

Discussion Paper Series A No.654

**Adoption of Management Practices in the Public Sector  
of Bangladesh**

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January 2017

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## Abstract

Improving public service delivery remains a key issue in the public sector of developing countries. The emerging literature reveals a positive correlation between the adoption of management practices and public service delivery. However, potential factors associated with the adoption of management practices are less known. We collected data concerning awareness of management concepts and the adoption of management practices in over 1,600 subdistrict offices of public departments in Bangladesh. We show that awareness of management concepts (e.g., Plan-Do-Check-Act, Total Quality Management, and *Kaizen*) is associated with a higher degree of adoption of management practices and more collaboration with stakeholders. The association is particularly sizable for practices related to process management, such as planning, improvement, and standardization. Financial and physical resources are not associated with adoption. The results are consistent with a previous finding in the private sector that lack of knowledge is a key barrier to the implementation of management practices. Offering simple management training about concrete methods and practices may improve the adoption of management practices.

*Keywords:* management practices, public service delivery, public sector, Bangladesh

## Highlights

- We study the factors associated with the adoption of management practices in the public sector of Bangladesh.
- Awareness of management concepts (Plan-Do-Check-Act, Total Quality Management, and *Kaizen*) is associated with higher adoption of office management practices.
- Awareness of management concepts is also associated with greater collaboration with other public and private stakeholders.
- Financial and physical resources have little correlation with office and collaborative management practices.
- Offering a simple training course about concrete methods and practices may improve the adoption of management practices.

## Acknowledgments

We are grateful to Nicholas Bloom, Tetsushi Sonobe, Takashi Kurosaki, Yasuyuki Sawada, Yuki Higuchi, and the participants in the seminar at Hitotsubashi University for their comments and suggestions. All errors in this paper are the authors' responsibility. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## 1. Introduction

In developed and developing economies, the state plays a vital role in providing public services such as education, health, and basic infrastructure. Improving the efficiency and productivity of the public sector is key to securing citizens' basic human needs. Understanding the barriers that impede efficient public service delivery and examining the methods to improve public sector productivity are critically important in developing countries, where the quantity and quality of public services are directly linked to the achievement of the Millennium and Sustainable Development Goals.

The emerging literature is revealing linkages between management practices and public service delivery.<sup>1</sup> Management practices originating in manufacturing (e.g., lean management or Kaizen) are found to have positive effects on management outcomes (i.e., sales, revenues, profits, and total factor productivity in the private sector (Bloom et al., 2013; Bloom et al., 2016; Bloom & Van Reenen, 2007)). (For a review, see Bloom, Lemos, Sadun, Scur, & Van Reenen, 2014; Bloom & Van Reenen, 2010). Application of such practices has been proposed to overcome managerial challenges in the public sector, such as improving effectiveness, efficiency, and accountability (Melese, Blandin, & O'Keefe, 2004).<sup>2</sup>

Quantitative studies generally find positive links between adoption of management practices and public service delivery in the sectors of health (Bloom, Sadun, & Van Reenen, 2014; McConnel, Lindrooth, Wholey, Maddox, & Bloom, 2013, 2016) and education (Bloom, Lemos, Sadun, Scur, & Van Reenen, 2015; McCormack, Propper, & Smith, 2015). In a broader setting, Rasul and Rogger (2016) covered multiple government ministries in Nigeria and find positive associations for management practices related to bureaucrats' autonomy and project completion rates but negative associations for practices related to incentives and monitoring.

If better management brings about positive effects, what characteristics are associated with the adoption of these practices and how can we facilitate their adoption? Studies have identified higher skills, larger scale, fiercer competition, and private ownership in hospitals (Bloom, Sadun, & Van Reen, 2014); school type (autonomous government schools) in high schools (Bloom et al., 2015); university type (older, research-intensive) in universities (McCormack et al., 2015); and education level and tenure of bureaucrats in various ministries in Nigeria (Rasul & Rogger, 2016). We extend the literature by examining the link between awareness of management concepts and their adoption.

The purpose of this paper is to investigate the correlates of the adoption of management practices in the public sector of Bangladesh, with particular focus on the awareness or knowledge of management concepts. To this end, we employ a dataset of 1,615 subdistrict

(*upazila*) offices within eight administrative departments (subordinate organizations of ministries) in 202 subdistricts. We measure the awareness of subdistrict officers by the recognition of the terms Plan-Do-Check-Act (PDCA), Total Quality Management (TQM), and *Kaizen*. These concepts (especially the first two) are common in introductory business and management books. We examine whether officers' awareness is associated with adoption of office management practices related to cleaning, targeting, planning, standardization, monitoring, and improvement. We also consider the relationship of this awareness to collaboration with stakeholders such as local councils, citizens, and nongovernmental organizations (NGOs). Such collaboration is essential, for example, in mobilizing local information for better targeting of beneficiaries. Since subdistrict officers have a certain degree of autonomy over office management practices and collaboration with stakeholders, their subjective perceptions of themselves (e.g., satisfaction and motivation) and others (relationships with superiors and subordinates) as well as office characteristics are controlled to examine the associations.

We find that awareness is positively correlated with both the adoption of office management practices and collaboration. The correlation is sizable especially for practices related to process management, such as improvement and standardization. The adoption rates in offices led by an officer aware of the concepts were 11% and 9% higher, respectively, than offices led by one unaware of the concepts. Although this finding is solely correlation, one possible interpretation is that the lack of knowledge of operational management concepts is a potential factor that prevents the adoption of management practices. We also found a suggestive indication that knowing concrete management practices and methods (e.g., TQM and *Kaizen*), rather than abstract management concepts (e.g., PDCA) may be important in making action of management practices.

Our focus on awareness of management concepts originates in Bloom et al.'s (2013) research, which suggests unawareness or informational constraints as the primary factor that explains the non-adoption of profitable modern management practices by Indian textile firms. Awareness of management concepts is also possible and easier to manipulate by intervention compared with other known correlates of adoption that are likely fixed and exogenous (e.g., skills, scale, school types). Impact evaluation of management trainings suggests that providing information and training about these practices can raise adoption and achieve profitable outcomes (see, e.g., Higuchi, Nam, & Sonobe, 2015; Mano, Atoken, Yoshino, & Sonobe, 2014; Mano, Iddrisu, Yoshino, & Sonobe, 2012).

The remainder of this paper is organized as follows. Section 2 explains the context and

institutional background. Section 3 presents the data and methods. Section 4 reports the results. Section 5 discusses the findings. Section 6 concludes.

## **2. Institutional Background**

### **2.1. Governmental Strategy for Improving Public Services**

During the past 25 years, Bangladesh has achieved stable economic growth and rapid poverty reduction. The average GDP growth rate from 1990 to 2014 was 5.3%. Accordingly, the poverty headcount ratio at the national poverty line (2,122 kcal/ day) is estimated to have substantially reduced from 56.7% in 1991 to 24.8% in 2015. Bangladesh is also achieving<sup>3</sup> 17 of 44 indicators of the Millennium Development Goals (MDGs) targeted for 2015 (Government of Bangladesh [GOB], 2015). Targets such as reducing poverty, increasing enrollment in primary schools, reducing infant and maternal mortality rate, improving immunization coverage, and reducing incidence of communicable diseases were met. However, targets related to hunger/poverty reduction, employment, quality of education, adult literacy, maternal health, and sanitation need greater attention.

To promote further socioeconomic development, the Bangladeshi government regards improving public services as a priority. The Sixth Five Year Plan (2011–2015) declares, “Emphasis will be given to improving service delivery in basic services such as education, health, nutrition and water supply,” and sets a strategy comprising four pillars: (1) strengthening the civil service, (2) promoting devolution to local governments, (3) strengthening public–private partnerships (PPPs), and (4) strengthening planning and budgetary processes (GOB, 2011, p. 32).

Regarding the first pillar, “strong training” is prescribed as a means to develop public administration capacity (GOB, 2011, p. 32). Among public training institutions, the Bangladesh Public Administration Training Centre (BPATC) plays a central role in providing training for public officers. For example, all new entrants into the Bangladesh Civil Service (BCS) must take the six-month Foundation Training Course wherein officers acquire general knowledge of administration and specific rules, regulations, processes, and procedures in public service delivery.

The second pillar, devolution to local governments, has long been confronted with difficulties. Although the Local Government Acts (Upazila Parishad Act 1998, subsequent amendments in 2011, and the Union Parishad Act 2009) were enacted to “transfer” 17 selected departments and



the central government's BCS to the jurisdiction of local government institutions, functional integration remains incomplete (Rahman & Ahmed, 2015, p.5).

The third and fourth pillars are countermeasures against weak administrative capacity in terms of human and budgetary resources. The Bangladeshi government has promoted PPPs, especially "collaboration with NGOs in the delivery of basic education, health and population management services" to support local administration (GOB, 2011, p. 33). As a major initiative for improving planning and budgetary processes, the Medium-Term Budgetary Framework (MTBF) was introduced to all ministries in 2010. The MTBF addresses not only budget allocation but also information about mission statements, strategic objectives, priority spending areas, key performance indicators, recent achievements, and medium-term targets (GOB, 2015a).

Although these four pillars are expected to improve public service delivery, it is unclear as to how they can be implemented in practice. What type of "strong training" is needed to achieve missions stated in the MTBF? How do public officers enhance collaboration with local governments and the private sector? Motivated by these questions, this study focuses on the knowledge of management concepts and actual adoption of management practices in connection with all four pillars.

## 2.2. Structure of the Central and Local Governments

**Figure 1** indicates the structure of public administration in Bangladesh. For administrative purposes, the country is divided into eight divisions, 64 districts, 489 subdistricts (*upazila*), and 4,542 unions as of July 30, 2016. The structure of public service delivery in local areas is divided between the central and local governments.

== Figure 1 ==

The central government, headed by the prime minister, comprises the ministries and subordinate departments with headquarters in the capital, Dhaka. Line departments under respective line ministries responsible for basic public services had field offices in divisions, districts, and subdistricts.

