

**Internship Report on**

**“Implementing Automation by Digitization of Information Systems**

**At Dhaka WASA”**

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**Scanned Copy of Internship certificate**

**Acknowledgment**

**Executive Summary**

(In three separate pages will be completed before draft final report)

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*CHAPTER 01 – INTRODUCTION*



Water (chemical formula H2O) is an inorganic, transparent, tasteless, odorless, and nearly colorless chemical substance, which is the main constituent of Earth's hydrosphere and the fluids of all known living organisms (in which it acts as a solvent). It is vital for all known forms of life, even though it provides no calories or organic nutrients. "Water" is the name of the liquid state of H2O at standard conditions for temperature and pressure.

Water plays an important role in our economy. Humans and modern civilization and also city life cannot sustain without clean water and sanitation. The size of human settlements are largely dependent on nearby available water. Agriculture, Fishing and Poultry needs water and sewage system. Water is an excellent solvent for a wide variety of substances both mineral and organic; as such it is widely used in industrial processes and in cooking and washing. Oil/Natural gas/Minerals production process, Metal, Paper, Garments, Leather products or other manufactured products required water. Large quantities of water, ice, and steam are used for cooling and heating, in industry and homes.

Water Resources are seas, rivers, canals, lakes, springs, rain, underground water wells and glaciers etc. Water occurs as both "stocks" and "flows". Water can be stored as lakes, water vapor, groundwater or aquifers, and ice and snow. Of the total volume of global freshwater, an estimated 69 percent is stored in glaciers and permanent snow cover; 30 percent is in groundwater; and the remaining 1 percent in lakes, rivers and the atmosphere.

Water supply and distribution network system and Sewer system development, operation, maintenance is the most important public service for well-being of the city duelers. Water Purification by filtration and disinfection, if required- is carried out at water treatment plants. Water from deep water wells does not need purification ant directly pumped into supply network.

Water resource management, clean drinking – water production, Potable Water Distribution and Sewage or Waste-water management, Customer services, Billing, Revenue Collection, Audit and Accounting are the main activities of Water Supply and Sewerage Authority.

Currently I have the opportunity to work as an engineer at Dhaka WASA at Planning & Design (Electrical & Mechanical) division. Engineers at Dhaka WASA are related to procurement of goods and services for - operation, maintenance, planning development / project works, quality assurence and also providing services to the customers.

**1.1Background / Origin of the report:**

This report is a partial requirement of the Internship program of MBA program of – Department of Accounting & Information Systems, Faculty of Business Studies, University of Dhaka. The main purpose of internship is to get the student exposed to the job world of the business managers. Being an employee & intern, the main challenge was to translate the real life experience into theoretical concept and write a report.

The internship program and the report have following purposes:

* To get and organize detail knowledge on business processes of the organization.
* To experience the real world business activities.
* To compare the real scenario with the lessons learned in class rooms of University of Dhaka.
* To fulfill the requirement of MBA program.

This report is the result of three months long internship program conducted in Dhaka WASA and is prepared as a requirement for the completion of the MBA program of University. As a result I need to submit this report based on the **“Implementing Automation of Business Processes by Digitization of Information Systems at Dhaka WASA”**. This report also includes writing on the overview of the organization, the products and services of Dhaka WASA, and also what factors they consider while selecting automation for different purposes.

**1.2 Objective of the report:**

The objective of the report can be viewed in two forms:

* General objective
* Specific objective

General Objective: The internship report is prepared primarily to fulfill the Masters of Business Administration (M.B.A) degree requirement under the Faculty of Business Studies, University of Dhaka.

Specific Objective: More specifically, this study entails the following aspects:

* To give an overview of Dhaka WASA.
* To understand and analyze the business process of Dhaka WASA.
* To identify the strategies and policies for implementing automation into all type of management process.
* To find out bottleneck of automation process with effective solutions to overcome the limitations.
* As a case study - try to take a deep look into the automation and already automated processes of Accounting and Billing Departments.
* To make some recommendations regarding implementation of automation effectively and efficiently.

**1.3 Significance of the report:**

Other than pointing out the key factors for Automation of Business process to the management, it will also be useful to employees, management practitioners, automation industry and the society as a whole.

Employees can find out in which direction the business process & management is going and based on the organizational environment what should be their future preparations. Management practitioners can gain important insights regarding the areas for improvement in similar sectors. Automation industry and Technology-vendors/bidders can also benefit from the outcomes of this study by getting an indication of where to focus resources and efforts for business opportunities. Finally, the society at large will benefit from improved customer services, if the findings help improve overall atmosphere of the organization.

**1.4 Methodology of the report:**

**1.4.1 Framework of the report:**

The whole report has been arranged in nine specific parts. Part one named as Introduction, which includes the origin, objectives, significance and methodology of the report. Part two named as Organization Overview, which includes the description of the overall organization of Dhaka WASA. Part three named as Job experience which includes my job responsibility and activities in the organization as employee for past ten years. Part four points out key areas of automation. Part five discusses about. Part six mentions the digitized processes and services. Part seven includes case study of automated AIS and billing. Part eight includes recommendation and conclusion and Part nine is Appendix.

