Chapter 6
Strengthening the Public Sector Accounting Through ICT: The Experience of a Developing Country

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Abstract This chapter aims to investigate the performance of public sector accounting (PSA) after introducing the computer-aided mechanism in a developing country, Bangladesh. Transparency and accountability which are assumed as the accelerator for the development of a nation are urged for the PSA for a long time. For poverty alleviation, reformation of PSA in developing countries has been suggested by the donor agencies as well. Different mechanisms have emerged as a consequence for the demand of PSA reformation. As a part of reforming the PSA, Bangladesh has introduced Integrated Budget and Accounting Systems (iBAS), a computer-based network through the country. The iBAS has been introduced with the association of donor agencies. This chapter focuses on the gradual performance of some parts of the PSA (e.g., bill passing, check clearing) to investigate the effectiveness of Information and Communication Technology (ICT) in public sector accounting. The investigation, analysis, and discussion indicate that the iBAS is likely to have positive impacts on strengthening the PSA. Therefore, it is expected that the iBAS can impact favorably on efficient public expenditure. The experience of adopting the iBAS and the structure of the iBAS in Bangladesh have been introduced in the chapter as well.

Keywords Public sector accounting • ICT (Information and Communication Technology) • iBAS (Integrated Budget and Accounting Systems) • Developing country • Bangladesh

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6.1 Introduction

The concept of New Public Management (NPM) urges the reformation of public sector accounting (PSA) [1]. The concept of NPM was initiated to reform the public sector in the 1980s and 1990s [1]. The term "New Public Management" is introduced by Hood [2]. Broadly, NPM denotes the government policies that aimed to modernize and ensure the efficiency of the public sector. The concept of NPM leads the PSA of different countries to undergo the reformation process for a long time [3–5]. Developing countries are not an exception. Moreover, the surrounding environment of developing countries is under the pressure to reform the PSA. As developing countries are depended on the resources of donor agencies, institutional pressure exists to reform the PSA (e.g., [5]). It is mentioned that to alleviate the poverty, public sector accounting can play a good role through the effective allocation of resources [5–7]. The efficient PSA can ensure the transparency of public expenditure that is urging by different stakeholders. Therefore, since 1980, international organizations (like World Bank, IMF, and donor countries) are raising concern to reform PSA in the developing countries [5].

Accounting's existence and evolution are strongly based on artifacts, things created by humans in order to solve a problem in a specific environment [8, 9]. Information and Communication Technology (ICT) can shape and forms the accounting artifacts as well (see [9]). The relevance of an artifact is determined by its inner environment as well as outer environment [9]. Inner environment indicates the substance and practice of an organization, whereas outer environment means how an organization operates in its surroundings. If inner environment can match outer environment appropriately, or vice versa, the artifact will survive with objectives [10]. Therefore, practice of accounting which is tied with ICT and the demand of stakeholders claim investigation.

This chapter aims to investigate the adoption of ICT in PSA of Bangladesh: its scenario, usage, and impacts. Bangladesh, a South Asian country, is reforming the PSA since the independence in 1971. A number of reformations have been initiated and are executed in PSA of Bangladesh. Most of the reformations have been executed with the associations of donor agencies [11]. As a process of reformation, an integrated reform is ongoing in the public financial management under the banner of "Strengthening Public Expenditure Management Program (SPEM)" since 2007 which is expected to end in 2018. The SPEM is a multi-donor-funded project which is administrated by the World Bank. In the project SPEM, an ICT-based mechanism has been introduced in PSA of Bangladesh named Integrated Budget and Accounting Systems (iBAS) [11]. After the primary introduction of the iBAS in Bangladesh, its problem has been identified, and the iBAS has been modified (iBAS to iBAS++), reintroduced, and re-implemented. Currently, the Office of the Controller General of Accounts (CGA), which is in charge of PSA in Bangladesh, is using the iBAS.

It seems that investigation of ICT adoption in the PSA of Bangladesh can add value for developing countries. As ICT is now recognized as a catalyst of growth and transformation [12], and as there exist a high degree of commonality between

accounting and information systems (see [13, 14]), its effectiveness and dissemination experience is worthy to explore. Researchers have agreed that the diffusion of ICT can ensure the development and better governance [15, 16].

The aim of this chapter is fourfold. After disclosing the methodology, theoretical background has been investigated first. Second, introduction, modification, and usage of the iBAS in the PSA of Bangladesh have been discussed. Third, impact of the iBAS has been investigated, and finally a constructive discussion has been drawn.