This paper focuses on the subdistrict offices of line departments. They represent the lowest tier of the departmental hierarchy and stand at the frontlines of public service delivery. Subdistrict officers head subdistrict offices. They manage frontline staff and budgets under the supervision of district officers. Subdistrict officers have a certain degree of autonomy and

discretion in managing implementation processes, from selecting beneficiaries to actually providing services (e.g., vaccinating livestock, managing school latrines, disbursing allowances and pensions). However, because tasks, targets, and budgets are assigned top-down from the headquarters, subdistrict officers have a limited role in formulating policy.

To coordinate these field offices of line departments, the central government appoints and dispatches chief executives from the Cabinet Division for three tiers: Divisional Commissioners for divisions, Deputy Commissioners for districts, and *Upazila Nirbahi* Officers (UNOs) for subdistricts. At subdistrict level, the UNO office and subdistrict offices of line departments usually share buildings or sites. Thus, they work in close physical proximity. UNOs oversee various affairs, including coordinating and supporting the activities of subdistrict offices. For example, UNOs hold regular coordination meetings to share information among subdistrict officers of various line departments and to discuss interdepartmental issues.

The local government is organized into five institutions in three tiers: district, subdistrict, and union councils headed by a chairperson in rural areas and city corporations and municipalities headed by mayors in urban areas. Approximately 60,000 councilors are elected by citizens as a whole. The central government regulates all of these institutions through the Local Government Division. At the subdistrict level, subdistrict (*upazila*) councils represent the local government. Subdistrict councils consist of one chairman, two vice chairmen (one seat is permanently reserved for a woman), and union chairmen from all unions in the subdistrict.

As mentioned, subdistrict officers of the 17 line departments are supposed to be “transferred” to subdistrict and union councils. However, because this devolution has not been realized yet, both councils face serious human and financial capacity constraints. Nevertheless, they have important functions for public service delivery in collaboration with line departments of the central government. For example, union councils nominate beneficiaries for some social safety net programs (e.g., the Vulnerable Group Development Program for poor women, the Gratuitous Relief for disaster victims) provided by subdistrict offices of line departments (Rahman, Choudhury, & Ali, 2011). Therefore, although the devolution of subdistrict offices has not been completely achieved yet, subdistrict offices and local councils are collaborating closely in practice.

### **3. Data and method**

#### **3.1. Analytical Framework**

**Figure 2** presents our analytical framework of public service delivery as an input–process–

output diagram. Inputs for public service delivery were human (staffing), financial (office budgets), and material resources (facilities). Inputs were exogenous to subdistrict officers because they are allocated top–down.

== Figure 2 ==

Regarding the process of service delivery, we distinguished two management practices. The first was office management practices, which included cleaning, targeting, planning, standardization, monitoring, and intra-office improvements to utilize the given resources effectively. Although the concrete details of the practices are explained in Section 3, these are essentially standard practices necessary for running a PDCA cycle. **Figure A1** in the Appendix shows some examples of management practices adopted.

The second management practice was collaborative management practices—i.e., collaboration with public and private stakeholders (e.g. UNOs, councils, NGOs, citizens) outside the office to complement limited office resources. This practice is an important aspect of collaborative public management, defined as “a concept that describes the process of facilitating and operating in multi-organizational arrangements to solve problems that cannot be solved or easily solved by single organizations” (Agranoff & McGuire, 2003, p. 4). In particular, NGOs are recognized as possible candidates to supplement the lack of government resources in providing public service delivery in Bangladesh (World Bank, 2003).

### 3.2. Survey design

We collected data under the Project for “Improving Public Services through Total Quality Management in Bangladesh” (IPS-TQM, hereafter “the Project”). This is an official development assistance (ODA) project co-financed by the Japan International Cooperation Agency (JICA) and the Government of Bangladesh and implemented by the BPATC. The Project commenced in February 2012 and is expected to end in January 2017. The aim of the Project is to improve the quality of public services delivered by subdistrict offices in approximately 25 departments. The main intervention of the Project is provision of training courses for subdistrict officers, which help them adopt management practices and conduct *Kaizen* activities on the basis of the framework of TQM in their routine work. These courses also help them develop and implement quarterly plans to improve service delivery.<sup>4</sup>

We employed data from the baseline survey for the Project. The objective of the survey was to collect information about the current conditions in the adoption of management practices and

output/outcome of public services. The information is expected to form the basis of impact evaluation of the Project.<sup>5</sup> Because of time and budget constraints, the survey limited its focus to eight departments: Livestock Services, Fisheries, Food, Social Services, Youth Development, Women Affairs, Secondary and Higher Education, and Public Health Engineering. These departments were selected because they provide basic public services to citizens directly and have local offices in all subdistricts. Although they oversee different sectors and beneficiaries, their tasks and duties are quite similar: providing training, disbursing subsidies and allowances, providing micro-credit programs, and setting standards and regulations. **Appendix Table A1** details their main duties declared in the MTBF.

The survey was conducted in 202 subdistricts, which amounts to 41% of the total 487 subdistricts in Bangladesh. The survey area was selected in two ways. First, all 64 district capitals (subdistricts called *Sadar Upazilas*) were covered because these areas were the main target of the Project. Second, 138 subdistricts other than district capitals were chosen randomly via stratified sampling in proportion to the number of subdistricts of each district.

Data were collected at subdistrict offices of each department using a structured questionnaire for face-to-face interviews with subdistrict officers from April to June 2014. To ensure that they answered the questionnaire dutifully and to avoid non-response bias, the survey was authorized by the headquarters of target departments via official letters. Finally, the sample size was 1,615 offices, consisting of eight departments in 202 sub-districts.<sup>6</sup>

The questionnaire is organized in two parts. The first part asks common questions for all departments in line with the analytical framework in **Figure 2**: (1) human resources (staffing), (2) financial resources (revenue budget), (3) material resources (facilities), (4) officer's awareness of management concepts (e.g., TQM, PDCA, and *Kaizen*), (5) the officer's awareness of self and others' perceptions of the work environment, and (6) adoption of management practices in the subdistrict office.

The second part seeks department-specific administrative statistics, aiming to collect information concerning output and outcome of the public service delivered by each department. For example, we asked subdistrict officers of the Department of Livestock Services about the number of vaccinations for livestock and the number of training for farmers as outputs and the production of milk, meat, and eggs as outcomes. We constructed items of the statistics from the MTBF, which clarify departmental output and outcome indicators. The items of the statistics were reviewed and authorized by the headquarters of each department, which consented to each subdistrict office registering the data to plan and monitor their service delivery. Therefore, the response rate for the administrative statistics can be regarded as an objective indicator of the

achievement in planning and monitoring in that subdistrict office.

### 3.3. Variables

#### 3.3.1. Outcome Variables

Our main outcome variables were classified into two groups: (1) office management practices within subdistrict offices and (2) collaborative management practices with external public and private stakeholders.

For office management practices, we selected the following 14 practices, classified into six categories:

- (i) Cleaning: (1) cleaning offices regularly and (2) filing and sorting office documents;
- (ii) Targeting: (3) setting measurable targets and (4) discussing them with staff;
- (iii) Planning: (5) planning time schedules, (6) personnel assignments, and (7) budget allocation;
- (iv) Standardization: (8) using guidelines or manuals and (9) using task lists; and
- (v) Monitoring: (10) holding regular meetings, (11) reporting progress, and (12) communicating with citizens;
- (vi) Improvement: (13) proposing new plans or methods and (14) modifying methods to deliver services.

We selected practices after discussion with TQM experts and officials at BPATC to fit the context of subdistrict offices.

We asked officers whether they had adopted these 14 practices during the past three months and recorded responses as dummy variables (i.e., yes or no). Such closed-end questions to measure office management were also used in the Management and Organizational Practices Survey conducted by the U.S. Census Bureau. Although this approach might be inferior in accuracy compared with open-ended questions, which were used in the World Management Survey, it incurs lower survey costs and registers higher response rates (Bloom et al., 2016). We adopted simple averages of adoption rates for each of the six management categories and overall categories as the main outcome variable.

Besides these self-reported subjective indicators, we utilized response rates for department-specific administrative statistics as objective indicators. We prepared approximately 30 items supposedly monitored by subdistrict offices for each department. We calculated response rates as the proportion of items answered to the total number of items.

As for collaborative management practices with other stakeholders, we asked the frequency (days) of communication with public and private stakeholders during the past 30 days. The

public stakeholders were UNOs (chief executive of the subdistrict) and district officers of their line departments (thus, the subdistrict officer's superior), subdistrict officers of other line departments, local councils of the subdistrict and union, and their own office staff for reference. Private stakeholders included NGOs and citizens.

### 3.3.2. Explanatory Variables

As the key explanatory variables that may affect management practices, we focused on officers' awareness of management concepts and perceptions of their work environments. After consultation with experts of the Project and officials at BPATC, we designed all variables to capture the current situation in the context of Bangladeshi public sector.

To measure awareness of management concepts, we asked subdistrict officers whether they were about the terms PDCA, TQM, and *Kaizen* on a three-point Likert scale (Don't know/Know something/Know well). We then constructed a dummy variable denoting whether subdistrict officers knew well or knew something about all three concepts. This variable can be seen as a proxy for knowledge of management.

To assess perceptions of self and others in the work environment, we asked 10 questions regarding satisfaction, motivation, confidence, leadership, busyness, need for improvement, trust in staff, reluctance of staff, recognition by the UNO, and recognition by the district officer. A five-point Likert scale of agreement (−2: strongly disagree, −1: disagree, 0: neutral, 1: agree, 2: strongly agree) was applied to each item listed in Panel B of **Table 1**.

Other controls included variables denoting office resources: human (number of staff), financial (annual office budget), and material resources (office facilities and equipment such as shelves, computers, access to the Internet, and vehicles). Subdistrict officers' characteristics such as sex, age, education level, and salary were also included. To control for geographical and socioeconomic characteristics of subdistricts, we used subdistrict dummy variables in the statistical estimation.