**1.4.2 Target population**

The target populations for the study are –

* Internal employees.
* Vendors of the organization.
* Consumers
* Key executives of Dhaka WASA.
* Government Regulators
* International Agencies

**1.4.3 Study Area**

The study will be conducted within the organization to study the automation process of Dhaka WASA.

**1.4.4 Data Sources**

For the information of the report mainly both type of internal and external - primary, secondary and tertiary sources of data have been collected. For accurate study we have to follow some rules & regulations. The study materials were collected from these sources:

**Primary sources**:

Data which is considered as first-hand information collected by a surveyor, investigator, etc. is defined as Primary Data. The sources from which such data is collected is termed as the primary source of data collection for the concerned information. Primary sources of data consist various data collected by-

1. Analysis of Practical work, Job responsibilities.
2. Face to face conversation with the co-workers and informal interview with the employees of Dhaka WASA.
3. Direct observations of DWASA activities- Zonal office works, Project works, Services to Customers.
4. Interview with Customers, Vendors & Consultants.

**Secondary sources:** Data that has already been collected, analyzed, published and has undergone statistical treatment can be defined as Secondary data. Such type of data is tailored from primary data sources.Secondary sources including

1. Files & folders in work computers have been used for this purpose. Digital copies of file notes, survey reports, estimates, drawings, contracts etc.
2. Old project files, letters, papers and old work documents, design and drawings printed on paper.
3. Official letters, notices, circulars, organization reports and publications collected & maintained by office or record section.
4. Dhaka WASA information from the official websites.
5. Internal Study report, Masterplan on Dhaka WASA automation DWASA central SCADA committee.
6. Presentation materials and training manuals from DWASA training center and trainers.

**External sources:** Some external sources (Some are also known tertiary source) were also used for information also

1. Various report and documents published by government units or development partners.
2. Newspapers & news websites.
3. Various Water Utility related Websites.
4. Automation guidelines and user manuals of international companies.
5. External Research or Study reports on WASA.
6. Textbooks.

**1.5 Limitation of the study:**

While doing this project I had to face some limitations. These are as follows-

* To perform employee survey involved in Accounting and Revenue/Billing Departments became very hard because I was not directly involved with the Accounting and Revenue/Billing Departments team; rather I worked with engineering team.
* Some employees were not willing to co-operate with external study.
* All the Information is not easily accessible or not permitted to disclose according to the organization policy, rules and regulations had been followed on the disclosure of confidential information.
* It was also difficult to collect information from different vendors of automation works.
* I also faced problem in communicating with my University Internship supervisor, Employees, Management members and Vendors of Dhaka WASA- face to face, due to COVID-19 situation.

Dhaka WASA launches online billing system.

**Staff Correspondent**

Tue Feb 19, 2008 12:00 AM Last update on: Tue Feb 19, 2008 12:00 AM

Dhaka Water Supply and Sewerage Authority (WASA) yesterday officially launched its online billing system, with a view to reducing customer harassment and ensuring transparency in the billing process.  
If the online billing system is implemented properly, the customers will be able to access their monthly water bills over the internet and file complaints if there is any discrepancy in their bills, said Iqbal.  
Since about 80 percent of the city dwellers do not have internet access, WASA will need to explore ways how to draw the city dwellers into using the online service to make the online billing system a success, he also advised.  
Regarding the preservation of natural water bodies in the city, Adviser Iqbal said the government has decided to preserve the water body behind Sonargaon Hotel upto Rampura Bridge by demolishing 11 structures instead of 300 structures, as proposed by Rajdhani Unnayan Kartripakkha (Rajuk) earlier.  
Since sewage from Baridhara and Gulshan areas is being dumped into Gulshan lake due to the lack any proper sewer system in the area, the adviser urged the WASA authorities to prepare a plan for setting up a sewage treatment plant for these areas.  
Adviser Iqbal said in order to protect the Turag River from pollution during Ijtema, the government has already taken a Tk 10 crore project for building a multi-storied toilet facility on the Ijtema ground.  
Dhaka WASA now serves about 2 lakh customers. It earned Tk 271 crore in revenue in fiscal year 2006-'07 and it earned another Tk 25 crore from other sectors, he said.  
He urged all to come forward and turn Dhaka WASA into a corruption-free, transparent and profitable service provider.  
Dhaka WASA, said the Dhaka WASA website, [www.dwasa.org.bd](http://www.dwasa.org.bd/), contains contact details of high officials of Dhaka WASA, tender information, forms and guidelines for water and sewerage connection, customer billing information, download and print option for water and sewerage bill of any specific month, option to lodge a complaint and view the action taken by Dhaka WASA following a particular complaint.  
After the banks that collect WASA bills are integrated with the online billing system of Dhaka WASA, customers will be able to pay their bills online. Besides, customers will also be able to lodge their complaints directly to the top management of Dhaka WASA through this site.

