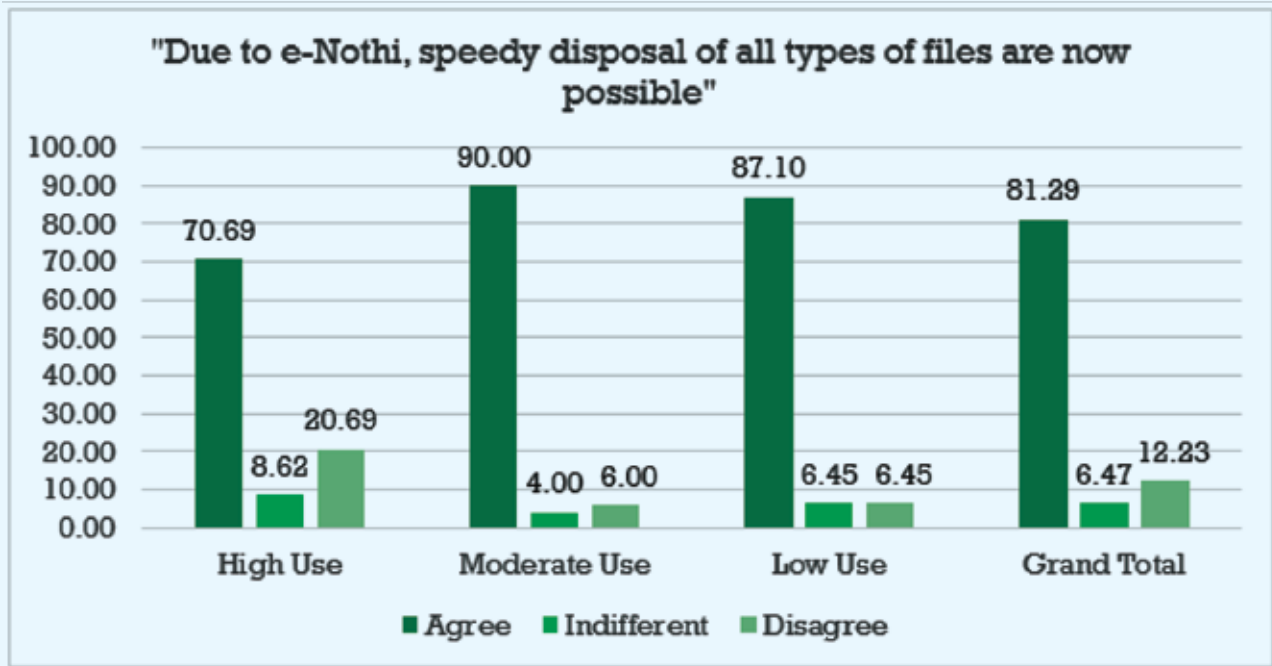


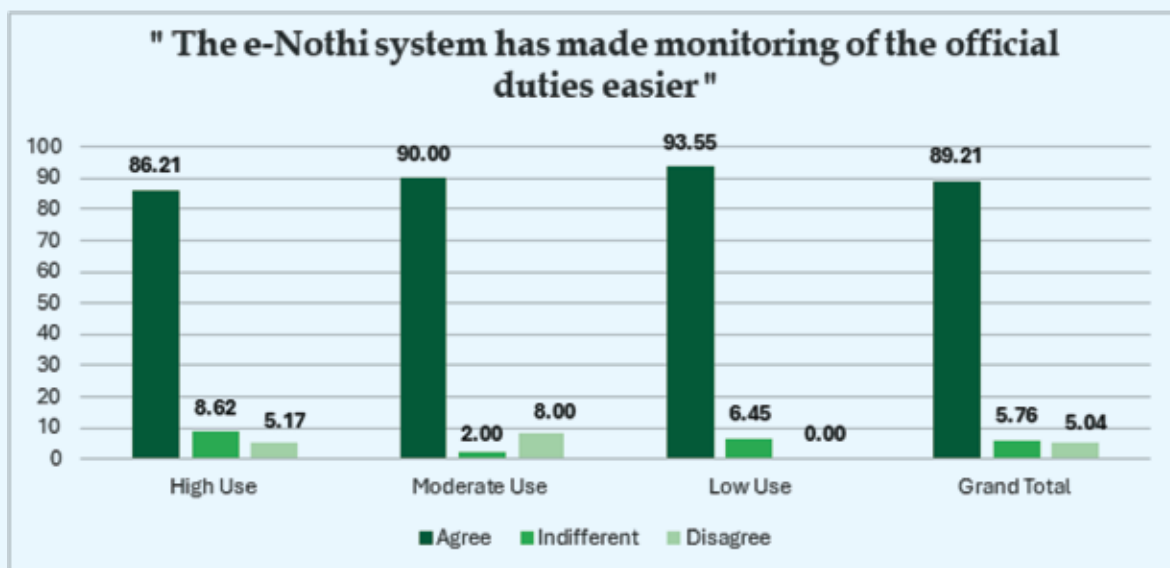
Figure 8 Due to e-Nothi, speedy disposal of all types of files are now possible



While talking to us, almost all the officials validate the survey findings. At the same time, these officials also mentioned that the introduction of e-Nothi has significantly improved the internal accountability of the office activities. As one official suggested,

"I really liked the file tracking system. It constantly reminds me how many days I have kept a file and automatically sends a notification if we don't dispose it within the given time. This is important and helps us to be responsive".