### 3.4. Statistical method

We examined the association between the adoption of office and collaborative management practices as outcome variables and key explanatory variables using descriptive analysis and multivariate regressions. For descriptive analysis, we reported unadjusted mean adoption rates of management practices by awareness of key management concepts.

For multivariate regressions, we estimated

$$y_{ijk} = \alpha + \beta_1 \text{AWARE}_{ijk} + X_{ijk}\gamma + D_j + U_k + \varepsilon_{ijk},$$

where  $y_{ijk}$  is the outcome variables for office and collaborative management practices for subdistrict office  $i$  of department  $j$  in subdistrict  $k$ .  $\text{AWARE}_{ijk}$  is the indicator of awareness of management concepts.  $X_{ijk}$  is the vector of variables representing officers' perceptions and control variables capturing office resources and officers' characteristics.  $D_j$  and  $U_k$  are department and subdistrict fixed effects, respectively.  $\varepsilon_{ijk}$  is the error term.

We estimated this model using ordinary least squares (OLS) with standard errors clustered by subdistrict. We also included survey team fixed effects to control the difference of survey teams in quality of interview and data collection, which may particularly affect the response rate for administrative statistics.

## 4. Results

### 4.1. Summary statistics

**Table 1** reports summary statistics of all variables.

== Table 1 ==

Panel A summarizes the outcome variables. Adoption rates of office management were relatively high. On average across 1,615 offices, the overall adoption rate of all six categories was 82%. The adoption rate was highest for “cleaning” (96%), followed by “targeting” (95%), “planning” (87%), and “monitoring” (86%). Practices of “standardization” (69%) and “improvement” (62%) were less commonly adopted. **Appendix Table A2** shows adoption rates for each of the 14 practices within the six management categories.

The response rate to key administrative statistics was 70% (SD = 21%). The difference in response rates was largely driven by variations among departments, ranging from 51% to 87%. We included department fixed effects in the regression analyses below to control for this.

On collaborative management practices, days communicating with stakeholders during the 30 days before the interview were 3.2 days (SD = 3.3) for their own office staff, 5.2 days (SD = 5.7) for UNOs and district officers, 4.1 days (SD = 5.1) for officers of other departments, 3.9 days (SD = 4.3) for local councils, 1.3 days (SD = 1.9) for NGO, and 2.7 days (SD = 4.9) for citizens. Total days communicating with any of the above stakeholders were 20.6 days (SD = 20.3). Panel B summarizes the explanatory variables. 21% of the officers were aware (knew at

least something) of all three management concepts (PDCA, TQM, and *Kaizen*). **Figure 3** shows awareness by each concept.

== Figure 3==

On officers’ perception, the average score of five-level Likert scales (higher score means higher agreement) are as follows: 4.6 (SD = 0.7) for “satisfaction,” 4.4 (SD = 0.9) for “motivation,” 4.0 (SD = 1.2) for confidence, 4.5 (SD = 0.8) for “leadership,” 4.1 (SD = 1.1) for “busyness,” 4.4 (SD = 0.9) for “needs for improvement,” 4.2 (SD = 1.0) for “trust in office staff,” 2.0 (SD = 1.2) for “reluctance of office staff,” 4.5 (SD = 0.9) for “recognition by UNO,” and 4.5 (SD = 0.9) for “recognition by district officer.” **Figure 4** depicts disaggregated information for each perception.

== Figure 4==

Panel C of **Table 1** summarizes other control variables denoting officer characteristics and office resources.

4.2. Descriptive results

**Table 2** provides information concerning unconditional outcome variables by awareness of key management concepts. Adoption rates of office management practices were higher for aware offices than for unaware offices for all six categories. Differences in adoption rates ranged from 1.1 percentage points (cleaning) to 10.3 percentage points (improvement). Similarly, the response rate to key administrative statistics was higher for aware-offices: 72.8% (aware) vs. 69.3% (unaware). However, unconditional indicators of collaborative management practices were not significantly different. In fact, on average, aware-offices spent fewer days than unaware-offices collaborating with office staff, supervisors, NGOs, and citizens.

== Table 2 ==

4.3. Main regression results

**Table 3** presents multivariate regression estimates of the correlation of awareness of management concepts on adoption of office management practices. Column (1) reports estimates for average adoption rate of overall practices. Columns (2) to (7) present results for



each category. Column (8) regresses response rates.

== Table 3 Correlates of the adoption of office management practices and response rate ==

**Table 3** shows that awareness correlates positively with adoption and response rates. Column (1) indicates that the average adoption rate for overall practices among aware-offices was significantly higher by 3.8 percentage points compared with unaware-offices, or 4.5% higher compared with the unadjusted mean for unaware-offices (81.5%). The breakdown of results by management category in Columns (2) to (7) reveals that the adoption rate was higher for aware-offices than unaware-offices in all management categories except “cleaning” (0.3 percentage points lower, -0.3% compared with the unadjusted mean for unaware-offices). The coefficient was significantly higher in the categories “planning” (4.7 percentage points, +5.4%), “standardization” (6.0 percentage points, +8.8%), and improvement (6.5 percentage points, +10.8%). Coefficients for “targeting” and “monitoring” were both positive but not significant. Column (8) indicates a higher response rate to administrative statistics by aware-offices, although the estimate was insignificant.

The correlation between officers’ perceptions and adoption was unclear and inconsistent; signs of the coefficients were mixed across management categories. However, the coefficient of “trust in office staff” was significantly negative, and the coefficient of “reluctance of office staff” was significantly positive for all practices. This result was driven by relatively large coefficient for “improvement”. We did not observe any other consistent association between other officer characteristics and office resources.

**Table 4** reports the estimates for collaborative management practices. Column (1) regresses days spent collaborating with any stakeholder. Columns (2) to (7) report the results for collaboration with each stakeholder.

== Table 4 ==

Column (1) shows that, on average, aware-offices spent 3.2 more days with stakeholders during the past 30 days than did unaware-offices. Columns (2) to (7) indicate that the correlation between awareness and collaboration was sizable and positive for all stakeholders; the effect was significant for local councils (0.8 days) and officers of other departments (0.8 days).

Regarding officer perceptions, again, Table 4 shows no sizable or consistent pattern of correlation. However, we did find a positive correlation between busyness and collaboration,

which was significant for collaboration with citizens (0.6 days). Regarding officers' characteristics, officers holding a master's degree were less likely to collaborate. Although the coefficient was insignificant except for collaboration with officers of other departments, it was sizable for all stakeholders (−3.9 days). For office resources, no clear, sizable, and consistent correlation was observed except for the positive effect of Internet access, although it was insignificant except for collaboration with citizens.

#### 4.4. What determines differences in collaboration?

The unconditional difference in days spent collaborating was lower for aware-offices than unaware-offices (**Table 2**), but the direction of correlation was inversed in the multivariate regression (**Table 4**). To investigate the cause of this change, we reported regression results by adding the set of explanatory variables step by step. Results reported in **Table 5** Panel C indicate that awareness was negatively correlated with collaboration even after the inclusion of department fixed effects (Column 2), but the coefficient turned positive after the inclusion of district fixed effects (Column 3; N.B. this is district, not sub-district).<sup>7</sup> This finding implies that much of the variation in intensity of collaboration is explained by district-level differences. In other words, there was a large variation among districts; this conceals the variation by awareness, which is much smaller.

== Table 5 ==

**Table 6** reports estimates by stakeholders. Unconditional coefficients of awareness appear in Panel A. Coefficients conditional on department and district fixed effects appear in Panel B. The awareness dummy increased for all stakeholders after controlling for fixed effects, with the largest changes for UNOs and district officer (Column 3) and officers of other departments (Column 4).

== Table 6 ==

#### 4.5. Sensitivity to the definition of “awareness” of management concepts

Here, we relax the definition of “awareness” of management concepts. Our original definition of the term required that an officer must be knowledgeable about all three concepts (PDCA, TQM, and *Kaizen*). However, recognition rates for the latter two concepts were below 41% and 31%, respectively (**Figure 4**). Therefore, our original definition might be too strict. We thus

relax the definition and consider that officers are “aware” of key management concepts if they know PDCA or both PDCA and TQM. We used these new awareness variables in the same manner as in **Tables 3 and 4**. **Table 7** reports the consequent results. Panel A admits “awareness” if respondents are aware of PDCA, whereas Panel B requires awareness of both PDCA and TQM. Panel C replicates the results in **Tables 3 and 4** for reference with the original definition (i.e., knowledgeable about all three concepts). Overall, the results indicated that relaxing the definition to being aware of PDCA only or PDCA and TQM does not make a considerable difference in terms of the sign of the coefficient. However, the estimates are more precise, and coefficients are larger under the original definition.

== Table 7 ==

## 6. Discussion

The main statistical findings can be summarized as follows. First, the adoption rate of the overall office management practices was high (82%), but the adoption rates of practices related to “standardization” (69%) and “improvement” (62%) were relatively uncommon compared with those related to “cleaning,” “targeting,” “planning,” and “monitoring.” This finding indicates that the process of “planning” the PDCA cycle was relatively well implemented, but “Do,” “Check,” and “Action” can be further improved. Also, the average response rate to administrative statistics of 71% was disappointing. The statistics we sought were fundamental and necessary information for setting targets and monitoring the progress of each department’s main tasks. It is therefore unsurprising that nearly 40% of the offices had not adopted practices of “improvement.”

Second, awareness of key management concepts was positively correlated with the adoption of both office and collaborative management practices. The difference was sizable, with the adoption rates of aware-offices regarding “improvement” and “standardization” exceeding those for unaware-offices by 10.8% and 8.8%, respectively. This finding is consistent with the evidence provided by Indian textile firms that one potential reason why firms did not adopt productive operational management practices was that they were simply unaware of such practices (Bloom et al., 2013). Bloom et al. (2013) found that it was easy to overcome this information constraint by merely explaining the existence of these practices, which eventually led to rapid adoption. This may suggest that unawareness is a key barrier to the implementation of such practices, and relatively simple intervention that provides information about management practices and best practices may boost adoption in the public sector as well.