Dhaka WASA (Water Supply & Sewerage Authority) was established in the year 1963 as an independent organization, under the East Pakistan ordinance XIX. In 1989, the drainage system of Dhaka city also handed over to DWASA from DPHE. Again in the year 1990, Water, Drainage & Sanitation service of Narayangonj city handed over to DWASA. Based on the tremendous geographical expansion and population growth over the last two decades, DWASA's activities has been reorganized by Dhaka WASA Act, 1996 and according to this act, DWASA it is operating as a service oriented commercial organization (and according to this act, DWASA is now operating as an autonomous body with corporate culture in its management & operation). Now, the jurisdiction of Dhaka WASA is more than 360 Sq. km and the population is about 12.5 million.

Vision of Dhaka WASA: To be the best water utility in the public sector of Asia-with commitment towards people and environment

Vision of Dhaka WASA

To be the `best water utility’ provider in the public sector of Southeast Asia - with ensuring an environment-friendly, sustainable and pro-people water supply management.

Mission

• To reduce the dependency from ground water to surface water by implementing ongoing mega surface water treatment plant projects. • To practice a corporate culture in its management and operation. • To ensure a high level of transparency and accountability in all its service and activities. • To improve the efficiency in all DWASA activities and; • To constantly ensure better customers service.

Responsibilities of Dhaka WASA

❑ Construction, operation, development and maintenance of necessary infrastructure (deep tube well, water treatment plant) for supplying safe water to residential, industrial and commercial customers. ❑ Construction, development and maintenance of storm sewer lines to remove water congestion in the city. ❑ Construction, development and maintenance of sewage treatment and sewerage system.

Introduction:

Dhaka wasa development Program has been formulated in line with the GoB’s sector policies and strategies, particularly the Sector development Program for water supply and sanitation spectrum of the country.

***Preface:***

Bangladesh is a third world Least Developed Country (LDC). Urbanization is relatively a new process in the third world where it is even more rapid than population growth and where the agglomerations are growing most rapidly. The negative impacts of urbanization include the loss of agricultural land coupled with problems of urban food supply, the destruction of habitats and urban diseconomies.

Presently Bangladesh has six city corporation and 309 municipalities those are having rapid urbanization. Urban administration though a relatively new concept but got a high significance here in Bangladesh. Dhaka as the capital of the country is badly in need of a good administration system. Various organizations like RAJUK, WASA, DPHE, UDD, RHD, HSD etc. are performing these duties.

Water supply and sanitation is the most fundamental demand of the dwellers of Dhaka city. The Dhaka Water Supply and Sewerage Authority (DWASA) is providing these important services. Its main functions include – supply of water, disposal of sewage, storm water drainage and solid waste management. Dhaka WASA has a 13 member’s board for undertaking policies and decisions. The organization is well performing as both service and commercial organization.

Dhaka WASA was created in 1963 as a public utility under the Ministry of Local Government, Rural Development and Co-operative, in charge of providing water supply and sewerage services in the Metropolitan area of Dhaka. In 1996 the WASA Act was amended in order to grant more autonomy to DWASA by reconstituting and strengthening the Board, introducing commercial regulations and reducing government role. The Act clearly defines the mandate of the Board and Managing Director of DWASA, their competencies and responsibilities in the matters related to procurement, budget approval, recruitment, staff promotion and definition of salaries and benefits.

In this paper we have tried to produce an overall scenario and setup of Dhaka Water Supply and Sewerage Authority (DWASA) as an urban development organization. We have collected real data and discussed on its establishment, background, administration, functions, service areas and services, personnel management, operation and maintenance, financial management, research planning and development, problems and some recommendation for solution. We believe that, this paper will demonstrate a complete overview of Dhaka WASA as an organization.

***Urban Administration definition:***

Urban Administration means a programme of the Govt to administer the Urban Bodies like the Municipality, Municipal Corporations and the City Corporation of the state. The aforesaid bodies are managed by their respective council members, elected by the people of that locality, coming under the bodies, through election. But the administration is controlled through the Dept of Urban Administration of the State Govt.

***Urban Organizations in Bangladesh:***

Bangladesh is relatively a low urbanized country than other Asian countries. However, the country experienced a remarkable rate of urban growth both in terms of urban population and urban centers immediately after its independence. Many organization and institution were established time to time to speed up the urbanization in Bangladesh and ensure proper administration. Here we shortly introduced some urban organizations of Bangladesh.

***RAJUK:*** The Rajdhani Unnayan Kartripakkha (RAJUK) works under the authority of Ministry of Housing and Public Works previously known as DIT. It is the leading construction actor in development process of Dhaka. Its main activities include construction of roads, box-culverts, bridges and houses. It is governed by chairman and 5 other members.

***DPHE:*** Department of Public Health and Engineering (DPHE) is a national agency under the Ministry of Local Government, Rural Development and Co-operative is entrusted to provide safe water and supply, environmental sanitation and hygiene education as mandated throughout the country except three cities namely Dhaka, Chittagong and Narayanganj.