Figure 9 The e-Nothi system has made monitoring of official duties easier

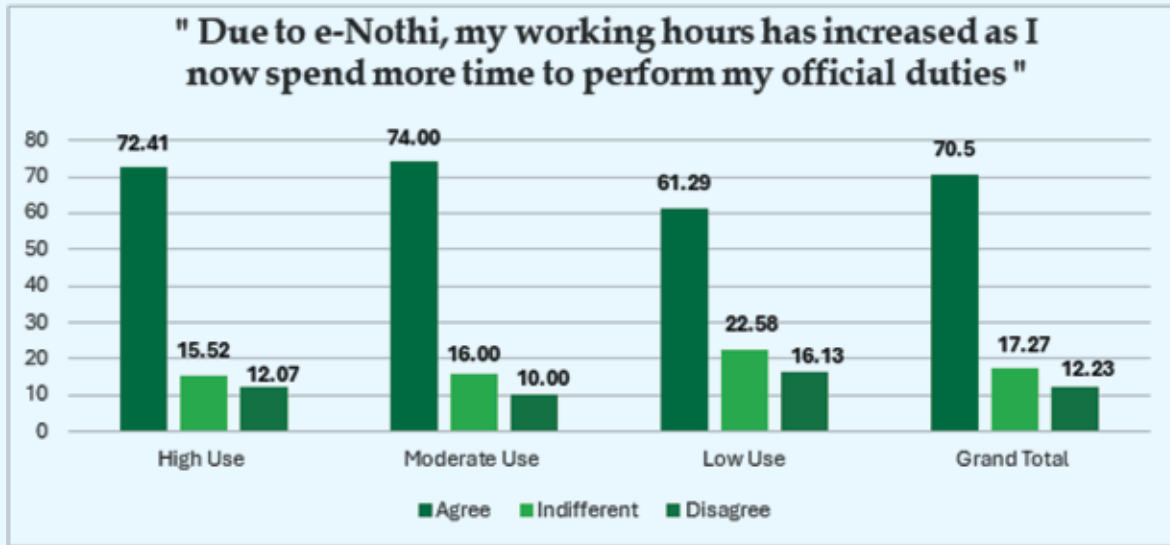




4.4.2 Impact of e-Nothi on Social Life

Interestingly, our survey findings show that more than 70% of the respondents consider that they now have to spend more time performing the official tasks.

Figure 10 Due to e-Nothi my working hour has increased as I now spend more time to perform my official duties



However, our interview findings show a mixed result in regard to this particular finding. For instance, one official stated,

“Due to e-Nothi, I now have to be ready 24 hours a day. I don’t need my office to dispose of a file, to issue a letter or to sign an official document. I can do that through using the app and that is why I think that I now spend more time to perform my official duties. It takes me less time to perform a specific duty and all in all, I spend more time working for my office”.

Several officials disagreed with this. As one of them observed,

“It depends on how you look at it. Yes, I have to be ready to perform my duties, but I can do it from my home. That is a big relief. Moreover, we often forget that civil service is a 24-hour job. So, there is no point in complaining about it.”

Another official made an interesting point,

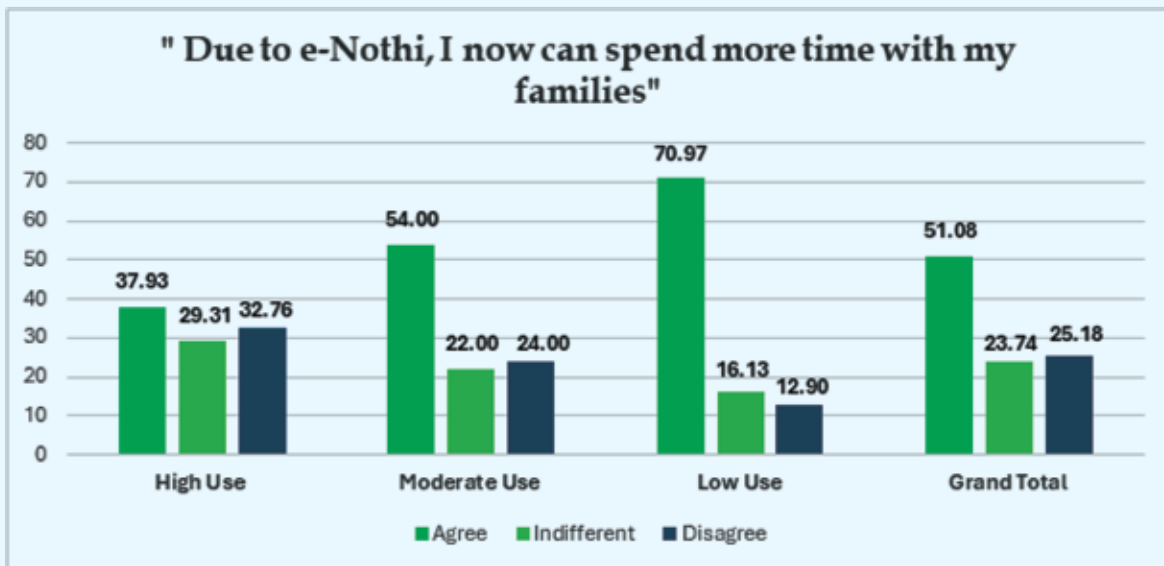
“I think compared to past, we spend less time at office and that matters. I remember, in the past I had to be at the office sometimes up to 10 pm to finish working on a file. I don’t need to do that now. I can go back home to my family and work from there. That is very important to me.”





In line with the findings above, our survey results show that only 51% of the respondents agree with the statement that due to e-Nothi, they can spend more time with family. Interestingly but not surprisingly, in the case of high user groups, only 37.93% of the respondents agree with the statement but in case of the low-user groups, that percentage is quite high and stands at almost 71%. This is expected because the high users are likely use e-Nothi more even when they stay at home.

Figure 11 Due to e-Nothi, I now can spend more time with my families



One of the interviewees made an important point,

“I don’t think we can say that we now spend less time with family members due to e-Nothi. I can come back home quickly and don’t need to stay at the office till late at night. But the thing is, I have to be always on alert and be careful of the little sound coming from my phone. But I will probably take it.”

In our work, we have also tried to find out whether the e-Nothi has relatively more positive impact on the female government officials and whether they are more interested in using e-Nothi if compared with their male counterparts. However, we have found no proof of that. All the interviewees suggested that the benefit achieved through e-Nothi does not have a gender dimension as it has equally helped all the officials. Moreover, they also suggested that the female officials are not more interested in using e-Nothi. One official explained it in the following way,

“I don’t think that gender identity of the officials matters. What I have seen is- relatively young officials who are more interested in using ICT are more interested in using e-Nothi. And they come from both the gender.”