6.2 Methodology

To conduct the study, theoretical ground has been investigated on whether ICT can play role for accounting. The common ground of ICT and accounting has been focused as well. The role of ICT and PSA in the development of a country has been searched. To get knowledge on the iBAS of Bangladesh, various documents have been collected and analyzed critically. Documents have been collected from the World Bank, the Ministry of Finance (MoF) of Bangladesh, the Office of the Controller General of Accounts (CGA), the Office of the Comptroller and Auditor General (C&AG), and other organizations of Bangladesh which are involved with the PSA. To understand the impact of ICT, 16 months data (from September 2014 to December 2015) of bill passing and check clearing from the local government to the central government of Bangladesh have been analyzed. Time span of data collection have been selected considering the availability and reliability of data. Through the analysis and justification, it has been tried to understand the usage of ICT in PSA, its effectiveness, and probable contribution to the development of a developing country.

It should be noted here that a number of developed countries and developing countries have reformed the PSA. Although the scenario of developing and developed countries are a bit different (e.g., [17]), a growing number of countries are trying to adopt or promise to adopt modified PSA to ensure the transparency [4, 18–20]. Research indicates that intentions and modification path of PSA in developed and in developing countries are different [17, 21, 22]. However, it seems that the ultimate aim of reformation of PSA is to transform the PSA from budgetary or cash basis accounting to accrual basis accounting. But, it has been seen that in developing countries, resources are not adequate to transform the PSA in accrual basis directly. Therefore, gradual developments in infrastructure have been suggested by scholars (e.g., [18–20]). The adoption of the ICT can be seen as an infrastructural change rather than methodological change (cash basis vs accrual basis) of PSA. It should be noted that many countries are not thinking about the accrual basis or alternative standards of accounting to reform the PSA [23]. In this case, ICT can play a significant role to increase the efficiency of PSA regarding the transparency and accountability of accounting. From this notion, in this chapter, the usage of ICT in PSA and its impact has been investigated.

6.3 ICT and PSA: Theoretical Underpinnings

Researchers have mentioned that although accounting and information systems (IS) are different, there exists a high degree of commonality between them [13]. In mainstream research of accounting, it has been mentioned that Information and Communication Technology has impact on the transparency and efficiency of accounting [9, 24]. In previous researches, both the ICT and efficient public sector accounting (PSA) are recognized as a catalyst for the development of a nation [5, 12, 25, 26].

Accounting has been suggested to be used as a tool for promoting good governance and the public interest [27, 28]. Researchers have mentioned that instead of simple financial recording, a broader concept of integrated financial management and stewardship over the effective and efficient use of financial and other resources in all areas of government operations can ensure the accountability [29]. Public accountability is also the focal issue in modern democratic governance. The government must be accountable to public for their acts and omissions, decisions, policies, and expenditures [30]. The concept of accountability is closely related to accounting. At least two features are involved with the term public accountability. First, the term public relates to the openness. The account giving is done in public, i.e., it is open or accessible to citizen [30]. Second, public refers to the public sector. In fact, accountability is usually defined as a social relationship in which an actor feels an obligation to explain and to justify his tasks to other [31, 32]. It seems plausible to say that through the efficient PSA, government can explain and justify its expenditure to the stakeholders. Public sector accountability is urged where there are enforced consequences for ineffective or poorly executed performance, outcomes, or policies (e.g., [26], p. 142). In developing countries, ineffective performance, outcomes, and policies are visible very often [33]. Therefore, developing nations are demanded to perform efficiently from various stakeholders for a long time. It has been agreed that through the efficient PSA, it is possible to ensure the transparency and the efficient use of public expenditure. Therefore, the reformation of PSA is demanded for the development of the developing nations [5].

Like the accounting, ICT is recognized as a catalyst for development and better governance [15]. It has been mentioned in previous researches that ICT can mitigate corruption and enhance the development of a nation. Corruption is defined as an act in which the power of public office is used for personal gain by violating the rules [34]. In many researches, public sector has been recognized as a primary enabler of corruption (e.g., [33, 35]). In the public sector, corruption can drive macroeconomic instability by increasing fiscal deficit which can be created by raising public expenditure and lowering the amount of tax received [36]. Corruption has multidimensional effect on a nation, e.g., discourages investment, alters the composition of government expenditure, limits economic growth, limits mission of reducing pov-