Third, officers who trusted their staff members were less likely to adopt office management practices, whereas those who thought that their staff members were reluctant tended to adopt more practices. A natural interpretation of this behavior is that office management practices are substitutes of trust or good relationship; officers adopt these practices because they cannot trust their staff or if the staff members are reluctant. These effects were significant and sizable, especially in the adoption of improvement practices, which implies that subdistrict officers tend to modify the method of public service delivery when their staff are reluctant and maintain the same method of public service delivery when staff members are trustworthy.

Fourth, office resources were not associated with both office and collaborative management practices. This is unsurprising, given that the practices we focused on did not necessarily rely on physical or financial resources. The exception is the positive correlation between Internet access and collaboration with citizens, which may suggest the importance of information infrastructure in facilitating public relations.

Fifth, a somewhat interesting finding is that much of the variation in collaboration came from variations across districts. This may reflect the influence of district-specific geographic or political factors. For example, cooperation and collaboration between departments may be affected by the leadership and management of the Deputy Commissioner of the Cabinet Division, who coordinates district officers of line departments at the district-level. This is consistent with our field observations and impressions that (i) the local public sector and administration are strongly affected by decisions, initiatives, and personal relationships at the district level and (ii) the extent of coordination and collaboration among departments tends to depend on the functioning of the monthly District Development Coordination Committee Meeting with district officers from line departments hosted by the Deputy Commissioner, who plays the role of the district “governor.”

Finally, the link between awareness and adoption of management practices was stronger under the original definition of “awareness,” which required the acknowledgement of TQM and *Kaizen*. Although PDCA is an abstract concept, TQM and *Kaizen* provides some concrete methods of running a PDCA cycle. Being aware of such methods, not merely concepts, might be important for making a real change in action.

Overall, the finding implies room for improvement in the processes of “Do,” “Check,” and “Act” in the PDCA cycle. In particular, constantly updating fundamental administrative statistics is necessary to set objective targets and monitor progress. To make progress in this respect, our results may suggest that simple intervention to creating awareness about management practices may be effective in improving their adoption.

The obvious limitation of this study is that its findings are merely associations based on cross-sectional data. Further careful investigation is necessary to establish causal links. Another important limitation is that we have disregarded the broader question of whether the adoption of management practices is associated with public service delivery. Addressing that issue is beyond the scope of this paper because we were unsuccessful in collecting data on administrative statistics. We plan to make some progress with the data in hand and complement the current study with qualitative case studies in the future .

Regarding the technical aspects, our measurement of management practices may be less accurate than the measures constructed from the now-standard method of the World Management Survey using open-ended questions. We believe that our simple discrete closed-end questions for specific and objective practices are reliable at least in capturing qualitative information about adoption, which is relatively obvious and distinct.

Finally, we have not investigated practices that are focused on in the previous literature: autonomy and incentives. The latter is of little relevance in our context, wherein subdistrict officers' compensation schedule has limited flexibility.<sup>8</sup> However, autonomy might be an important aspect of management practice; as in the case of Rasul and Rogger (2016), our subjects are middle-tier bureaucrats who supervise and manage local frontline staff. We intend to collect information concerning this aspect in a follow-up survey.

## **7. Conclusion**

We found the awareness of management concepts such as PDCA, TQM, and *Kaizen* are positively correlated with the adoption of office management practices, especially those related to planning, standardization, and improvement. We also observed a positive correlation for collaboration with stakeholders. We found suggestive indications that knowing concrete management practices and methods, rather than abstract management concepts, may be important in taking action of management practices. Finally, we found that much of the variation of the extent of collaboration with stakeholders originates in the difference between districts, suggesting that management at the district-level is consequential.

A possible interpretation of our results overall is that the lack of knowledge of basic management concepts may be a factor that prevents the adoption of management practices. Offering a simple training course about concrete methods and practices may be effective in improving the adoption of management practices.

Our results and interpretations should be considered with care, however, as our results indicate association, not causal link. Further studies are needed to improve the strength of evidence

indicating the relationship between awareness and better management in the public sector. Moreover, this study does not answer the broader question of whether the adoption of these practices improves public service delivery. Investigation into this ultimate outcome in the current context is left for future research.

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## Notes

<sup>1</sup> Another major solution to improve public service delivery is the introduction of performance incentives. (For reviews, see Hasnain & Pierskalla Henryk, 2012; Montagu & Yamey, 2011. Studies added to these reviews in the health sector include Miller et al., 2012; Unützer et al., 2012; Basinga et al., 2012; Ashraf, Bandiera, & Jack, 2014). Improving accountability and monitoring by local beneficiaries also seems to have a positive effect (Deininger & Mpuga, 2004; Olken, 2008; Bjorkmand, de Walque, & Svensson, 2016; Reinikka & Svensson, 2004, 2011). Adopting operational management practices may be easier and more beneficial than introducing performance incentives. Introduction of performance incentives requires modification of the compensation system, which is a huge institutional change and challenge for the public sector. Furthermore, performance incentives might induce unintended consequences of gaming, crowding-out of pro-social workers, and misallocation of effort under a multi-tasking environment.

<sup>2</sup> In the context of the New Public Management (NPM), management practices in the public sector have been intensively studied since the late of 1980s, an era that introduced disaggregation, competition, and incentivization in public organizations (Hood & Peters, 2004). These studies mainly focus on qualitative case studies of NPM in developed countries (Kuipers et al., 2014), although this wave of NPM has now “largely stalled or been reversed” in some countries (Dunleavy et al., 2006, p.467).

<sup>3</sup> We consider indicators evaluated as “target met” or “on track” in the Annexure of GOB (2015a) as “achieving.”

<sup>4</sup> For further details, see the Project website (<http://www.bpatc.org.bd/index.php?pageid=82>).

<sup>5</sup> The impact evaluation is supposed to be analyzed using data from both the baseline survey and the follow-up survey planned in 2016.

<sup>6</sup> Although the sample size should be 1,616 offices (= 8 departments × 202 subdistricts), one office of the Department of Women Affairs could not participate in the survey because of the officer’s long absence.

<sup>7</sup> We also confirmed that the positive and significant coefficient of awareness with full controls (Table 4) turned insignificant and negligibly small after dropping district or subdistrict fixed effects. The coefficient stayed positive and significant when we dropped department fixed effects. These results imply that the key control is the regional fixed effects.

<sup>8</sup> Performance incentives are considered to be adopted in the Seventh Five-Year Plan (2016–2020), which sets “Strengthening of civil services with the institution of merit based promotion and improved incentives in terms of remuneration” among its “priorities for the future” (GOB, 2015b, p. 23).

## Tables

**Table 1 Summary Statistics**

Variable	Definition	Mean	SD	Min	Max
<b>Panel A: Outcomes</b>					
<b>Office management practices</b>	Average implementation rate of management practices during the past three months.				
Cleaning	(1) office cleaning and (2) document filing	0.96	0.17	0	1
Targeting	(3) setting office targets and (4) discussion of targets with staff	0.95	0.18	0	1
Planning	Planning (5) work schedules, (6) personnel assignments, and (7) office budgets	0.87	0.21	0	1
Standardization	Utilizing (8) guideline/manual and (9) task lists	0.69	0.37	0	1
Monitoring	(10) regular meetings with staff, (11) reporting progress to the boss, and (12) communication with citizens	0.86	0.23	0	1
Improvement	(13) proposition of new plan/method and (14) modification of the way of service	0.62	0.42	0	1
All practices	All office management practices	0.82	0.16	0	1
<b>Response rate to administrative statistics</b>	Average response rate to departmental questions about basic statistics for specific public services	0.7	0.21	0	1
<b>Collaborative management</b>	Number of days contact with related stakeholders during the past 30 days.				
Own staff	Staff of own office	3.24	3.35	0	20
UNO and district officer	UNO (chief executive of the subdistrict) and district officer	5.24	5.72	0	30
Officers of other departments	Other subdistrict officers in the same and other subdistricts	4.09	5.11	0	30
Local councils	Local councils (subdistrict and union councils)	3.93	4.31	0	30
NGO	NGO members	1.28	1.88	0	20
Citizens	Citizens	2.73	4.89	0	20
All stakeholders	All related stakeholders	20.64	20.3	0	153
<b>Panel B: Main explanatory</b>					
<b>Awareness of management</b>	1 if aware of all three management concepts (PDCA, TQM, and <i>Kaizen</i> )	0.21	dummy	0	1
<b>Officer's perception (5-point scale)</b>	(−2: strongly disagree, −1: disagree, 0: neutral, 1: agree, 2: strongly agree)				
Satisfaction	Are you satisfied with your job these days?	1.55	0.73	−2	2
Motivation	Are you well motivated to deliver quality services as a government official?	1.41	0.9	−2	2
Confidence	Do you think you can accomplish your goals on your own ideas?	1.01	1.17	−2	2
Leadership	Do you think you can lead office staff to improve your service on your own initiative?	1.53	0.78	−2	2
Busyness	Do you think you have too much work these days?	1.08	1.1	−2	2
Needs for Improvement	Do you think your office needs to improve public service delivery continuously?	1.42	0.88	−2	2
Trust in office staff	Do you think most staff can be trusted in your office?	1.2	0.97	−2	2
Reluctance of office staff	Do you think some staff is reluctant to improve public service in your office?	−0.96	1.23	−2	2
Recognition by UNO	Do you think your work is well recognized by the UNO?	1.46	0.87	−2	2
Recognition by district officer	Do you think your work is well recognized by the district officer?	1.5	0.86	−2	2
<b>Panel C: Controls</b>					
<b>Officer's characteristics</b>					
Female (dummy)	1 if officer is female	0.15	dummy	0	1
Age	Officer's age	45	8.2	20	70
Masters or above (dummy)	1 if officer holds a master's degree or above	0.09	dummy	0	1
Log salary	Officer's annual salary (log)	9.68	0.35	7.18	11.41
<b>Office resources</b>					
Log annual budget	Annual office budget (log, per staff)	12.16	0.62	8.2	16.75
Number of telephone & fax	Number of telephones and faxes in the office (per staff)	0.17	0.2	0	2.5
Number of PC & printer	Number of PCs and printers in the office (per staff)	0.28	0.26	0	4
Internet access (dummy)	1 if the office has Internet access	0.74	dummy	0	1
Number of shelf	Number of shelves in the office (per staff)	0.57	0.45	0	6.38
Number of vehicle (bicycle & motorcycle)	Number of vehicles (bicycles and motorcycles) in the office (per staff)	0.24	0.3	0	5
Number of office staff	Number of office staff	7.05	3.55	0	20
Average age of office staff	Average age of office staff	43.42	4.51	24.65	64.5

Note: N = 1,615 for all variables. UNO: *Upazila Nirbahi* Officers; NGO: non-governmental organization; PDCA: Plan-Do-Check-Act; TQM: Total Quality Management.