4.5 Institutionalization of e-Nothi

To understand the current state of institutionalization of e-Nothi system, we have concentrated on two issues-

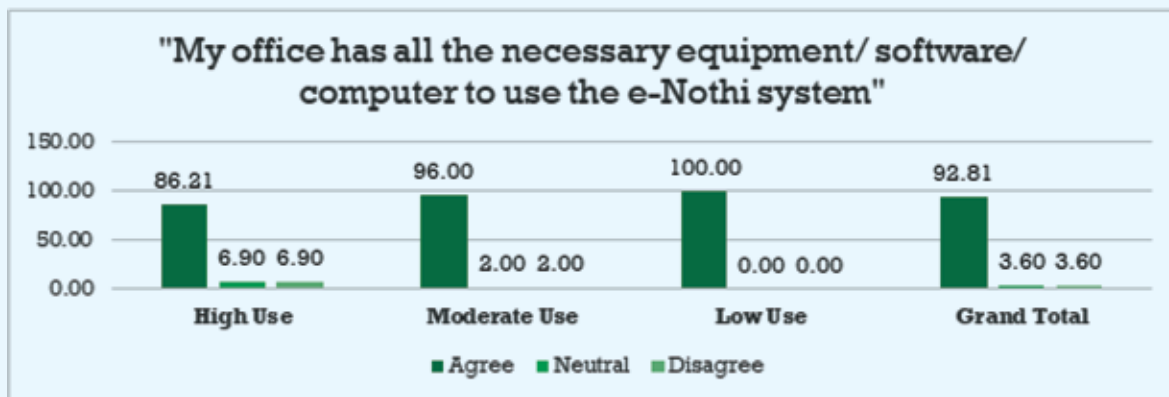
First of all, we have tried to explore the level of ‘office preparedness’, i.e., whether there is necessary infrastructure and equipment, logistical support and whether the officials have necessary training regarding the use of e-Nothi.

Secondly, we have also tried to understand whether the whole office has enthusiastically embraced the use of e-Nothi or if there are hidden pockets of resistance. At the same time, if there are hidden pockets of resistance, we have tried to understand the specific reasons behind this resistance.

4.5.1 Office Preparedness

The majority of the employees agreed to the following statement "My office has all the necessary equipment/ software/ computer to use the e-Nothi system".

Figure 12 My office has all the necessary equipment/ software/ computer to use the e-Nothi system



It is, however, important to note that the survey results mostly show the perception of the officials working at the central/ national level. The situation is somewhat different at the local level where the officials, while talking to us, inform us that they lack the necessary equipment to work through e-Nothi. As one official from the local level mentioned,

"I do understand that at the national level, they have the necessary laptops, computers and other equipment but that is not the situation here. Let me tell you about my office. We have only one laptop and sometimes even that doesn't work. I love e-Nothi, and I want to use it, but my office does not provide that opportunity. Often times, I have to work with my personal laptop".

Interestingly, at the national level, overall, almost three-fourth of the respondents feel that the officials in their office have adequate knowledge to use and apply e-Nothi; one-fourth of the employees either disagree with the statement or remain neutral. In High Use offices, the percentage of disagreement is higher (22.41%) than Moderate Use (14.00%) and Low Use (16.13%) offices.

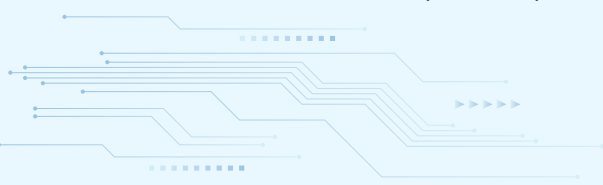
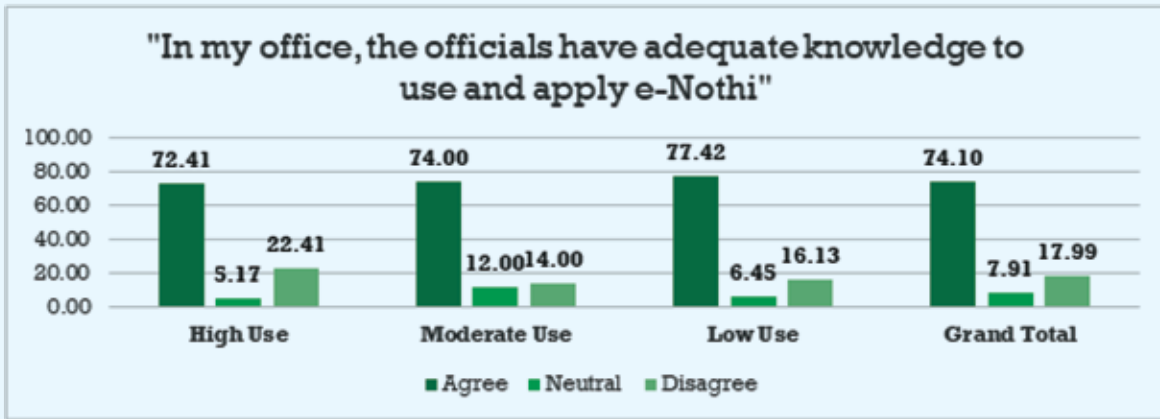


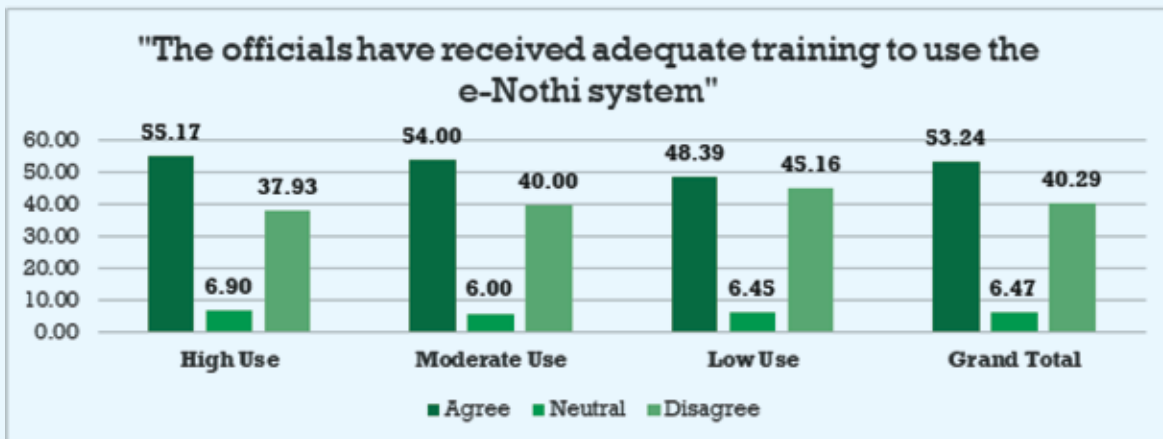


Figure 13 In my office, the officials have adequate knowledge to use and apply e-Nothi



Of all the respondents, 53.24% think that the officials have received adequate training to use the e-Nothi system and 40.29% disagree with it. The percentage of disagreement is the highest among the Low Use offices' employees (45.16%), followed by Moderate Use offices' employees (40.00%), and is the lowest among the employees of the High Use offices.