erty, and so on [36, 37]. Very often, corruption impacts on the poorer segment of the population in developing countries and may result in exacerbating income inequality [26]. The country analysis of different international organizations (e.g., World Bank, International Monetary Fund) indicates that corruption intensifies the income inequality and poverty [36, 38]. Researchers have mentioned that by controlling corruption, economic development and competitiveness of the country can be ensured, social condition can be improved, and poverty can be reduced [36]. It has been found that a number of factors induce corruptions in public sector including regulation that creates artificial limitation on goods or services, rigid bureaucratic traditions, lack of transparency, examples of corruption set by leaders, and others [39]. Previous researches find that the efficient usage of ICT can dismantle the enablers of corruptions [26]. ICT in the public sector has been recognized as a mechanism that increases efficiency and transparency and improves accountability in public administration procedures and management to provide better services [15, 25, 40, 41]. ICT (as a mechanism of e-Government) can achieve the thing that is demanded in the concept of NPM.

ICT can play role for PSA. ICT can work as a continuous auditing mechanism in the public sector accounting. Previous researches indicate that the concept of continuous auditing (CA) is not new in accounting and auditing area (see [42]). Positive impact of CA has been noticed by the researchers as well. It is mentioned by the researchers that CA could:

- Change the generation and dissemination of business intelligence by providing real-time reporting of financial results
- Change system assurance by providing artifacts for more efficient and effective independent audits of company financial statement
- Change the design and operation of internal controls by providing artifacts for monitoring transactions and identifying anomalies [9]

It is agreed that CA is normally adopted as a mechanism for monitoring transactions and identifying anomalies.

As both the ICT and accounting are the catalyst of development and as ICT has positive impact on accounting, therefore, it seems plausible to say that the combination of accounting and ICT in PSA can lead the development of developing nations. However, it should be reminded that both the success and failure are seen in the performance of ICT in public sector [43]. A significant number of ICT projects in public sector are ended with disappointing failure [44]. Some empirical researches show that performance of ICT in public sector depends on the intention to use and facilitating conditions of ICT [41]. It has been observed that in spite of strong stakeholders support in emerging economy, ICT projects struggled to meet their objective [45].

6.4 iBAS: Introduction, Modification, and Usage in Bangladesh

6.4.1 Introduction of the iBAS

As it has been mentioned, to ensure the transparency and to cope with the concept of NPM, the government of Bangladesh tempted to reform the PSA. Most of the reformations of PSA have been executed with the association of the donor agencies. PSA of Bangladesh is originated in the mid-1800s, the days of British-occupied India. After the independence in 1971, a number of reformations have been executed in PSA, and a number of reformation initiatives have been taken with the association of donor agencies. Strengthening Public Expenditure Management (SPEMP) is such a multi-donor trust fund program that started in 2007 and expected to end in 2018. The iBAS is introduced under the SPEMP project, and still the iBAS is under the process of development [11]. The SPEMP is funded by UK aid from Department of International Development (DfID), Danish International Development Agency (DANIDA), and European Union, and the project is administrated by the World Bank. The objectives of SPEMP are:

- Strengthen and modernize core institutions of budgeting within the government with particular emphasis on introducing a performance orientation in public financial management
- Enhance demand for better budget outcomes by improving the effectiveness of formal institutions of financial accountability, in particular Comptroller and Auditor General's Office and the financial oversight committee of the parliament

Consisting with the objective of SPEMP, the iBAS is introduced in Bangladesh regarding the public finance management, especially focusing on the infrastructural strength of PSA. The iBAS can be identified as a ICT mechanism that helps to conduct transactions within the government (G2G), between government and business (G2B), and between government and citizen (G2C).

The iBAS was developed from the earlier Transaction Accounting System (TAS). The TAS was based on old technology and was accused of unsuitable functionality and unsustainable technology. The iBAS was primarily considered as the modern replacement of TAS. Initially, iBAS was developed for simple transaction recording systems. During the development of the iBAS, authorities were aimed to add budget module in the same platform of accounting. However, because of traditional view, accounting and budgeting activities were maintained as separate activities.

Normally budget refers to numerical plan under several classifications complying with the chart of accounts. It includes allocation of budget, amendment of the budget, comparison and variance with other data (e.g., actual data or other year's data) relevant to the budget. Accounting refers to recording the transactions against the chart of accounts, managing all the budget-related expenditures, and communicating the reports to the users. Therefore, it appears that there is a link-

age and ground for integration between the budget and the accounting. Integration refers to systems where data, entered once, is available to fulfill all functions of that data without the need to enter the same data again for other functions in the one, fully integrated systems [46].