**Table 2 Mean Comparison of Outcome Variables by Awareness of Key Management Concepts**

Variable	Awareness of PDCA, TQM, and <i>Kaizen</i>			Difference [95% Conf. Interval]	<i>p</i> -value
	Total ( <i>n</i> = 1,615)	Aware ( <i>n</i> = 345)	Unaware ( <i>n</i> = 1,270)		
<b>Office management practices</b>					
Cleaning	0.955	0.964	0.953	0.011 [-0.008, 0.030]	0.267
Targeting	0.951	0.970	0.946	0.024 [0.005, 0.043]	0.012
Planning	0.867	0.903	0.857	0.046 [0.023, 0.069]	0.000
Standard.	0.694	0.745	0.680	0.065 [0.022, 0.108]	0.003
Monitoring	0.861	0.885	0.854	0.031 [0.004, 0.057]	0.022
Improvement	0.622	0.703	0.600	0.103 [0.055, 0.152]	0.000
Total	0.825	0.862	0.815	0.047 [0.027, 0.066]	0.000
<b>Response rate to administrative statistics</b>	0.700	0.728	0.693	0.036 [0.012, 0.059]	0.003
<b>Collaborative management practices</b>					
Own staff	3.237	3.174	3.254	-0.080 [-0.435, 0.276]	0.660
UNO and district officer	5.245	5.035	5.302	-0.267 [-0.888, 0.355]	0.400
Officers of other departments	4.092	4.194	4.064	0.130 [-0.444, 0.705]	0.656
Local councils	3.931	4.217	3.853	0.365 [-0.189, 0.919]	0.197
NGO	1.276	1.258	1.281	-0.023 [-0.244, 0.198]	0.837
Citizens	2.731	2.513	2.790	-0.277 [-0.817, 0.263]	0.314
All stakeholders	20.641	20.539	20.669	-0.130 [-2.438, 2.178]	0.912

Note: “Aware” are offices which “know something” or “know well” about all three concepts of PDCA, TQM, and *Kaizen*. “Difference” column reports the difference between the two groups. *P*-values of Welch’s *t*-test reported in the last column for each outcome. Those below 0.05 are emphasized in bold letters. UNO: *Upazila Nirbahi* Officers; NGO: non-governmental organization; PDCA: Plan-Do-Check-Act; TQM: Total Quality Management.

**Table 3 Correlates of Office Management Practices and Response Rates (OLS)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Office management practices							Response rate
	All practices	Cleaning	Targeting	Planning	Standardization	Monitoring	Improvement	
<b>Awareness of management concepts</b>								
Aware of PDCA, TQM, and Kaizen	0.038** (0.012)	-0.003 (0.011)	0.022 (0.014)	0.047** (0.017)	0.060* (0.027)	0.033 (0.019)	0.065* (0.029)	0.016 (0.012)
<b>Officer's perception</b>								
Satisfaction	0.002 (0.009)	0.020* (0.010)	0.001 (0.012)	-0.002 (0.013)	-0.005 (0.017)	0.006 (0.014)	-0.008 (0.022)	0.017 (0.010)
Motivation	0.002 (0.007)	-0.008 (0.005)	0.013 (0.010)	0.012 (0.009)	-0.005 (0.015)	0.002 (0.008)	-0.002 (0.015)	0.004 (0.007)
Confidence	-0.002 (0.004)	-0.006 (0.003)	0.000 (0.006)	0.006 (0.005)	0.001 (0.008)	-0.015* (0.006)	0.002 (0.010)	-0.000 (0.004)
Leadership	-0.009 (0.008)	0.004 (0.008)	0.001 (0.009)	0.001 (0.012)	-0.024 (0.016)	0.003 (0.013)	-0.037 (0.019)	-0.005 (0.007)
Busyness	0.004 (0.005)	-0.002 (0.004)	0.012 (0.008)	0.003 (0.007)	0.012 (0.011)	-0.008 (0.006)	0.007 (0.012)	0.003 (0.006)
Needs for improvement	0.004 (0.007)	0.007 (0.008)	0.021* (0.010)	-0.007 (0.010)	-0.007 (0.014)	0.017 (0.012)	-0.006 (0.015)	-0.003 (0.006)
Trust in office staff	-0.011* (0.005)	0.011 (0.006)	-0.007 (0.006)	-0.013 (0.007)	-0.009 (0.011)	-0.011 (0.008)	-0.040** (0.013)	0.004 (0.006)
Reluctance of office staff	0.011** (0.004)	-0.004 (0.004)	-0.001 (0.005)	0.008 (0.006)	0.014 (0.009)	0.005 (0.005)	0.046*** (0.011)	0.007 (0.004)
Recognition by UNO	0.000 (0.007)	-0.007 (0.006)	-0.007 (0.010)	-0.000 (0.011)	-0.023 (0.019)	0.013 (0.013)	0.025 (0.019)	0.006 (0.009)
Recognition by district officers	-0.005 (0.008)	-0.002 (0.009)	-0.021 (0.011)	-0.003 (0.011)	0.005 (0.017)	-0.006 (0.012)	-0.001 (0.020)	-0.010 (0.007)
<b>Officer's characteristics</b>								
Female (dummy)	0.007 (0.013)	0.032 (0.016)	0.006 (0.015)	-0.013 (0.020)	0.012 (0.031)	0.009 (0.019)	-0.001 (0.034)	0.003 (0.016)
Age	0.000 (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.002* (0.001)	0.002 (0.001)	-0.000 (0.001)	0.002 (0.001)	0.001 (0.001)
Masters or above (dummy)	-0.021 (0.019)	0.005 (0.020)	-0.028 (0.019)	-0.051 (0.026)	-0.026 (0.051)	-0.006 (0.026)	-0.020 (0.049)	-0.014 (0.022)
Log salary	-0.010 (0.012)	0.007 (0.016)	-0.019 (0.014)	0.030 (0.020)	-0.032 (0.027)	-0.010 (0.019)	-0.038 (0.028)	-0.009 (0.017)
<b>Office resources</b>								
Log annual budget	-0.001 (0.007)	0.022** (0.007)	-0.014 (0.010)	-0.008 (0.010)	0.003 (0.016)	-0.002 (0.010)	-0.009 (0.017)	-0.006 (0.008)
Number of telephone & fax	-0.008 (0.023)	-0.018 (0.028)	0.020 (0.027)	0.014 (0.040)	-0.083 (0.056)	0.010 (0.036)	0.006 (0.059)	0.008 (0.030)
Number of PC & printer	0.027 (0.022)	0.034 (0.029)	0.020 (0.030)	0.034 (0.028)	0.009 (0.049)	0.018 (0.031)	0.046 (0.053)	-0.025 (0.024)
Internet access (dummy)	-0.004 (0.012)	-0.029* (0.013)	-0.015 (0.018)	-0.017 (0.017)	0.035 (0.027)	-0.012 (0.018)	0.016 (0.026)	0.029* (0.013)
Number of shelf	-0.009 (0.010)	-0.023 (0.027)	-0.007 (0.013)	-0.006 (0.014)	0.032 (0.034)	-0.036 (0.025)	-0.011 (0.034)	0.005 (0.013)
Number of vehicle	0.004 (0.015)	0.004 (0.015)	-0.002 (0.026)	-0.001 (0.020)	0.010 (0.030)	0.003 (0.020)	0.010 (0.032)	-0.002 (0.015)
Number of office staff	0.004 (0.002)	-0.000 (0.002)	0.003 (0.003)	0.006* (0.003)	0.006 (0.004)	0.004 (0.003)	0.003 (0.005)	0.002 (0.002)
Average age of office staff	-0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	-0.000 (0.001)	-0.001 (0.002)	0.001 (0.002)	-0.002 (0.003)	-0.000 (0.001)
Constant	1.007*** (0.163)	0.550** (0.210)	1.241*** (0.191)	0.678** (0.215)	1.257** (0.394)	0.890*** (0.244)	1.428*** (0.418)	1.135*** (0.187)
N	1615	1615	1615	1615	1615	1615	1615	1615
R-sq	0.438	0.377	0.224	0.317	0.429	0.370	0.451	0.571

Note: Dependent variables are adoption rates of office management practices and response rate to administrative information. 14 activities of office management practices are aggregated into 6 categories and total index (for the details, see Table 1). Department, subdistrict, and survey team fixed effects are included but not reported. Standard errors clustered by subdistrict are in parentheses. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . UNO: *Upazila Nirbahi* Officers; NGO: non-governmental organization; PDCA: Plan-Do-Check-Act; TQM: Total Quality Management.