Figure 14 The officials have received adequate training to use the e-Nothi system



However, officials working at the local level have largely disagreed with the perception held by the national offices. Many of them pointed out that at the local level most of the government employees, especially the senior ones who are close to their retirement, either don't know or have no interest in learning about e-Nothi. These officials are also not happy with the training provided regarding e-Nothi use. As one of them mentioned,

"I think the training needs to be more extensive. Right now, one or two officials from the local office get training from a2i and they are supposed to train the rest of the employees. To be honest, that doesn't work well. I think the central government officials should come here and train all of us. At the same time, I think online training should be avoided at all cost and to me, that is a waste of time. We should go for in-person trainings."

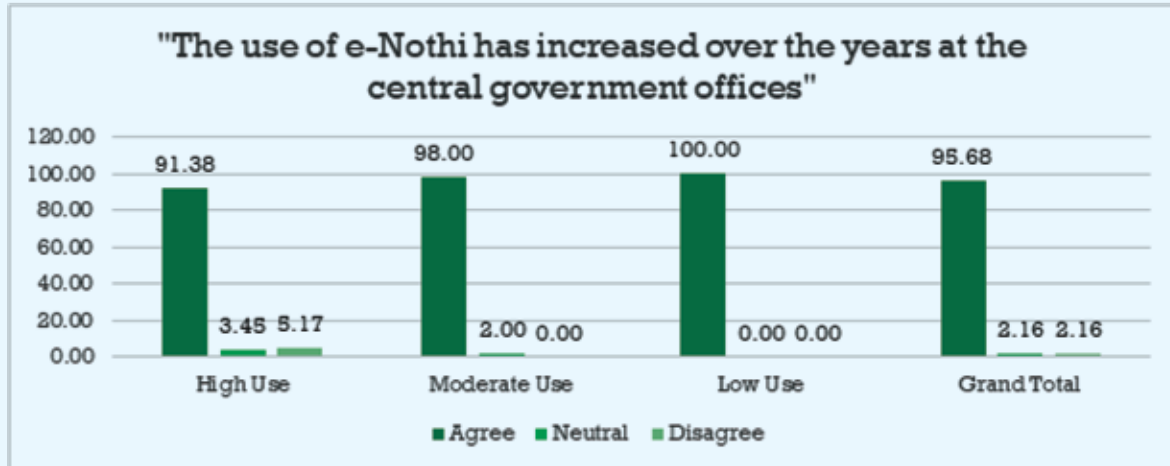




4.5.2 Acceptance and Institutionalization

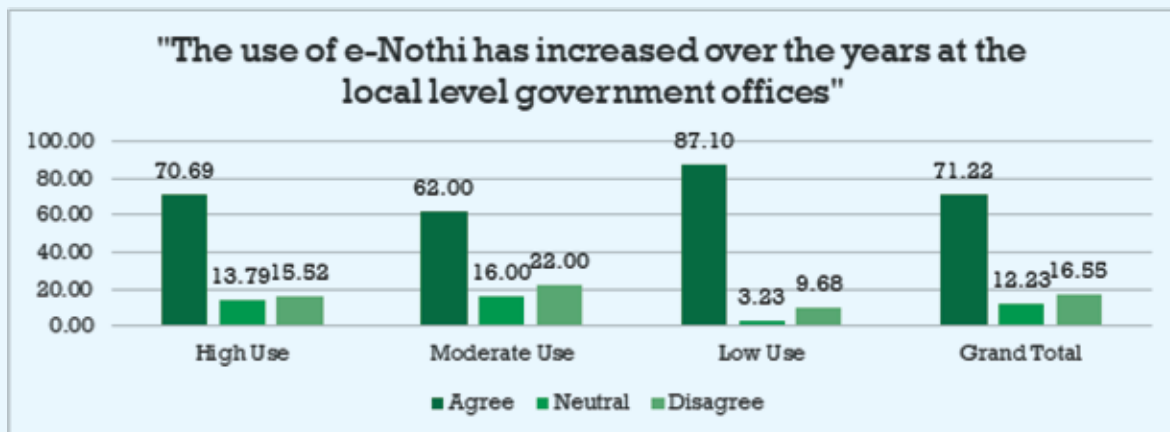
The majority of the employees agreed to the following statements - "The use of e-Nothi has increased over the years at the central government offices" and "The use of e-Nothi has increased over the years at the local level government offices".

Figure 15 The use of e-Nothi has increased over the years at the central government offices



Not surprisingly, the percentage of officials who think that use of e-Nothi has increased at local level is lower than the percentage of official who think it has increased at national level (71% vs 95%). If we consider the opinion of the local level officials mentioned above, this is not surprising and indicates that the central level officials are somewhat familiar with the difficulties faced by local level officials.

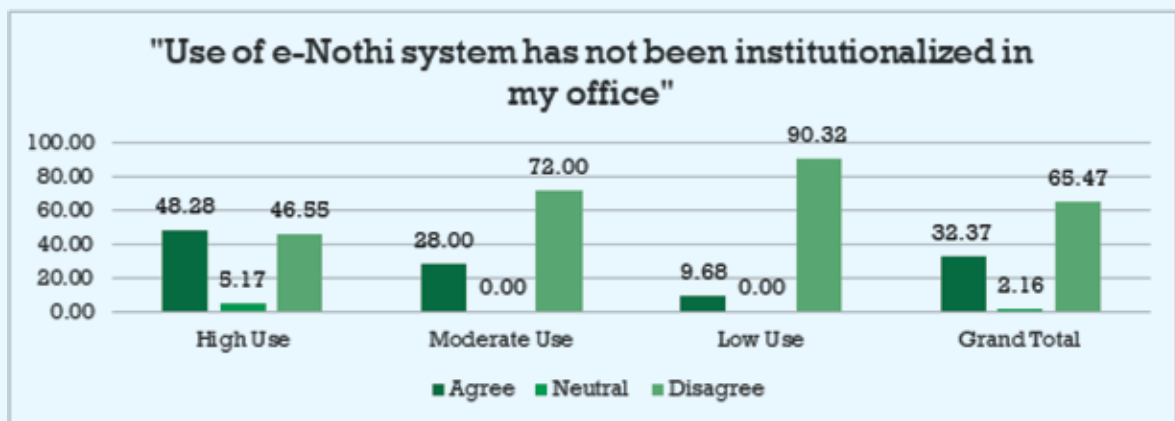
Figure 16 The use of e-Nothi has increased over the years at the local level government offices