In Bangladesh, the Controller General of Accounts (CGA) office is in charge of accounting wing, and the Ministry of Finance (MoF) is in charge of budgeting divisions. Historically, in Bangladesh, budget and expenditure were seen as separate activities, and the iBAS had been developed accordingly. Therefore, the primary version of Integrated Budget and Accounting Systems (iBAS) fails to integrate the task of budget and accounting. In the iBAS, transaction (accounting) was recorded first and then the decision to add or amend budget was taken. This procedure ultimately divides the budget and accounting systems. However, it should be noted that the preliminary version of iBAS introduced the usage of computer systems and established the reliance on computer that provides a ground for developing more sophisticated computer-based financial management systems and facilities across almost all government finance areas in Bangladesh [46].

6.4.2 Modification of the iBAS

Considering the limitation of the iBAS regarding the integration of budget and accounting, renovation of the software has taken place, and the renovation is continuing for further development. After the reformation, the iBAS++ has taken place of the iBAS.[1] Integration between budget and accounting has given priority in reformation. Continuous assessment, monitoring, performance evaluation, and management are the concern of the iBAS++ to ensure the integration. The flow of accounting data as well as the tasks of iBAS++ has been presented in Fig. 6.1.

Figure 6.1 shows the flow of accounting data in Bangladesh that is currently maintained by the iBAS++. The PSA operates across the country from the local government to the central government. In Bangladesh, the tasks of PSA can be divided into several administrative divisions and level which have been presented in Fig. 6.1. The office of the Controller General of Accounts (CGA) is the central and supreme organization for keeping and maintaining the accounting records for the government of Bangladesh. Figure 6.1 shows that accounting data flows from the local government to the central unit step by step. In Bangladesh, there are 420 Upazila Accounts Offices, 64 District Accounts Offices, 6 Divisional Controller of Accounts, 51 Chief Accounts Officers, 57 Ministries, and a number of Postal Offices, Forest Offices, and Public Health Offices. All these administrations are recording and keeping their accounts and transferring the information to the upper-level administration which aims to transfer the records to the CGA. All these administrations are connected through the iBAS systems.

[1] For the next sections of this chapter, iBAS and iBAS++ is used interchangeably.

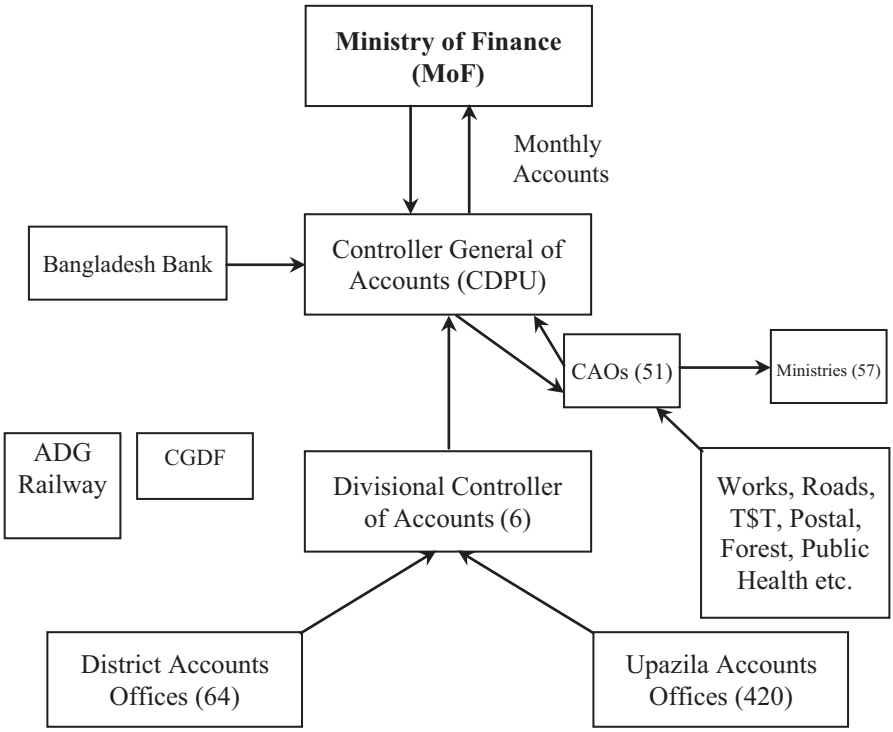

Fig. 6.1 Flow of accounting data in Bangladesh government (Source: various documents of CGA) (where *C&AG* Comptroller and Auditor General, *CGDF* Controller and General Defense Finance, *ADG* Additional Director General, *CAO* Chief Accounts Officer and *CDPU* Central Data Processing Unit)