**Table 4 Correlates of Collaborative Management Practices (OLS)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All stakeholders	Own staff	UNO and District officer	Officers of other dept.	Local councils	NGO	Citizen
<b>Awareness of management concepts</b>							
Aware of PDCA, TQM, and Kaizen	3.173** (1.159)	0.092 (0.231)	0.663 (0.339)	0.833* (0.326)	0.821** (0.307)	0.243 (0.134)	0.373 (0.290)
<b>Officer's perception</b>							
Satisfaction	-0.273 (0.849)	-0.094 (0.211)	-0.044 (0.287)	-0.058 (0.229)	-0.064 (0.210)	-0.086 (0.109)	0.027 (0.219)
Motivation	0.577 (0.922)	-0.011 (0.175)	0.067 (0.280)	0.183 (0.257)	0.271 (0.232)	0.019 (0.092)	0.131 (0.186)
Confidence	-0.158 (0.414)	-0.066 (0.098)	-0.083 (0.135)	-0.013 (0.117)	0.003 (0.099)	0.065 (0.051)	-0.111 (0.110)
Leadership	0.899 (0.883)	-0.034 (0.238)	0.559 (0.315)	0.187 (0.233)	0.024 (0.196)	0.133 (0.077)	-0.044 (0.202)
Busyness	1.853 (0.960)	0.281 (0.176)	0.466 (0.278)	0.230 (0.246)	0.071 (0.166)	0.066 (0.051)	0.596** (0.225)
Needs for improvement	0.444 (0.776)	0.141 (0.167)	0.105 (0.223)	0.284 (0.180)	-0.121 (0.172)	0.019 (0.083)	0.064 (0.199)
Trust in office staff	0.844 (0.608)	0.013 (0.145)	0.143 (0.200)	0.398* (0.170)	0.216 (0.133)	-0.014 (0.061)	0.094 (0.163)
Reluctance of office staff	0.158 (0.448)	0.066 (0.079)	0.047 (0.140)	0.211 (0.126)	-0.003 (0.117)	-0.078 (0.049)	-0.011 (0.101)
Recognition by UNO	0.055 (0.798)	0.011 (0.125)	0.379 (0.242)	-0.035 (0.257)	-0.230 (0.224)	-0.019 (0.075)	0.027 (0.256)
Recognition by district officers	-0.710 (1.005)	0.090 (0.153)	-0.448 (0.303)	-0.123 (0.241)	0.018 (0.271)	-0.006 (0.087)	-0.239 (0.241)
<b>Officer's characteristics</b>							
Female (dummy)	0.377 (1.516)	-0.358 (0.318)	-0.010 (0.485)	0.239 (0.415)	0.459 (0.388)	-0.091 (0.219)	0.191 (0.323)
Age	-0.068 (0.059)	0.001 (0.011)	-0.037 (0.020)	-0.016 (0.015)	0.003 (0.016)	0.014 (0.010)	-0.028 (0.016)
Masters or above (dummy)	-3.898 (2.699)	-0.047 (0.399)	-1.256 (0.797)	-1.179* (0.576)	-0.673 (0.635)	-0.259 (0.246)	-0.350 (0.685)
Log salary	0.769 (1.276)	0.172 (0.261)	0.358 (0.399)	0.586 (0.371)	-0.170 (0.329)	-0.194 (0.154)	0.086 (0.308)
<b>Office resources</b>							
Log annual budget	0.496 (0.577)	0.032 (0.104)	0.091 (0.197)	-0.078 (0.210)	0.313 (0.248)	-0.025 (0.056)	0.144 (0.126)
Number of telephone & fax	-2.803 (2.568)	-0.296 (0.501)	-1.282 (1.078)	-0.605 (0.660)	-0.003 (0.427)	-0.051 (0.237)	-0.273 (0.675)
Number of PC & printer	0.632 (2.558)	-0.206 (0.420)	0.335 (0.784)	1.152 (1.146)	0.421 (0.837)	0.083 (0.325)	-0.903 (0.573)
Internet access (dummy)	2.782* (1.356)	0.261 (0.266)	0.566 (0.424)	0.583 (0.365)	0.325 (0.309)	0.112 (0.147)	0.798* (0.336)
Number of shelf	0.644 (1.147)	-0.054 (0.296)	0.030 (0.335)	0.575 (0.570)	0.035 (0.314)	-0.141 (0.118)	0.086 (0.304)
Number of vehicle	-4.109* (1.655)	-0.670* (0.305)	-0.897 (0.505)	-1.174* (0.480)	-0.601 (0.385)	0.126 (0.155)	-0.668 (0.433)
Number of office staff	0.231 (0.197)	-0.013 (0.048)	0.005 (0.061)	0.102 (0.053)	0.110* (0.047)	0.024 (0.022)	0.015 (0.053)
Average age of office staff	0.097 (0.111)	-0.026 (0.019)	0.039 (0.036)	0.014 (0.032)	0.006 (0.029)	0.010 (0.012)	0.047 (0.027)
Constant	14.466 (18.681)	5.373 (3.107)	1.624 (5.406)	0.132 (5.523)	1.157 (4.950)	3.086 (1.871)	2.464 (4.248)
N	1615	1615	1615	1615	1615	1615	1615
R-sq	0.551	0.344	0.467	0.476	0.377	0.286	0.516

Note: Dependent variables are days spent for collaborative management practices (days communicated with stakeholders during the past 30 days). Department, subdistrict, and survey team fixed effects are included but not reported. Standard errors clustered by subdistrict are in parentheses. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . UNO: *Upazila Nirbahi* Officers; NGO: non-governmental organization; PDCA: Plan-Do-Check-Act; TQM: Total Quality Management.

**Table 5 Incremental Addition of Independent Variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Base (Uncond- itional)	Add Department FE	Add District FE	Replace with Subdistrict FE	Add Survey Team FE	Add Officer's Perception	Add Officer's Character.	Add Office Resources
<b>Panel A: Office management practices (all practices)</b>								
Aware of PDCA, TQM, and Kaizen	0.047*** (0.012)	0.046*** (0.012)	0.035** (0.012)	0.033* (0.013)	0.036** (0.012)	0.037** (0.012)	0.037** (0.012)	0.038** (0.012)
N	1615	1615	1615	1615	1615	1615	1615	1615
R-sq	0.014	0.022	0.319	0.410	0.423	0.434	0.435	0.438
<b>Panel B: Response rate</b>								
Aware of PDCA, TQM, and Kaizen	0.036** (0.013)	0.017 (0.011)	0.013 (0.010)	0.017 (0.012)	0.015 (0.012)	0.014 (0.012)	0.015 (0.012)	0.016 (0.012)
N	1615	1615	1615	1615	1615	1615	1615	1615
R-sq	0.005	0.338	0.505	0.556	0.563	0.567	0.568	0.571
<b>Panel C: Collaborative management practices (all stakeholders)</b>								
Aware of PDCA, TQM, and Kaizen	-0.130 (1.312)	-0.397 (1.298)	3.590*** (1.003)	3.718** (1.116)	3.443** (1.172)	3.185** (1.198)	3.160** (1.187)	3.173** (1.159)
N	1615	1615	1615	1615	1615	1615	1615	1615
R-sq	0.000	0.030	0.462	0.530	0.533	0.543	0.545	0.551

Note: This table investigates the sensitivity to the set of independent variables included in the regression. The independent variables are added step by step from column (1) to column (7) cumulatively, except for column (4) where district fixed effects added in column (3) are replaced by subdistrict fixed effects. The result with full independent variables (column 7) corresponds to column (1) (8) of Table 3, and column (1) of Table 4 4 (reported for reference). Standard errors clustered by subdistrict are in parentheses. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . UNO: *Upazila Nirbahi* Officers; NGO: non-governmental organization; PDCA: Plan-Do-Check-Act; TQM: Total Quality Management.



**Table 6 Incremental Addition of Independent Variables Denoting Collaboration with Stakeholders**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All stakeholders	Own staff	UNO and District officer	Officers of other dept.	Local councils	NGO	Citizen
<b>Panel A: Unconditional</b>							
Aware of PDCA, TQM, and Kaizen	−0.130 (1.312)	−0.080 (0.192)	−0.267 (0.352)	0.130 (0.330)	0.365 (0.314)	−0.023 (0.112)	−0.277 (0.308)
N	1615	1615	1615	1615	1615	1615	1615
R-sq	0.000	0.000	0.000	0.000	0.001	0.000	0.001
<b>Panel B: Conditional on department and district FE</b>							
Aware of PDCA, TQM, and Kaizen	3.590*** (1.003)	0.112 (0.188)	0.876** (0.295)	0.970*** (0.280)	0.841** (0.278)	0.181 (0.113)	0.454* (0.226)
N	1615	1615	1615	1615	1615	1615	1615
R-sq	0.462	0.260	0.368	0.368	0.273	0.180	0.431