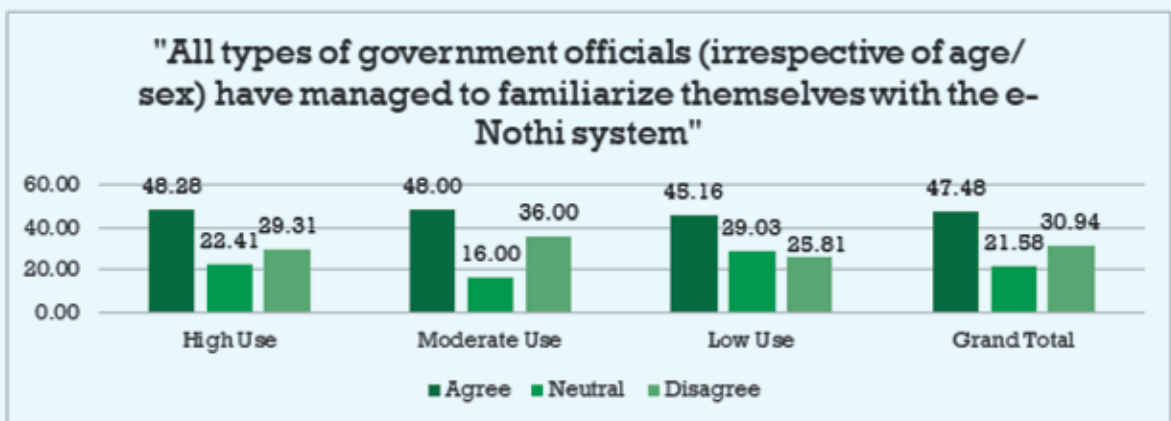
In response to the big question, i.e., whether the use of e-Nothi has been institutionalized 32% of the respondents opined that it has not. 65.47% of respondents think that e-Nothi has been institutionalized in their offices. Interestingly, this percentage is the highest among the employees of the Low Use offices (90.32%), followed by Moderate Use offices (72.00%), and is the lowest among High Use offices' employees (46.55%). In fact, the highest percentage of employees from the High Use offices feel that the use of e-Nothi has not been institutionalized in their offices.

Figure 17 Use of e-Nothi system has not been institutionalized in my office



While majority of the respondents in Moderate Use and Low Use offices feel that e-Nothi has been institutionalized in their offices; when we asked the respondents about their perception regarding whether all types of government officials have managed to familiarize themselves with the e-Nothi system, a little less than half of the respondents agreed to the statement but more than half either remained neutral or disagreed.

Figure 18 All types of government officials (irrespective of age/ sex) have managed to familiarize themselves with the e-Nothi system



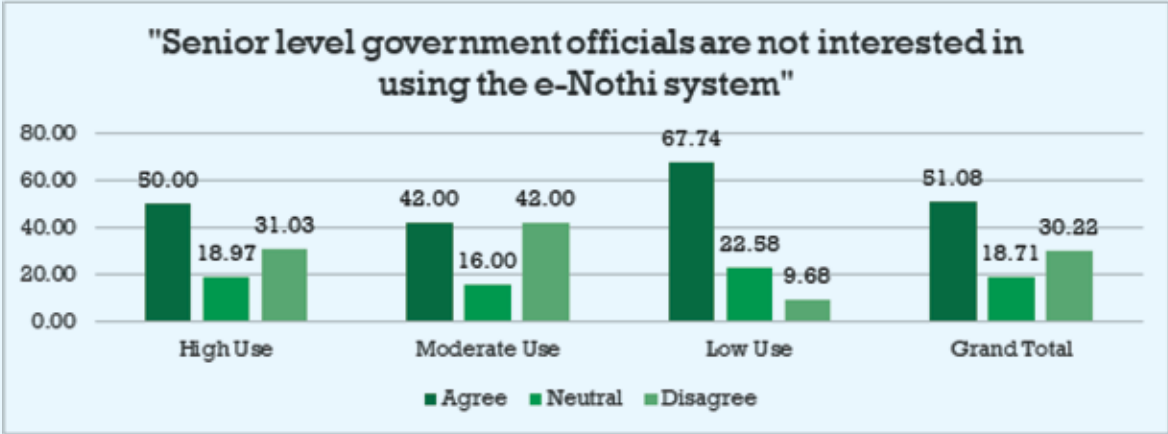


One possible reason is that some of the senior government servants are still not interested in e-Nothi. According to one of the respondents:

“In my office, the problem is the senior ones, especially the ones close to retirement. I get why they are hesitant. They are at the end of their job. There is no motivation or incentive for them to learn new things. So, they don’t simply care”

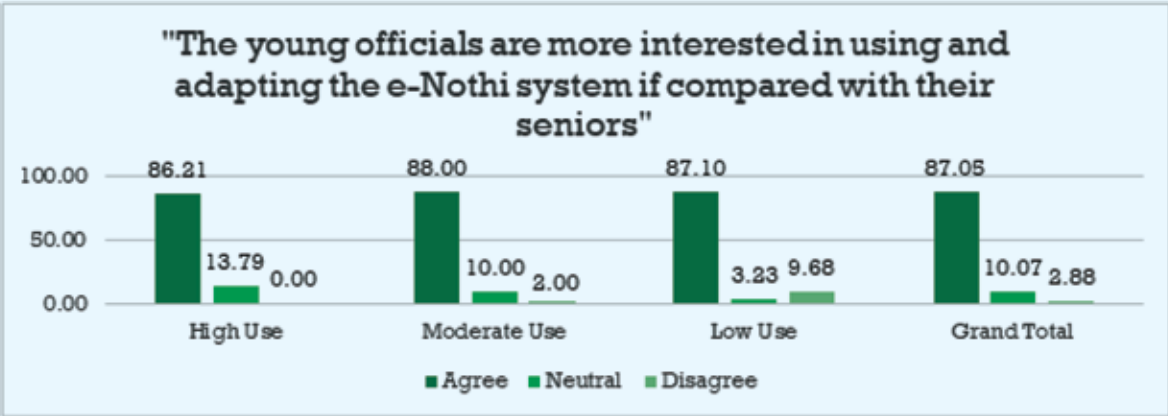
The survey findings support the statement. More than half of the respondents think that the senior level government officials are not interested in using the e-Nothi system. This percentage is higher among the employees of Low Use organizations (67.74%).