6.4.3 Usage of the iBAS in the PSA of Bangladesh

At present all the public administration of Bangladesh except the Controller and General Defense Finance (CGDF) and the Additional Director General Railway are connected through the iBAS for accounting purposes. CGDF and the Additional Director General Railways are keeping and maintaining accounts independently. In the iBAS systems, Controller General of Accounts (CGA) is used as the Central Data Processing Unit (CDPU). As it has been mentioned, the key concept to the iBAS design is that data is stored on central database (CDPU) and all entry and reporting is possible to access via a single common user interface. At present all accounting offices under the CGA are fully automated through iBAS.

The responsibility of CGA is to produce monthly and annual accounts for establishing efficient expenditure control and budgetary management. These tasks cannot be ensured efficiently unless Chief Accounts Offices (CAOs), Divisional Controller of Accounts (DCAs), District Accounts Offices (DAOs), and Upazila

Accounts Offices (UAOs) are properly equipped to assume delegated responsibilities [47]. The iBAS is supporting to do this. The accounting data of UAOs, DAOs, DACs, and CAOs move forward to the CDPU through the iBAS.

Upazila Accounts Offices (UAOs) perform a number of accounting activities as routine task. The Upazila Accounts Offices (UAOs) actively participate in the iBAS systems. The Upazila Accounts Offices (UAOs) incorporate monthly accounts in the next following month in the central iBAS with the schedule date specified by CGA. The Upazila Accounts Offices (UAOs) use the iBAS to settle the audit observations which are reported by Chief Accounts Offices (CAOs) and Divisional Controller of Accounts (DCAs) against UAOs. Upazila Accounts Offices settle claims of development expenditure as per authority which is issued by Chief Accounts Offices (CAOs) for the centrally administrated Annual Development Programme (ADP) budget [48]. The Chief Accounts Offices (CAOs) use the iBAS systems as well to monitor the claim of UAOs regarding the ADP budget.

The iBAS helps the preauditing for all accounting administrations including the Upazila Accounts Offices (UAOs). Preaudit is an audit approach where payment vouchers are reviewed by audit staff before final payment is made. Preaudit ensures the internal control and reduces the risk. Accounting and auditing codes are easily useable through the iBAS network to perform the preauditing activities. To make accounting and reporting easy and effective, accounting codes are used. Through accounting codes, user can collect additional data for a transaction which is recorded by using systematic code. Through the efficient use of economic code (coding on the basis of different economic head) and function code (coding on the basis of accounts units), the iBAS has made the accounting data reliable, verifiable, and transparent. The preauditing process of iBAS is interchangeable with the concept of continues audit.

Like the Upazila Accounts Offices (UAOs), District Accounts Offices (DAOs) incorporate monthly accounts in the next following month in central iBAS within the date that has been specified by the Office of the Controller General of Accounts (CGA). The District Accounts Offices (DAOs) use the iBAS to reconcile the preaudit check to settle all the audit observations and claims of development expenditure as CAO imposed the authority on them for the centrally administered ADP budget [49].

Upazila Accounts Offices (UAOs) and District Accounts Offices (DAOs) submit the accounting reports to the Office of the Divisional Controller of Accounts (DCAs). DCAs incorporate monthly accounts of his/her office, monthly accounts of District Accounts Offices (DAOs), and Upazila Accounts Offices (UAOs) under him in the next following month in central iBAS within the schedule date specified by the Office of the Controller General of Accounts (CGA). Divisional Controller of Accounts (DCAs) reconcile preaudit checks of his/her offices as well as of subordinates and reconcile accounts where iBAS plays an important role [50].