***UDD:*** Urban Development Directory (UDD) is one of the sustainable urban development authorities that belong to the Ministry of Housing and Public Works. Its vision is to increase quality and standard of life of people through planned development of infrastructure. Main functions are to prepare regional plan, master plan and detailed layout.

***RHD:*** Roads and Highways Department established in 1962 belong to the Ministry of Communication. RHD is responsible for the construction, maintenance and management of the major National, Regional and Zilla road and bridge network of over 21000 km road length and some 18,258 bridges.

***KDA:***Khulna Development Authority (KDA) is an autonomous body works under the Ministry of Housing and Public Works. Its main functions are urban planning, urban development and urban control. It undertakes and implements master plan for Khulna with the help of Government.

***PWD:*** Public Works Department (PWD) is an organization under the Ministry of Housing and Public Works. It is the primary construction agency of the government of Bangladesh. It has almost 19000 employees including engineers. The administration is headed by a chief engineer and supported by several other engineers.

***WASA:*** Water Supply and Sewerage Authority (WASA) in an organization that belong to the Ministry of Local Government, Rural Development and Co-operative is responsible for water supply, sanitation and drainage facility to the town people. WASAs are guided by “WASA Act, 1996. Currently only two cities have WASA these are Dhaka and Chittagong.

***Dhaka*** ***Water Supply and Sewerage Authority***

***Background of Dhaka WASA:***

Dhaka mega city was established in 1600 during the reign of Mughols. The city is formed covering the river of Buriganga. The then internal canals and rivers of Dhaka were – Begunbari canal, Shegunbagicha canal, kalyanpur canal, Dholaikhal canal, Deb-Dholaikhal canal, BurigangaRiver, Turag, Balu, and ShitolokkhaRiver. These rivers were the basic water storage, water way and means of storing rain water.

Basically, pure drinking water supply in Dhaka city started in 1874 by establishing Chadnighat Water Filtering Plant under patronization of Nawab Khaja Abdul Gani. It was in small scale. Later the water supply and sewerage service in Dhaka started in large scale. After the division in 1947 government established Department of Public Health and Engineering (DPHE) to ensure water, sanitation and rehabilitation service in town and rural areas.

By introducing the town Improvement Act 1953” the planning development of Dhaka megacity started. In 1959 the first “Mega Plan” of Dhaka megacity was formulated. In the plan population was estimated to 5.75 lacs. Since the independence of the country the population of Dhaka city started to increase rapidly. Necessary materials for people living in Dhaka comprising – dwellings, electricity, water supply, communication system, were supposed to be extended and developed. Under this situation the “Mega Plan” of 1959 became ineffective. In 1996 RAJUK formulated the 2nd “Mega Plan” for Dhaka Metropolitan city. In this plan the population determined to 10 million and area to 590 square mile. The present population of Dhaka metropolitan city is 12 million.

In 1963, Dhaka WASA was established as a unique organization for water supply and sewerage of Dhaka city. Then the activities of Department of Public Health and Engineering (DPHE) transferred to Dhaka WASA. In 1989, the storm water reservation function of DPHE with all its human resource transferred to Dhaka WASA. Since 1 July, 1990 the function of water supply and sewerage of Narayangonj city transferred to Dhaka WASA. Presently the Dhaka WASA is performing key responsibilities of water supply, sewerage and storm water reservation of Dhaka metropolitan city. At present Dhaka WASA is rightly operating as a service oriented and commercial organization.

***Legal Framework:***

Under the order No. 19 of the East Pakistan Ordinance No. XIX of 1963 Dhaka WASA was established to ensure water supply and sewerage in Dhaka city. Later in 1996, Dhaka WASA Act (Act No. 6 of 1996, 17 August 1996) was promulgated to formulate and implement the rule of corporate management.

***Mission*** ***and Vision:***

Improving the standard of living of city people by developing safe and pure drinking water supply, sanitation and drainage system is the main objective of Dhaka WASA. The present main duties of Dhaka WASA are –

Construction, operation, development and maintenance of necessary infrastructure to filter, pick up, store and supply pure drinking water to general people. industry and business institution of Dhaka city.

Construction, development and maintenance of wastage water filtering and drainage system.

Construction, development and maintenance of storm sewer to remove metropolitan water blockage.

***Dhaka*** ***WASA Organizational Milestone:***

As an autonomous body Dhaka WASA started its journey with the mandate to effect (EP Ordinance NO. XIX, 1963)

Supply of water

Disposal of sewage

Storm water drainage and

Solid waste management

The organization however, continued to provide services spanning water supply, treatment and disposal of sewage since inception.

***Dhaka*** ***WASA: The Organization & Mandate:***

* 1989: Storm Water Drainage was transferred to Dhaka WASA from DPHE
* 1990: Narayanganj Water Supply Transferred to Dhaka WASA
* 1996: Dhaka WASA reorganized to introduce Corporate Management under WASA Act’96
* Mandate: To ensure Water Supply, Treatment and Disposal of Wastewater (sewage) and Storm Water Drainage.