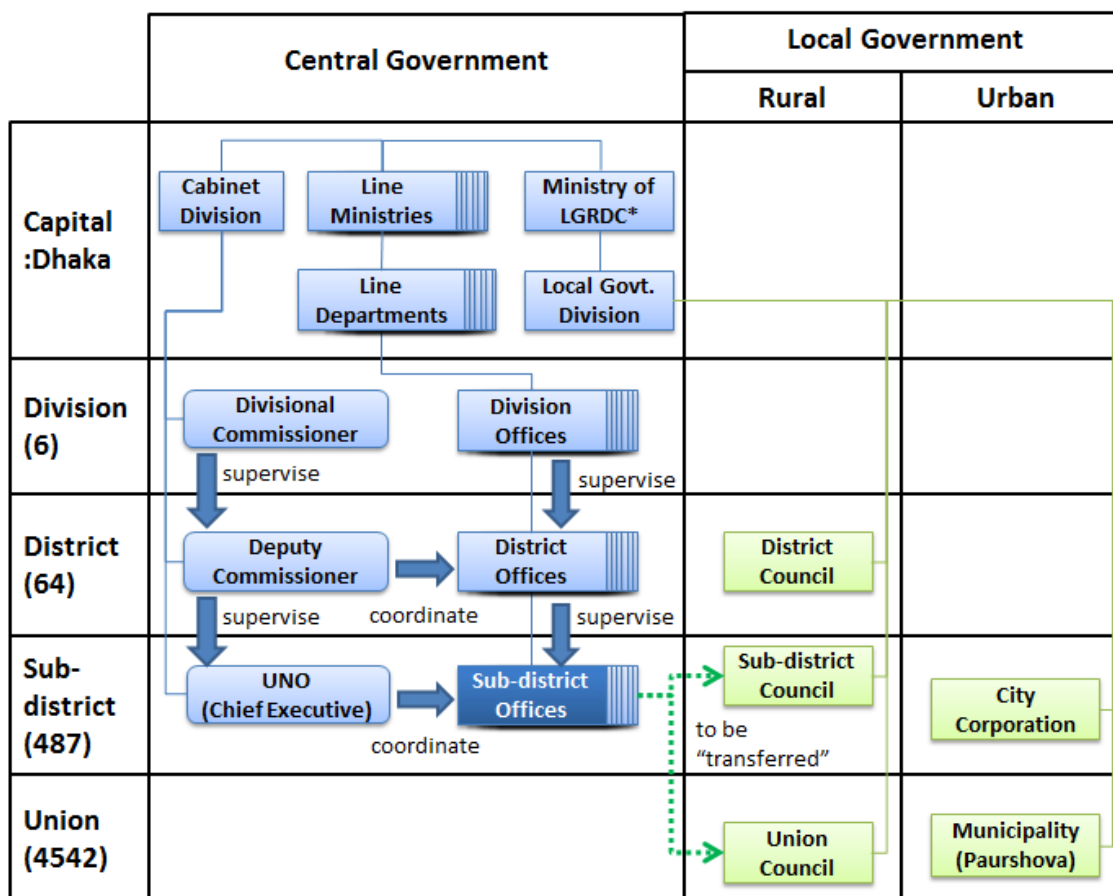
Note: Panel A reports unconditional OLS estimates. Panel B reports OLS estimates conditional on department and district fixed effects. Standard errors clustered by subdistrict are in parentheses. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ . UNO: *Upazila Nirbahi* Officers; NGO: non-governmental organization; PDCA: Plan-Do-Check-Act; TQM: Total Quality Management; OLS: Ordinary least squares.

**Table 7. Robustness: Changing the Definition of “Awareness”**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Office management practices							Response rate	Collaborative management practices						
	All practices	Cleaning	Targeting	Planning	Standard-ization	Monitor-ing	Improve-ment		All stake-holders	Own staff	UNO and District officer	Officers of other dept.	Local councils	NGO	Citizen
Panel A: Awareness = PDCA															
Aware of PDCA	0.022*	−0.014	0.026	0.025	0.042	0.020	0.033	0.015	2.055	−0.340	0.372	0.550	0.748**	0.399**	0.263
	(0.011)	(0.010)	(0.015)	(0.015)	(0.024)	(0.015)	(0.027)	(0.011)	(1.156)	(0.263)	(0.382)	(0.325)	(0.264)	(0.123)	(0.254)
R-sq	0.435	0.378	0.225	0.313	0.427	0.369	0.450	0.571	0.549	0.346	0.466	0.475	0.377	0.290	0.516
Panel B: Awareness = PDCA and TQM															
Aware of PDCA & TQM	0.028*	−0.009	0.036*	0.047**	0.055*	0.023	0.018	0.010	1.017	−0.126	0.103	0.254	0.473	0.238	0.046
	(0.011)	(0.009)	(0.014)	(0.015)	(0.025)	(0.017)	(0.026)	(0.010)	(1.072)	(0.210)	(0.343)	(0.281)	(0.274)	(0.126)	(0.255)
R-sq	0.437	0.378	0.228	0.318	0.429	0.369	0.449	0.570	0.548	0.345	0.465	0.474	0.375	0.286	0.516
Panel C: Awareness = PDCA and TQM and Kaizen (Main result)															
Aware of PDCA & TQM & Kaizen	0.038**	−0.003	0.022	0.047**	0.060*	0.033	0.065*	0.016	3.173**	0.092	0.663	0.833*	0.821**	0.243	0.373
	(0.012)	(0.011)	(0.014)	(0.017)	(0.027)	(0.019)	(0.029)	(0.012)	(1.159)	(0.231)	(0.339)	(0.326)	(0.307)	(0.134)	(0.290)
R-sq	0.438	0.377	0.224	0.317	0.429	0.370	0.451	0.571	0.551	0.344	0.467	0.476	0.377	0.286	0.516

Note: This table investigates the sensitivity to change in definition of the main explanatory variable: “awareness” of key management concepts. N = 1,615 for all regressions. Panel A employs the loosest definition, taking unity if the officer is aware (“know something” or “know well”) of PDCA. Panel B tightens the definition to being aware of both PDCA and TQM. Panel C employs the strictest definition, requiring awareness of PDCA, TQM, and *Kaizen*, which corresponds to the main results in Tables 3 and 4 (reported for reference). All independent variables in Tables 3 and 4 are included but not reported. Standard errors clustered by subdistrict are in parentheses. \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05. UNO: *Upazila Nirbahi* Officers; NGO: non-governmental organization; PDCA: Plan-Do-Check-Act; TQM: Total Quality Management.

## Figures



**Figure 1. Structure of Bangladeshi Public Administration**

Note: \*Ministry of Local Government, Rural Development, and Cooperatives

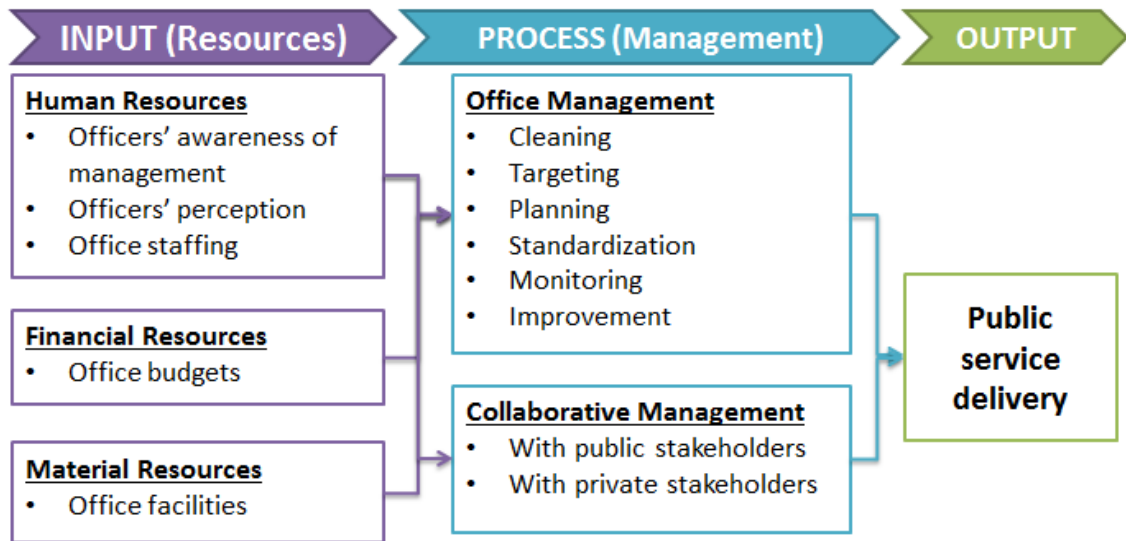
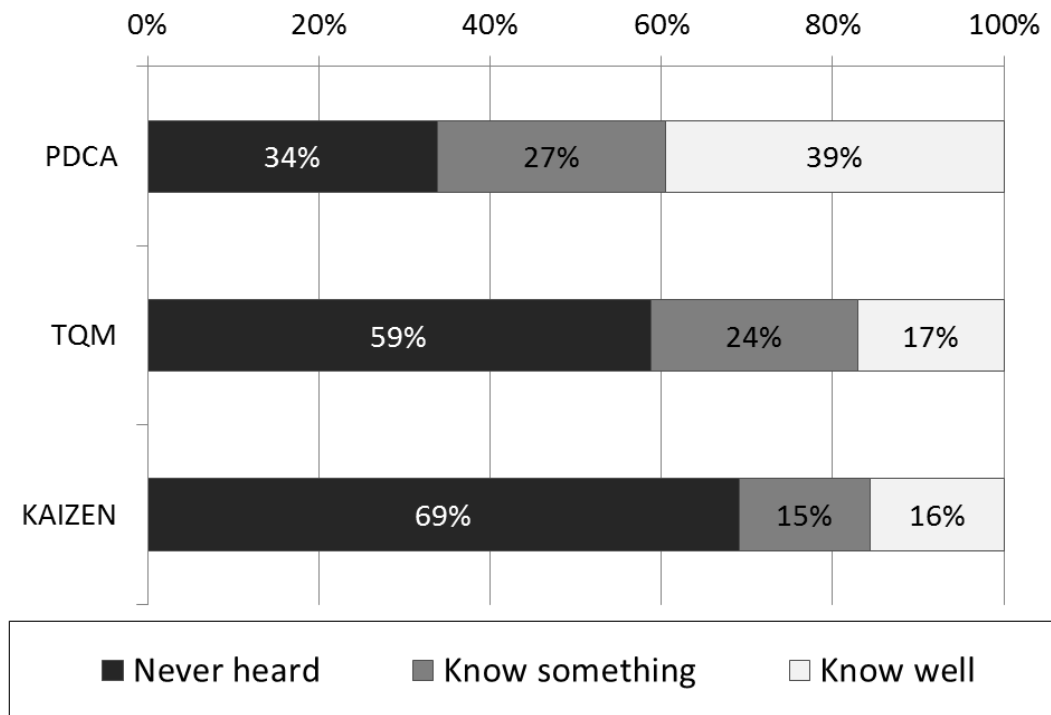
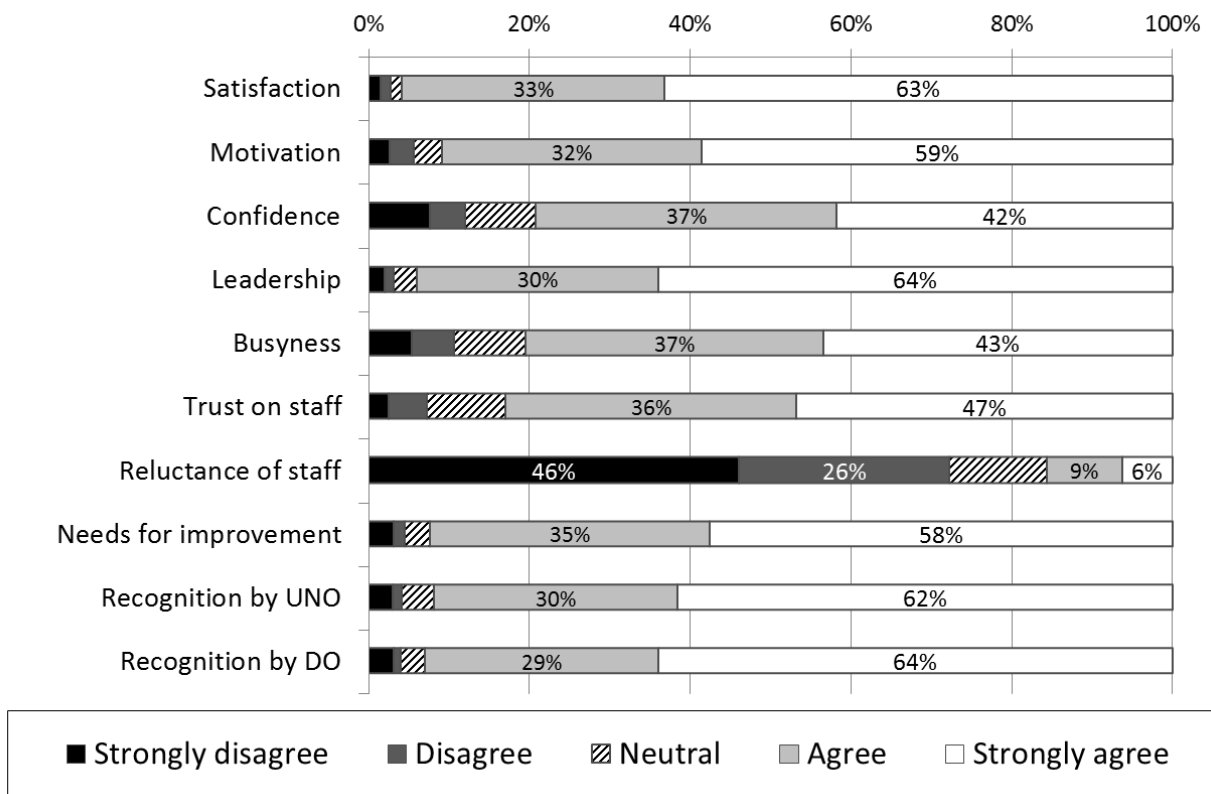