In the accounting systems of Bangladesh government, Office of the Chief Accounts Officer (CAO) plays an important role. The Chief Accounts Officer (CAO) acts as the Staff Officer to the Principal Accounting Officer (PAO)/Secretary of Ministry or Division regarding the Accounts and Financial rules [47]. The Chief Accounts Officer (CAO) incorporates monthly account in the next following month in the central iBAS within the schedule date specified by the Office of the Controller

General of Accounts (CGA). The Chief Accounts Officer (CAO) performs some focal activities for Bangladesh government where iBAS plays an important role. For example, the Chief Accounts Officer (CAO) draws management report from iBAS, and the Chief Accounts Officer (CAO) discusses it with the Principal Accounting Officer (PAO). The Chief Accounts Officer (CAO) monitors the trend of collection of revenue and expenditure by iBAS systems, and the Chief Accounts Officer (CAO) advises the Principal Accounting Officer (PAO) on financial discipline. On the basis of information obtained from iBAS, the Chief Accounts Officer (CAO) assists the Principal Accounting Officer (PAO) in preparation of budget estimate and advice on expenditure control. The Chief Accounts Officer (CAO) performs a number of activities like ensuring correctness of balance of the public account; ensuring correctness of accounts of the concerned ministry/division incorporated by Divisional Controller of Accounts (DCA), District Accounts Offices (DAOs), and Upazila Accounts Offices (UAOs); and settling claims of development expenditure and issues authority to DCA, DAO, and UAO for centrally administrated annual development program (ADP) budget [51]. For all these activities, the Chief Accounts Officers (CAOs) take help from the iBAS. The iBAS systems have speeded up the activities of Chief Accounts Officer (CAO) and other administrations through its functions.

As it has been mentioned, the Office of the Controller General of Accounts (CGA) works as the central processing unit of government accounting. It prepares monthly accounts of the government where it uses the data that has been provided by the Chief Accounts Officers (CAOs), Divisional Controller of Accounts (DCAs), District Accounts Offices (DAOs), and Upazila Accounts Offices (UAOs). Through the web page of the Office of the Controller General of Accounts (CGA), it continuously discloses the information of different accounts to the citizen as well. To do these, CGA takes help from the iBAS [47].

The iBAS ensures consistent flow of accounting data to the Central Data Processing Unit (CDPU) at the Controller General of Accounts (CGA). The iBAS with Wide Area Network (WAN) arrangement among Upazila Accounts Offices (UAOs), District Accounts Offices (DAOs), Divisional Controller of Accounts (DCAs), the Chief Accounts Officers (CAOs), and the Central Data Processing Unit (CDPU) is allowing availability of nationwide individual transaction/voucher information and expenditure per budget line to date. At the same time, CGA is disclosing the information publicly through the website of CGA where CGA is taking help from the iBAS continuously. Therefore, it can be mentioned that the iBAS is helping to ensure the accountability of public expenditure.

6.5 Impact of the iBAS: Evidence from Recorded Data

In the previous section of this chapter, it has been seen that the iBAS helps all the accounting administrations of government to keep accounts, and it prompts interaction among them. The iBAS helps to monitor the activities and control the expenditure as well. At the same time, iBAS helps CGA to publish data of accounting publicly.

To assess the effectiveness of the iBAS on the efficiency of public accounting administrations, we collected 16 months data on bill passing and check clearing from the CGA's information technology (IT) team. The IT team of the Office of the Controller General of Accounts (CGA) collected this data randomly from the Chief Accounts Officers (CAOs), Divisional Controller of Accounts (DCAs), and District Accounts Offices (DAOs) to monitor the daily accounting activities and to increase the efficiency of using computer systems. The IT team of the CGA disclosed data from September 2014, and the data is available up to December 2015.

These data have been disclosed publicly. The performance of bill passing and check clearing has been measured by four scales, namely, Excellent, Very Good, Good, and Phone Call. If the bill passing and check clearing are executed within or less than 3 days, it is marked as *Excellent*. If the bill passing and check clearing are executed between 4 and within or less than 5 days, it is marked as *Very Good*. If the bill passing and check clearing are executed between 6 and within or less than 7 days, it is marked as *Good*. If bill passing and check clearing take more than 7 days, it will follow up by the phone call and is marked as *Phone Call*. The activities of bill passing and check clearing are monitored by the iBAS daily, and it marks the performance automatically.

By analyzing the data, we have tried to understand the trends of performance. The trends have been presented in Fig. 6.2. It shows that over the period, performance of bill passing and check clearing is improving. The number of follow up by *Phone Call* is decreasing. Over the period, performance marked as *Excellent* is increasing.

To understand the situation more clearly, we have analyzed the number of maximum days, minimum days, and average days required for bill passing and check clearing over 16 months period. Figure 6.3 shows that over the period, required maximum days and average days for bill passing and check clearing are decreasing.

From Figs. 6.2 and 6.3, it seems plausible to say that the continuous monitoring, feedback, and corrective actions through the iBAS have improved the situation of bill passing and check clearing. As bill passing and check clearing are the tasks of accounting, it also indicates the gradual improvement of the efficiency of PSA of Bangladesh.