***Major River System and Water Sources in Bangladesh:***

Bangladesh is a country with full of rivers, canals and other water storages. All these are sources of water. But of them can be identified as the major water sources and are used to collect water. The sources can be shown in map and pie chart.

***Map and Figure: water sources of Bangladesh and their portion.***

***National Water Demand in Urban Areas:***

Urban population will increase to 73 million by 2025, and 136 million by 2050. Major migration to Dhaka city and adjoining areas are the main cause of population increase in the city. If this situation continues the Urban Water supply, sanitation and drainage will be major issues confronting the nation.

***Service Zone of Dhaka WASA:***

Till June 1989 the service territory of Dhaka WASA was truly in the metropolitan city. At the beginning of 1990 Dhaka WASA has taken the duty of water supply and sewerage of Narayangonj city. Presently Dhaka metropolitan city and Narayangonj are known as the service zone of Dhaka WASA. On the basis of operation, maintenance and customer service the Dhaka WASA zones are divided into 11 geographical areas. From these 10 is in Dhaka and 1 is in Narayangonj. Every zonal office is responsible for technical operation, maintenance and revenue bill collection. As a consequence the standard of clients’ service increased.

***Dhaka*** ***WASA Jurisdiction by 1963 Ordinance and New Demand Areas***

|  |  |  |
| --- | --- | --- |
| **Year** | **Population (Million)** | **Area (Sqkm)** |
| **1991** | 7.3 | 250 |
| **2005** | 10.0 | 481 |
| **2010** | 12.2 | 587 |
| **2015** | 14.9 | 717 |
| **2025** | 21.6 | 1000 |

***Organization and Personnel Management:***

Under the order No. 6 of Act 1996 the organization structure of Dhaka WASA was changed. The Act suggested a 13 member Dhaka WASA board. The chief of the board is chairman and the members are from various professional organization and government representative. According to the organization structure there are a managing director (MD) and four Deputy Managing Directors (DMDs). At present Dhaka WASA have a total of 4375 employees combining all 1st – 4th class. Employees are from all 4 wings. Among these wings, Operation and Monitoring wing has maximum number of employees in all 11 zonal offices. Employees are appointed and guided by “Service Rule 1990” except MD and DMD. Board has no executive power while the MD is the executive head and is directly recruited from market through advertisement for 3 years. Service rule is amended in 2010 as “Dhaka WASA Employees Service Regulation 2010”. There are provisions of ACR, personal life, punishment and welfare of the employees. According to the organizational structure – 2007, a table & pie chart of officers and staffs of Dhaka WASA are shown here.

|  |  |  |  |
| --- | --- | --- | --- |
| **Class** | **Permitted**  **Positions** | **Existing**  **Positions** | **Vacant**  **Positions** |
| **1st class** | 293 | 160 | 133 |
| **2nd class** | 328 | 184 | 44 |
| **3rd class** | 1887 | 1686 | 201 |
| **4th class** | 1867 | 1671 | 196 |
| **Total** | 4375 | 3701 | 574 |

***Organogram of Dhaka WASA***

***Dhaka*** ***WASA at a Glance:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Water Supply System:*** | | | | | |
|  | 2004-2005 | 2005-2006 | 2006-2007 | 2007-2008 | 2008-2009 |
| **Deep tube-well** | 402 | 418 | 441 | 465 | 490 |
| **Water refinery** | 4 | 4 | 4 | 4 | 4 |
| **Daily water production** | 146 c.lr | 160 c.lr | 166 c.lr | 170 c.lr | 176 c.lr |
| **Water line** | 2475.62 km | 2500 km | 2520 km | 2533 km | 2600 km |
| **Water connections** | 210771 | 210726 | 232907 | 243477 | 256375 |
| **High water tank** | 38 | 38 | 38 | 38 | 38 |
| **Street tap** | 1643 | 1643 | 1643 | 1643 | 1643s |
|  | | | | | |
| ***Sewerage System:*** | | | | | |
| **Sewerage lines** | 786 km | 808 km | 813 km | 881 km | 882 km |
| **Sewerage connections** | 49707 | 50130 | 50719 | 59299 | 60277 |
| **Sanitation lift station** | 26 | 27 | 29 | 29 | 29 |
| **Sanitation treat plant** | 1 | 1 | 1 | 1 | 1 |
|  | | |  | | |
| ***Drainage System:*** | | | | | |
| **Storm sewer lines** | 224 km | 230 km | 248 km | 256 km | 265 km |
| **Open canals** | 56 km | 65 km | 65 km | 65 km | 65 km |
| **Box-culvert** | 7.80 km | 8 km | 8.3 km | 8.4 km | 8.5 km |
| **Pumping station** | 2 | 2 | 2 | 2 | 2 |
| 1. **1.      Kallyanpur** 2. **2.      Dholaikhal** | 10 cm3 | 10 cm3 | 10 cm3 | 10 cm3 | 10 cm3 |
| 22 cm3 | 22 cm3 | 22 cm3 | 22 cm3 | 22 cm3 |
|  | | | | | |
| ***Revenew Income-Expenditure:*** | |  | | | **Lac taka** |
| **Revenue Income** | 22565.27 | 26939.17 | 30563.81 | 32862.80 | 36831.82 |
| **Revenue Expenditure** | 22284.86 | 26806.32 | 30505.10 | 32862.22 | 36170.68 |
| **Profit / Loss (+ / – )** | 280.41 | 132.85 | 58.71 | 0.58 | 661.14 |
|  | | | | | |
| ***Water and Sanitation tax:*** | |  | | | **Lac taka** |
| **Billing** | 20872.47 | 25018.46 | 28210.85 | 30139.87 | 33294.62 |
| **Collection** | 16847.72 | 19914.75 | 20901.81 | 27093.25 | 31434.32 |
| **Due (Provision)** | 22470.13 | 27473.74 | 34882.78 | 36034.61 | 37934.61 |
|  | | | | | |
| ***Development Project:*** | | | | | |
| **Water supply** | 4 | 1 | 2 | 2 | 6 |
| **Sewerage** | 2 | 1 | 2 | 1 | 2 |
| **Drainage** | 1 | 4 | 2 | 2 | 3 |
| **Total** | 7 | 6 | 6 | 5 | 11 |