Figure 2. Analytical Framework: Input–Process–Output Diagram of Public Service Delivery



**Figure 3 Awareness of Key Management Concepts**

Note: n = 1,615.



**Figure 4 Perceptions of Subdistrict Officers**

Note: n = 1,615.

## Appendix

**Table A1. Main Activities of Targeted Departments**

No.	Department/ Directorate	Main activities (selected)	Budget (FY2014, taka in 1,000)
1	Department of Livestock	<ul style="list-style-type: none"> <li>• Provide treatment services to livestock and poultry</li> <li>• Provide medical services to livestock and poultry</li> <li>• Produce vaccines and impart training for the prevention and control of diseases of poultry and livestock</li> <li>• Supply chickens to small farmers at affordable prices to increase commercial production of broiler chickens</li> </ul>	1,693,622
2	Department of Fisheries	<ul style="list-style-type: none"> <li>• Provide training on modern pisciculture technology and management of fish resources</li> <li>• Produce quality fish eggs and fingerlings</li> <li>• Set up demonstrative fish farm for the expansion of pisciculture</li> <li>• Expand fish farming in the flood plains and stagnant water bodies</li> </ul>	3,596,579
3	Directorate of Food	<ul style="list-style-type: none"> <li>• Procure domestic food-grains (rice and wheat)</li> <li>• Import food-grains (rice and wheat) through own resources and foreign assistance</li> <li>• Construct modern and standard new food godowns and infrastructure</li> <li>• Sell and distribute food-grains (rice and wheat) under Open Market Sales (OMS)/Fair Price Programme</li> </ul>	4,205,569
4	Department of Social Services	<ul style="list-style-type: none"> <li>• Provide old age allowance</li> <li>• Provide allowance for widows, deserted wives, and distressed women</li> <li>• Provide allowance for insolvent persons with disabilities and educational stipends to students with disabilities</li> <li>• Providing interest free micro-credit</li> </ul>	851,100
5	Department of Women Affairs	<ul style="list-style-type: none"> <li>• Provide technical, vocational, and income-generating training, equipment/materials for women</li> <li>• Provide micro-credit for the self-employment of women</li> <li>• Form and register voluntary social organizations and provide grants or loans to them</li> <li>• Provide food assistance to vulnerable women under the VGD (vulnerable group development) Program</li> </ul>	1,478,449
6	Department of Youth Development	<ul style="list-style-type: none"> <li>• Conduct training courses for youth suitable for domestic and overseas employment</li> <li>• Provide micro-credit to trained unemployed youth to create self-employment/ employment</li> <li>• Impart training to unemployed educated youth and create temporary employment opportunities under the National Service Program</li> </ul>	3,255,170
7	Department of Secondary and Higher Education	<ul style="list-style-type: none"> <li>• Provide training to teachers and members of the School Management Committee</li> <li>• Conduct all public examinations and publish results in time</li> <li>• Provide stipends and scholarships to eligible female and male students at junior secondary and secondary level</li> <li>• Provide stipends and scholarships to female students at higher secondary and degree level</li> </ul>	20,550,224
8	Department of Public Health Engineering	<ul style="list-style-type: none"> <li>• Construct safe water sources</li> <li>• Supply water through pipelines in urban areas</li> <li>• Construct and maintain community sanitary latrines</li> </ul>	6,186,043

Note: Description of main activities and budgets are from the Medium-Term Budgetary Framework (MTBF) published by the Ministry of Finance.

**Table A2 Adoption Rate of 14 Office Management Practices**

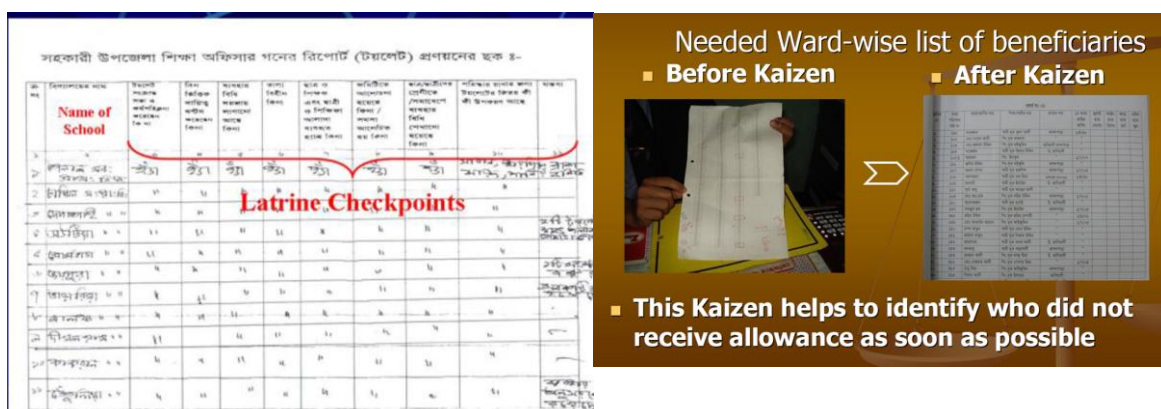
Category	Office management practices	Num. of total observation	Num. of obs. for answer = “Yes”	% of obs. for Answer = “Yes”
(i) Cleaning	(1) Cleaned office rooms regularly	1,615	1,545	95.7
	(2) Filed office documents and sorted	1,615	1,540	95.4
(ii) Targeting	(3) Set measurable targets	1,615	1,536	95.1
	(4) Discussed on targets with staff	1,615	1,535	95.0
(iii) Planning	(5) Planned time schedules	1,615	1,490	92.3
	(6) Planned personnel assignment	1,615	1,497	92.7
	(7) Planned budget allocation	1,615	1,214	75.2
(iv) Standardization	(8) Employed a guideline or manual	1,615	1,035	64.1
	(9) Employed lists of tasks	1,615	1,206	74.7
(v) Monitoring	(10) Had regular meetings	1,615	1,296	80.2
	(11) Reported progress	1,615	1,450	89.8
	(12) Communicated with citizens	1,615	1,424	88.2
(vi) Improvement	(13) Proposed a new plan or method	1,615	1,083	67.1
	(14) Modified delivery of services	1,615	925	57.3





(a) Cleaning

(b) Standardization



(c) Standardization and Monitoring

(d) Improvement and Monitoring

**Figure A1. Examples of Management Practices**

Note: (a) A subdistrict office of the Directorate of Land Record and Survey cleaned the storage cabinet and sorted land record to reduce the time needed to provide services of land records. (b-c) A subdistrict office of the Directorate of Primary Education made a checklist for primary schools' toilets so that students can use clean toilets with standardized sanitary conditions. (d) A subdistrict office of the Department of Social Services made a new detailed form for old-age allowances to identify people who did not receive allowances and to contact them quickly.