6.6 Discussion

The accounting value chain is complex, and it involves a number of practical issues [9]. Therefore, success of the iBAS has to be monitored for a long time to draw conclusions as well as to make it more compatible for the environment of Bangladesh.

From the discussion of the functions of different accounting administrations (UAOs, DAOs, DCAs, CAOs), it appears that iBAS helps to speed up the activities and helps continuous monitoring. In fact, the positive impact of the iBAS on PSA is expected naturally as previous studies show evidence of positive impact of

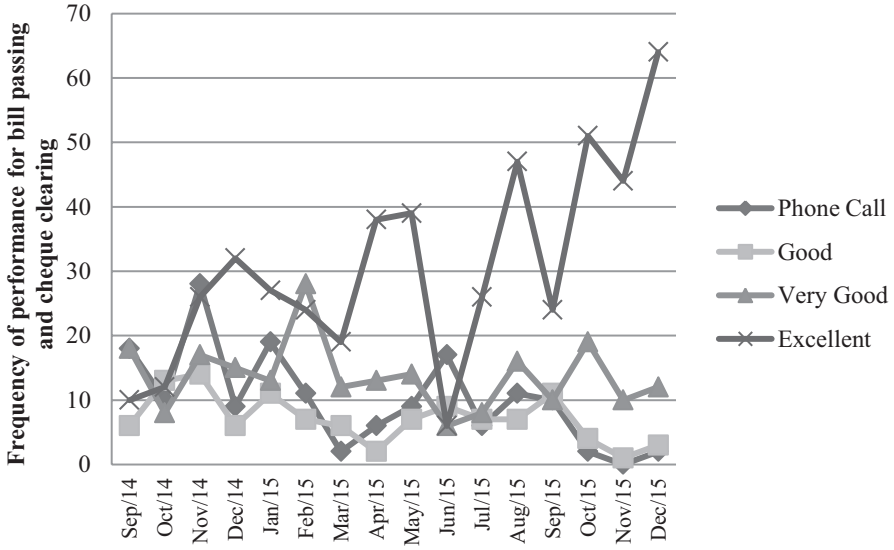

Fig. 6.2 Trends of bill passing and check clearing performance (Source: developed from the data collected from the CGA)

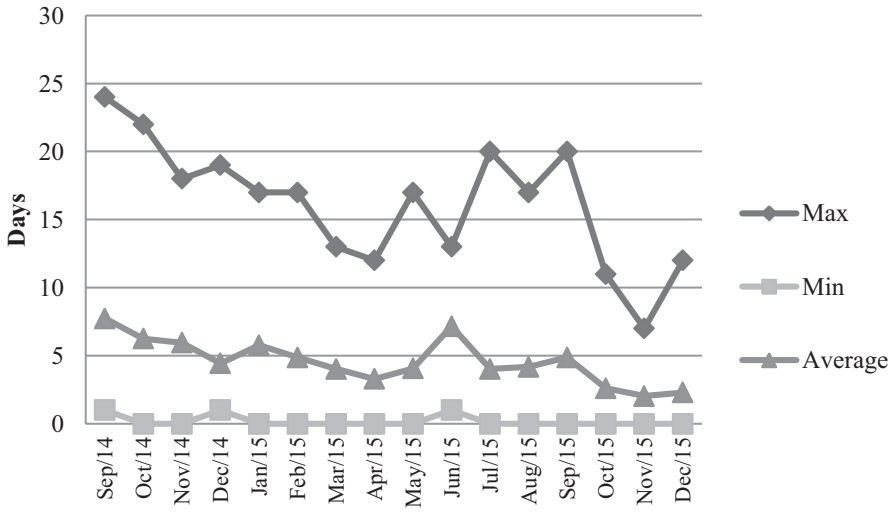

Fig. 6.3 Required days for bill passing and check clearance (Source: developed from the data collected from the CGA)

ICT. Impact of ICT in public sector entities has been investigated by many researches (e.g., [43, 52]). To improve the managerial process in the public sector, the use of ICT has been recommended in many research works [53]. In case of Bangladesh, it seems that both the iBAS and the managerial efficiency of accounting have improved over the time.