***Major Areas of Functions***

***Water Production System:***

Total Actual Production: 1980 mld

Total production capacity: 2182 mld

*Surface Water Treatment Capacity*

Sayedabad      :           225 mld

Chadnighat     :           39 mld

Narayangonj    :           28 mld

(Godnail & Sonakanda)

Total Surface Water Production: 257 mld

*Ground Water:*

DTW in Operation: 554

Total water connection: 284461

Total length: 2662 km

***Sewerage Treatment System:***

Coverage Area            : 110 sq.km

                                    (30% of DCC)

Population served       : 25%

Treatment Plant           : 1

Treatment Capacity     : 120000 CuM

Actual Treatment        : 30000 – 50000 CuM

Connections                : 59510

Sewerage line              : 881 km

***Drainage System:***

Coverage         : 38 km

Service area     : 150 sq.km

Box culvert     : 12 km

Open channel  : 65 km

Pipe drain        : 250 km

Pump station   : 3 nos.

Pump capacity : 54 cumec

Temp Pumping arrangement

Total nos.        a. 6 × 25 = 150 cu sec

                        b. 145 × 5 = 725 cu sec

***Administrative Functions***

***Policy:***

To ensure the service standard and accountability to the clients a citizens charter has been formulated. After a long period of 24 years in 2007 a new organizational structure comprising 4375 position was rapidly approved by the government on 9/12/2007. Dhaka WASA (water connection and water tax) regulation 2007 published as gadget. Other than this the three regulations below approved by 72th special meeting and sent to ministry on 6/12/2007. They are –

  Dhaka WASA Employees Service Regulation 2007

  Dhaka WASA Finance Regulation 2007

  General Future Fund Regulation 2007

***Development Project Implementation:***

In 2008 – 09 fiscal year 205.92 crore taka was allotted and 195.47 expended against 12 development projects. By that time 98% of project progress and 95% of financial progress achieved.

***Water Production:***

At present Dhaka WASA is producing 176 liters of water by 490 deep tube well and 4 water filtering centre. Among this in running fiscal year water production was increased by placing 21 new deep tube well. More new deep tube well placing is under progress. To ensure continuous water supply a gas generator with 3.4 megawatt power placed in Sayedabad water purifying centre. In consequence electricity equal to an amount of 50 lacs taka is been saved in every month.

***Service:***

To ensure the standard of customer service the operation and maintenance system has been developed. Billing and collection system have made easier. To remove water blockage in Dhaka city 13 canals are been opened to flow away rain water. Pumping and other maintenance system has been developed to sewer block rain water on the street. As a result west Dhaka was free from water blockage in last year.

***Administration:***

Several administrative activities were taken to established good governance in various sectors including wastage and corruption protection. It reduces the administrative red-tapism. The important is, system loss has been reduced to 35%. To reduce 2% system loss in every year step taken against the bill defaulter and awareness programs were operated. To make administration more active 269 transfers were made during the stated fiscal year.

***Activities taken to Develop Customer Service:***

To provide customers with more facilities help desk is opened in every modes zone. Necessary services are being given by these. A complaint counter is also attached with every modes zone. Complaints are completed within three working days after complaining. In terms of new water connection, work in done within 15 days of application. Time for meter placing is also shortened by placing it within three days of testing. Any complaints relating to water supply are tried to solve by 24 hours of complaining. Computerized database is made on each of Dhaka WASA’s properties.

***Research Activities:***

To upgrade water supply, sewerage and drainage system of Dhaka city GLS based MIS is being activated. To bring transparency in billing and collection, computerized system is introduced. Pilot program is taken to publish revenue bill in website. Digital meter system is to be introduced to lessen customer harassment. Double entry accounting system and computerized accounts system are introduced to make organizational accounts transparent. Institute of water modeling is recruited to make feasibility test on if it is possible to produce 40 crore liters of water from 70 tube wells in Singair ground water source. If survey report is positive then the project will be implemented in financial association of government.