Figure 19 Senior level government officials are not interested in using the e-Nothi system



Across all types of organizations, the majority think that young officials are more interested in using e-Nothi. The majority of the respondents also feel that the system is less likely to be efficient if senior level officials are not interested in it.

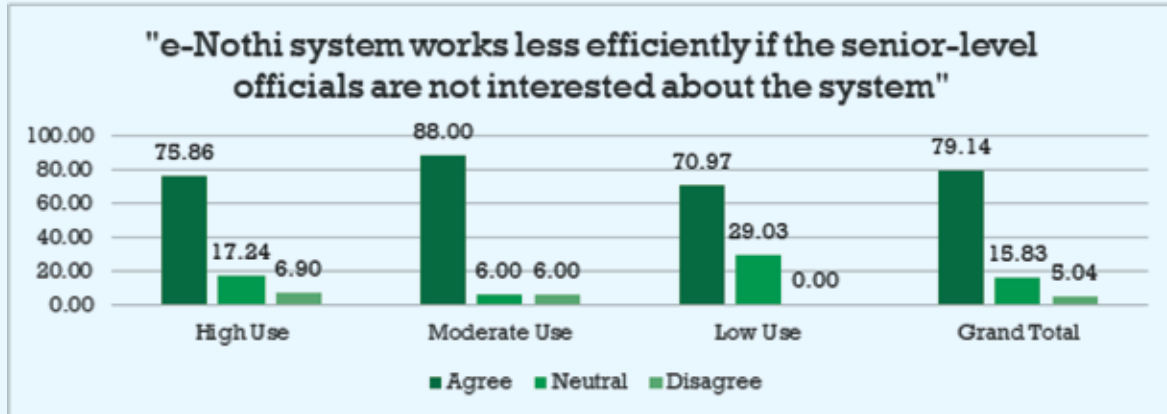
Figure 20 Young government officials are interested in using the e-Nothi system





This is an important finding because as the majority of the officials suggested, the e-Nothi system works best when the senior level officials get interested about the system.

Figure 21 e-Nothi system works less efficiently if the senior-level officials are not interested about the system



Our findings regarding institutionalization of e-Nothi indicate that whereas things have improved significantly over time, there are still issues of concern. The Government Offices have made a stride towards institutionalizing but there is no room for being complacent. Considering this in mind, we have tried to identify the factors that hinder institutionalization while identifying the challenges. Our study has identified the following ones-

Infrastructure and logistical issues

Not surprisingly, one of the key challenges identified by the officials is the problems regarding server capacity and lack of equipment. Whereas this has mostly been identified by the local level officials, the central level officials also talked about this. According to one of them,

“One thing that you will hear everywhere you go is the server issue. It is just too slow. And it creates an embarrassing situation when my superior asks for a file and I cannot send it to him or her. I now try to start work at very early in the morning or take my work to home to get a better speed”

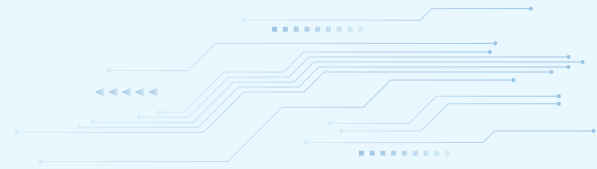
Security concerns

An important finding of our study is in all types of offices, officials are increasingly getting concerns about cyber security and online protection of the files uploaded in the e-Nothi system. One of them observed,

“I think it’s a real concern, especially if you consider the current state of cyber security. You have read in the newspaper that NID information has been hacked and I deal with sensitive official documents. There will be consequences if the information of my documents ever gets leaked. That is why I always keep a hard copy and I think many other officials also follow that trend”.

Our study shows that this has become an important concern that needs to be addressed.





Attitude of the Senior officials

As mentioned in the previous section, as per the government officials, they often lack the support of the senior level officials and that plays an important role in hindering institutionalization.

Difficulties in using different types of file

Another possible reason is that all types of files cannot be used in the system. According to one respondent:

“I have to say that we don’t use e-Nothi for financial matters or budget documents. Sometimes we have to issue letters or dispose files backdate. In e-Nothi, you cannot do that”

On the multiplicity of types of documents, a respondent said:

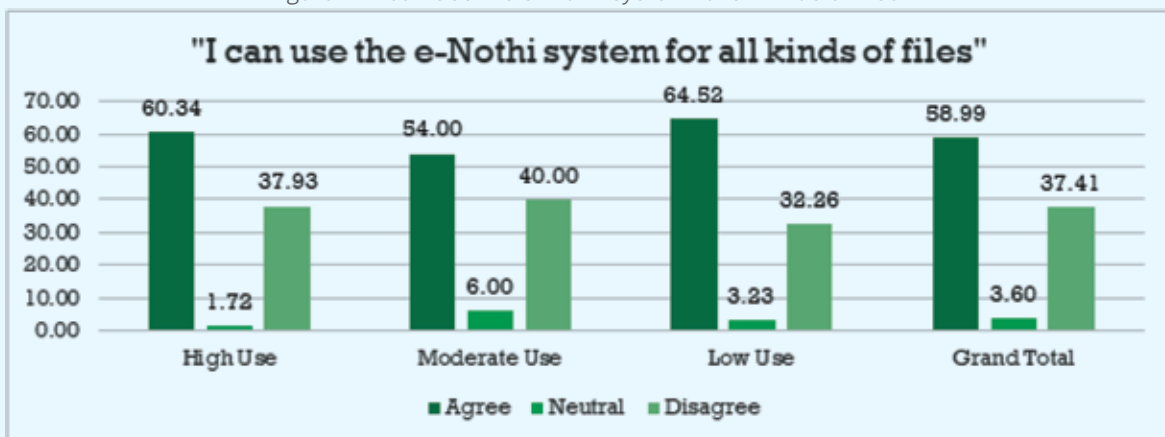
“We have to deal with different disciplinary issues. Again, we have to consider various things, sometimes take a decision at a later date and then issue it in backdate. This is something we can’t do through e-Nothi”

Sometimes, files are just too big to upload to the e-Nothi system.