The things that the iBAS is providing for the PSA can be justified with the concept of continuous auditing (CA). The iBAS is actually doing the tasks (e.g., preauditing) that are expected from the CA of accounting systems. As it has been mentioned, by reducing interactions with officials, speeding up decisions, reducing human error, and enabling record keeping functions, e-Governance (through ICT) can reduce corruption (see [27]), and it is expected that iBAS will do the same thing for Bangladesh. Not only the internal efficiency but also the public accessibility is ensured through the iBAS which ultimately may enhance the accountability.

Researchers have mentioned that ICT (as a mechanism of e-Governance) expand citizen's access to public information, increase transparency and public accountability, and weaken authoritarian tendencies [26, 54]. Empirical researches indicate that e-Government through ICT can mitigate corruption and can enhance the positive relationship between the citizen and government [55]. iBAS provides public access to information that ultimately supports the accountability. The CGA in Bangladesh is providing information on PSA on the website through the iBAS. Therefore, it seems plausible to say that the iBAS is helping to enrich the accountability in the PSA of Bangladesh.

The overall discussion on the iBAS states that it is helping both for the efficient managerial process and for public accountability regarding the PSA. As it has been found in previous literature, efficient managerial process in public administration and accountability can ensure transparency and work as accelerator for development; it is expected that the iBAS will play the same role for Bangladesh. ICT can play an important role to develop the economy-related factors in the developing nations [26]. The iBAS as a mechanism of ICT is expected to perform similarly. The iBAS has helped the Government of Bangladesh (GoB) and the Ministry of Finance (MoF) to make considerable step to move forward to the use of computers and network-based financial systems. It can improve the speed of reporting, can strengthen the control, and can improve the overall performance of public financial management as well as the public sector accounting.

However, it should be noted that ICT does not guarantee the success or development. It is agreed that information technology itself cannot ensure transparency and accountability (e.g., [56]). This statement also is true for the iBAS. ICT projects (as a mechanism of e-Government) are not always the outcome of planned and controlled change management activities [25]. E-Government or ICT projects often emerge from a set of complex relationship which exist between e-Government policies, technological choice and design, and political and institutional environments [25, 57]. The introduction of the iBAS in Bangladesh can be explained from the above statement. There are continuous pressures on Bangladesh from different donor agencies to reform the PSA. Donor agency pressures along with other factors (e.g., technological choice and design and government policies) together have intro-

duced the iBAS in Bangladesh [11]. Therefore, for sustainable success of the iBAS, surrounding environment has to be monitored carefully. Numerous spectacular failures of ICT are seen in the public sector [58–60]. A number of factors have been suggested to consider for the success, namely, needs of users, process, and systems of ICT, levels of uses, lack of choices or forced choice, trust, readiness to usage IT, cost versus quality, and coordination of success. Attention on the citizen engagement has been advised in the public administration as well [61]. Researchers have noticed the interrelationship among ICT, functions of ICT, transparency, accountability, and development in the literature on ICT and development (e.g., [26, 56]). Efficiency of information technology depends also on the planning and design. To reduce the corruption through ICT, concern of transparency and accountability should be integrated into the public service, providing systems from the planning to design phase (e.g., [62]). Reliable and accurate record keeping is identified by researchers as the foundation of transparency (e.g., [26]). Moreover, bureaucratic corruption has to be monitored and controlled carefully. In developing nations, bureaucratic corruption induces from lack of formal rules and regulations, lack of transparency, and other informalities of process [33]. To make the iBAS fruitful for the economic development, all these factors have to be considered.

6.7 Conclusions

The chapter introduces the usage of Information and Communication Technology (ICT) in the PSA of a developing country. It should be noted that the iBAS has improved the structural strength of public sector accounting rather than methods (cash basis vs accrual basis). The introduction and development of the iBAS has improved both the managerial process of PSA and public accountability. It has speeded up the accounting activities among the different public accounting administrations and levels. At the same time, by helping CGA to disclose information publicly, the systems have strengthened the attempt of ensuring public accountability. By helping to conduct interactions within the government (G2G), between government and business (G2B), and between the government and citizen (G2C) simultaneously, the iBAS is serving the multi-facets. Through disclosing the information publicly and ensuring the effective interactions among stockholders, the iBAS is expected to contribute to the efficient public expenditure. And it is agreed that efficient public expenditure can alleviate the poverty. The developing countries, which are suffering from lack of resources to implement accrual basis accounting, can use ICT like the iBAS to enhance the strength of PSA.

For the sake of development and alleviation of poverty, future research can drive to theory building or find better artifacts to bring PSA and ICT together, or it can work on the interconnection between the disciplines.

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