***Eviction of illegal possession:***

Action taken against any illegal dwellings or constructions made by Dhaka WASA officers or staffs relating to create profit. 2000 illegal constructions are destructed and possession evicted.

***Others:***

Dhaka WASA’s self financial bottle drinking water named “Shanti” has popularized to people. “Shanti” put great contribution fulfill pure water demand created by SIDR and flood in southern part of the country. In association with private organization special activities is taken to serve poor and slum dwellers. Under this project water and sewerage service is started in some slum areas of Mirpur.

***Operation and Maintenance***

***Water Supply System:***

In 2008 – 2009 Dhaka WASA has set up 54.50 km of new water line and reconstructed 4.8 km water line. In last three years (2005-06, 2006-07, 2007-08) Dhaka WASA has constructed 110.10 km of water line, placed 76 deep tube wells and replaced 70 deep tube wells.

 Dhaka WASA has achieved great success in water production and water supply. In last 3 years it has pointed different water crisis areas of Dhaka metropolitan city and placed deep tube wells. Therefore, by increasing water supply and decreasing the supply deficit they reduce the sufferings of people. It increased 76 deep tube wells in Dhaka in last 3 years. At present, Dhaka WASA depends on ground water. Total 490 deep tube wells are being used to lift and supply water. Other than this, Dhaka WASA 5 large and small water filtering centers including Sayedabad and Buriganga water filtering centre to filter river water and supply. It is mentionable that Dhaka WASA have total (2007 – 2008) 264 generators which are driven by diesel. By using these generators the ground water is lifted when there is no electricity supply, especially in summer season. Beside the increasing demand of water the crisis of electricity is getting extreme. Then by using the generators water supply in the city is kept usual. Other than this, if water crisis occur in any part of the city Dhaka WASA immediately supply water by using 22 water vans and 44 trolleys.

At present, Dhaka WASA is supplying about 176 crore liters of water daily. Among these 84% is ground water and 16% is surface water. Last years, 500 new water connection are provided in slum areas to development the standard of life style, heath condition and environment of the slum areas. In fiscal year 2007 – 2008 total 27109 different sample have examined to confirm the quality standard of water.

***Daily Water Production***

Dhaka WASA supply water in Dhaka metropolitan city and Narayangonj. At present, the population of Dhaka and Narayangonj is about 1.36 crore and will increase a lot by 2020. To fulfill the increasing demand water of city dwellers Dhaka WASA is lifting and supplying water by using deep tube wells. Because of lifting gourd water constantly the water layer is going down to 7 – 10 feet in each year. To tackle this situation Dhaka WASA has started to collect water from Deeper Aquifer (1000 feet or deeper) and for permanent solution of water problem in Mirpur are deep tube wells are established from Singayer of Manikgonj. The probability survey shows than supplying water in Dhaka using pipe line is about to end. Beside this, by using the river water of Meghna, a plan for construction of the water filtering centre in taken. It is mentionable that, the specialists doubt that ground water lifting world be the reason of land erosion and deferent environmental crises. In this circumstances Dhaka WASA give importance in water production from surface water as the alternate and dependable source of water supply. till 30 June, 2008 the production capability of Dhaka WASA was 190 crore liters (daily) and real production was 176 crore liters in average. For about 1.36 lacs people of Dhaka metropolitan city and Narayangonj municipality the demand of water per head estimated to be 160 liters daily where Dhaka WASA’s water production was a total of 205 crore liters. The difference between water production capability and demand was 35 crore liter and to fulfill the demand the capability of Dhaka WASA is about 80% to 85%. From 1963, the daily demand of water capability of supply and deficiency at different time in shown in a table below –

***Dhaka WASA’s Daily Water Supply, Demand and Deficit:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Years*** | ***Population (lac)*** | ***Demand (crore.liters)*** | ***Supply (crore-liters)*** | ***Deficit (crore-liters)*** | ***# of active deep tube-well*** |
| **1963** | 8.50 | 15 | 13 | 2 | 30 |
| **1970** | 14.60 | 26 | 18 | 8 | 47 |
| **1980** | 30.30 | 55 | 30 | 25 | 87 |
| **1990** | 55.60 | 100 | 51 | 49 | 216 |
| **1996** | 75.50 | 130 | 81 | 49 | 216 |
| **1997** | 80.00 | 135 | 87 | 48 | 225 |
| **1998** | 90.00 | 144 | 107 | 37 | 277 |
| **2000** | 95.00 | 150 | 113 | 37 | 308 |
| **2001** | 100.00 | 160 | 122 | 38 | 336 |
| **2002** | 105.00 | 168 | 130 | 38 | 379 |
| **2003** | 110.25 | 176 | 136 | 40 | 391 |
| **2004** | 115.76 | 185 | 140 | 45 | 802 |
| **2005** | 121.50 | 194 | 146 | 48 | 418 |
| **2006** | 126.50 | 190 | 154 | 46 | 441 |
| **2007** | 131.50 | 198 | 166 | 32 | 465 |
| **2008** | 136.50 | 205 | 176 | 29 | 490 |
| **2009** | 140.50 | 210 | 185 | 25 | 535 |
| **2010** | 145.00 | 220 | 198 | 22 | 554 |