“While taking decisions on different matters, I need to review the earlier precedents, different issues, notes, comments etc. And that requires reviewing a lot of documents...a lot. The good thing about the earlier system was all of these files were submitted together to you and you could just turn pages to see what other officials had said. In e-Nothi, it is difficult to upload or read all the documents”

There is support for it in the survey findings. Across all types of organizations, 58.99% respondents agree that they can use e-Nothi for all kinds of files, 37.41% disagree and 3.60% neither agree nor disagree.

Figure 22 I can use the e-Nothi system for all kinds of files





4.6 Public Service Motivation and Use of e-Nothi

In this study, the research team has also tried to measure the relationship between public service motivation and the use of e-Nothi. There was a module of 8 questions to measure the Public Service Motivation (PSM) of the employees. There were 3 questions to measure Attraction to Public Management, 3 questions for measuring Commitment to Public Interest, and 2 questions for measuring Compassion. In each question, based on the response a score from the discrete scale of 1 to 5 was assigned. Finally, we took the average of the 8 scores to obtain the average PSM score.

The average PSM for High Use offices is 3.57. Anti-Corruption Commission (3.23) and Directorate of Secondary and Higher Secondary Education (3.46) have scores lower than the typical average PSM of other High Use offices. The Moderate Use offices have an average PSM score of 3.68 and the Low Use offices have the lowest average PSM score of 3.47.

Table 11 Average Public Service Motivation (PSM) Score of Different Offices

Name of the Offices	Average Public Service Motivation Score
High Use	3.57
Anti-Corruption Commission	3.23
Department Of Inspection For Factories And Establishments	3.85
Directorate General of Food	3.63
Directorate of Secondary and Higher Education	3.46
Information and Communication Technology Division	3.68
Trading Corporation of Bangladesh	3.57
Moderate Use	3.68
Controller Of Certifying Authorities	3.74
Department of Agricultural Extension	3.90
Department of Youth Development	3.73
Dhaka Mass Rapid Transit Company Limited	3.51
Ministry of Liberation War Affairs	3.51
Low Use	3.47
Department of Women Affairs	3.38
Islamic Foundation	3.59
Ministry of Railways	3.44
Grand Total	3.59

This shows that the high user groups have a higher level of PSM. However, this result does not show the direction of causality, i.e., whether higher PSM leads to high performance or high-performance leads to high PSM. Therefore, we conduct a linear regression to examine the relationship between efficiency of file transfer or disposal and PSM score. For this, we measure the flow time within office, transport time to other offices, and disposal time in hours. We run three separate models with these three as dependent variables. We use the same set of independent variables. Apart from PSM score, we add gender, age, role, and education background as control variables. We present the findings with both – without fixed effects and with fixed effects at the level of the office.



Table 12 Linear regression with Flowtime, Transport Time, and Disposal Time as dependent variables

	Flowtime (Hours)	Flowtime (Hours)	Transport Time (Hours)	Transport Time (Hours)	Disposal Time (Hours)	Disposal Time (Hours)
PSM Score	0.113	4.700 +	-6.701 +	-0.040	-15.356 *	7.197
	2.126	2.692	3.847	3.961	6.970	8.826
Male	1.243	0.260	4.891	1.132	6.839	3.738
	2.181	1.892	3.592	3.645	7.140	7.152
Age	0.157	0.046	0.104	-0.050	0.576	0.021
	0.154	0.103	0.240	0.254	0.604	0.421
Note Initiator	0.984	2.248	4.332	1.137	15.638 +	6.655
	2.547	1.475	3.929	3.189	8.949	5.245
Business Studies	-2.912	-2.958	-7.010	-6.747	-3.041	-4.754
	3.664	3.279	7.055	7.380	15.881	14.033
Engineering	-4.232	-2.135	-11.378 *	-8.761 *	-16.295	-12.828
	3.003	1.838	5.257	4.388	10.186	8.183
Others	-5.793 *	-2.628	-7.608	2.678	-41.725 ***	-18.899
	2.845	2.700	7.336	8.694	11.688	12.117
Science	-0.942	0.797	-7.484	-4.223	-6.940	-2.528
	3.276	2.626	5.085	4.170	12.215	9.003
Social Science	-4.279	-6.290 +	-6.585	-5.733	-5.535	-17.967
	2.988	3.233	6.181	7.023	11.971	14.134
Num.Obs.	139	139	139	139	137	137
Fixed Effects	None	Office	None	Office	None	Office

+, *, **, * indicate significance at 10%, 5%, 1%, and 0.1% level respectively**

Our data shows that holding all other variables unchanged, an increase in PSM score by 1 point is associated with a decrease of 15.356 hours in file disposal time on average, and it is significant at 95% level. A 1-point increase in PSM is also associated with 6.7 fewer hours on average for transport of files to other offices, if nothing else changes, and it is significant at 90% level. However, PSM score is not significant when we account for the fixed effects at the office level. PSM score is not a significant predictor of flowtime within the office. However, when account for the office fixed effects, a 1-point increase is associated with 4.7 more hours in flowtime within office on average, holding everything else constant, and it is significant at 90% level.



Section 5: Concluding Observations and Recommendations

Our findings indicate the following positive trends-

- As an e-Government tool that establishes a government-to-government connection, e-Nothi has been widely accepted by government officials. They acknowledge the usefulness of the tool and consider it as an effective tool for monitoring and to them, it has become an important instrument for being responsive to the citizens.
- Empirical evidence suggests that Time, Cost, and Visit have significantly decreased over time, and
- It is effective in supporting environmental sustainability.

However, the following concerns are there-

- Most of government officials are concerned about security while using and utilizing e-Nothi. They are concerned about the files, especially the sensitive ones as they fear that these can be lost or hacked which may create problems for the entire government. As a result of that, many of them have the tendency of printing out the file or maintaining a hardcopy so that it can be physically shared if necessary. This, however, is compromising the utility of e-Nothi.
- The officials are also of the opinion that the use of e-Nothi has not been completely institutionalized within the offices. In addition to security concerns, they have also identified two reasons-
 - o First of all, at the local level, the offices need to work in a coordinated way and often, they need to share information or files with other government offices. The problem is, if the other offices are not well-versed in e-Nothi, it is likely that they will ask for information in hardcopy. This creates a problem for the well-performing institutions as in addition to uploading the files onto the e-Nothi platform, they also need to have a hardcopy ready. This discourages them from fully embracing the platform.
 - o The officials also point out that whereas leadership plays the most important role in institutionalizing e-Nothi within an Office, the senior level officers sometimes lack motivation to orient themselves with the e-Nothi platform. Consequently, this discourages the offices to wholly rely on e-Nothi.
- Officers have also mentioned that they do not feel comfortable in using the platform for all types of files. For instance, they mentioned that in case of budget-related files or files that deal with disciplinary issues, they hesitate to use e-Nothi, as they cannot conduct file-work in 'back-date'. As many officials mentioned, to them the problem with e-Nothi is it is not possible work in 'backdate' and the budgetary or disciplinary issues cannot always be solved within the stipulated time. As a result, they decide not to work e-Nothi platform for these files.
- The officials, especially the ones working at the local level point out they have serious logistical



concerns. In many offices, the number of laptops is extremely limited forcing them to work on their personal laptop. They are also concerned about the internet speed which often frustrates them while using e-Nothi.

- The officials of the local level are also of the opinion that the training they receive is inadequate and cannot build their capacity properly. They are not happy with the current provision where one official from the local office is selected to train in Dhaka and who then train the others. They are of the opinion that these trainings should be organized at local level where trainers from the central government would come and train the officials.
- D-Nothi currently lacks an automated real-time or incremental backup mechanism. File data is stored centrally without continuous synchronization or cloud-based redundancy. In the event of system failure or data corruption, recent files and transactions may be permanently lost. This compromises data integrity and hampers administrative continuity.
- There is no formal Disaster Recovery (DR) system or secondary infrastructure in place for D-Nothi. The platform is hosted in a centralized environment without a defined failover setup. A natural disaster, hardware crash, or cyberattack could lead to total service disruption, severely impacting national-level operations and delaying crucial administrative workflows.

Based on the challenges mentioned above, the paper proposes the following recommendations-

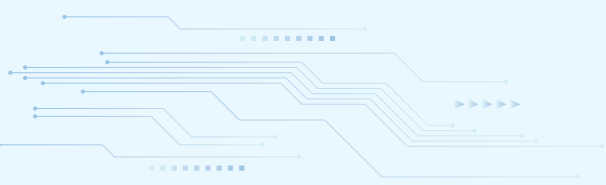
First of all, to address the concerns about files' security and the overall security of the platform, a cyber security training should be organized for the officials where they will learn, how to protect the uploaded files, how to identify malware, how protect their files from the hackers. They should also be trained about the processes through which risks associated with e-Nothi platform can be properly managed.

Secondly, since relatively young officials with training of ICT are relatively more interested and fully embraced the e-Nothi system, in every office these officials should be identified, and they should be put in-charge of e-Nothi management.

Thirdly, to farther encourage these officials, efforts should be taken to include their proficiency in e-Nothi management within their performance assessment system. One possible way of doing it is to encourage the senior officials to evaluate the performance of the relatively junior officials based on their ease of using e-Nothi.

Fourthly, to motivate the senior level officials, specialized trainings can be organized where the focus will be on changing their mindset about technology use, to make them familiar with the tools and approaches. This will be a specialized training that will cater to their specific needs and perceptions which can be arranged after conducting a special training need assessment.

Fifthly, it is important that the government focuses on introducing in-person longer training at the local level where the officials from the central government will go to the local office and hold longer trainings for all the officials. Online training should be phased out.





Sixthly, within the government, there are several closed Facebook pages where only the government officials participate to discuss their issues. In line with that, the central government or a2i may think about facilitating the development of a 'closed Facebook group' where senior officials from the government (including but not limited to the Secretaries of key Ministries) will join and discussions will be held by the e-Nothi users on their problems, prospects, challenges and solutions. This will serve two purposes- at one end, this will encourage peer learning and on the other will allow opportunities for the senior government officials to get involved which will lead to institutionalization.

Seventhly, efforts should be taken to encourage the government officials to use e-Nothi for budget-related issues. In this case, experiences of the government offices that have already started using e-Nothi for financial issues can be analyzed.

Eighthly, D-Nothi should have a real-time or incremental backups mechanism. Also, it needs to implement automated backup scheduling and set up a backup monitoring dashboard to ensure visibility and alerting in case of failures.

Ninthly, D-Nothi should establish a dedicated disaster recovery site or secondary infrastructure in a geographically separate location. Also, formulate a complete Disaster Recovery Plan (DRP), conduct regular DR simulation drills, and train key personnel for emergency restoration procedures.

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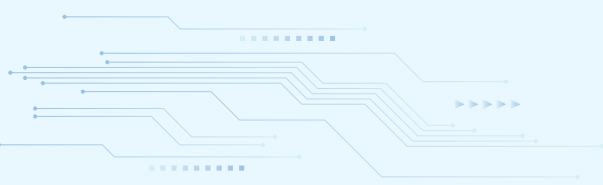
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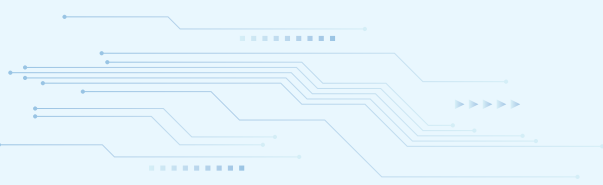
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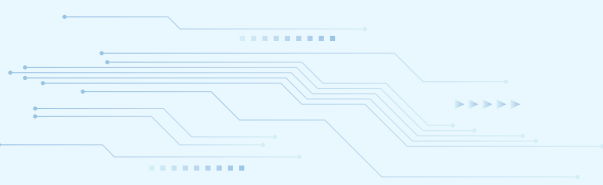
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