***Financial Management***

***Revenue Income – Expenditure:***

As a service oriented and commercial organization the main income and expenditure source of Dhaka WASA are water and sewerage tax. In recent years Dhaka WASA has developed their billing and collection system. In consequence revenue income of Dhaka WASA is increasing and establishing a balance situation in income and expenditure. Presently, system loss is a big challenge for Dhaka WASA and to face this problem Dhaka WASA has already taken some necessary steps. These steps are putting contribution to the increase of real income of the organization. In case of revenue income, billing is a great challenge for Dhaka WASA. The late billing is raising the due amount. Dhaka WASA has computerized its billing and collection system by uninterrupted efforts of last few years. Presently Dhaka WASA started online billing system to provide customers with more facilities.

***Budget Making Process:***

Dhaka WASA runs by its own finance. The budget making process of Dhaka WASA is incremental. Each year it rises by 10%. The process contains revised and estimated budget. After every six months of the original budget Dhaka WASA prepare revised budget including 5% with six months total costs. And next budget include 10% more with it.  Government usually funds on projects. The accounts department first prepares a budget and send to board for approval. After being approved in the board meeting the budget is sent to Monitoring sell of Ministry of Finance. Then if everything seems alright the budget is approved by the government.

***A Recent Budget Summery of Dhaka WASA of last few years are shown below –***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | **Taka in lac** |
| **Sl.no.** | **Particulars** | **Budget est. 2010-11** | **R. Budget 2009-10** | **App. Budget 2009-10** | **6 Months Jul’09-Dec’09** | **Actual 2008-2009** |
| **1** | **2** | **3** | **5** | **7** | **8** | **9** |
| **A** | **Income** |  |  |  |  |  |
| **1** | Water | 38022.06 | 34565.51 | 32919.18 | 13271.64 | 28227.55 |
| **2** | Sewer | 12481.87 | 11347.15 | 10806.81 | 3317.91 | 9385.88 |
| **3** | Street Hydrant | 577.50 | 525.00 | 525.00 | 200.40 | 766.38 |
|  | **Subtotal (1+..+3)** | **51081.43** | **46437.66** | **44280.99** | **16789.95** | **38379.81** |
| **4** | Bottled Water sale | 138.60 | 126.00 | 126.00 | 63.00 | 125.16 |
| **5** | Water Sale (Direct) | 69.30 | 63.00 | 63.00 | 31.50 | 475.36 |
|  | **Sub-total (1+…..+4)** | **51289.33** | **46626.66** | **44439.99** | **16884.45** | **38980.33** |
| **B** | **Others** | **5226.54** | **4796.85** | **4346.85** | **2088.46** | **1934.52** |
|  | **Total Income (A+B)** | **56515.87** | **51423.51** | **48786.84** | **18972.91** | **40914.85** |
| **C** | **Expenditure** |  |  |  |  |  |
| **1** | Salary, Wages & Others | 10419.63 | 9053.52 | 8658.01 | 3559.78 | 8950.30 |
| **2** | Contingency & Others | 5837.46 | 6203.89 | 5955.22 | 2072.10 | 4652.21 |
| **3** | Chemicals | 1200.00 | 1030.00 | 1400.00 | 64.69 | 950.75 |
| **4** | Power | 10000.00 | 10000.00 | 10000.00 | 5149.73 | 11265.90 |
| **5** | Fuel for Generator | 1700.00 | 1500.00 | 1600.00 | 920.71 | 1204.80 |
| **6** | Depreciation | 7200.00 | 7000.00 | 7000.00 | 3500.00 | 7800.00 |
| **7** | Repair & Maintenance | 4673.89 | 3524.57 | 2400.00 | 1036.56 | 2955.10 |
| **8** | Saidabad (O&M) | 800.00 | 750.00 | 800.00 | 131.49 | 188.32 |
| **9** | DSL (IDA Loan) | 2500.00 | 2500.00 | 2500.00 | 1250.00 | 2500.00 |
| **10** | Interest Charge to Revenue | – | – | – |  |  |
| **11** | SIDA Loan | 50.00 | 100.00 | 100.00 | 50.00 | 82.50 |
| **12** | DSL (Govt.) | 80.00 | 80.00 | 80.00 | 40.00 | 80.00 |
| **13** | Drainage (watering pump) | 270.00 | 215.00 | 250.00 | 103.92 | 95.04 |
| **14** | Revenue Purchase | 1605.00 | 1683.00 | 2040.00 | 46.89 | 1512.95 |
| **15** | Resch.Dev.Study & Cons. | 420.00 | 420.00 | 420.00 | 61.07 | 18.36 |
|  | **Total Exp. C** | **46755.98** | **44059.98** | **43203.23** | **17986.94** | **42256.23** |
|  | **Profit/loss (A+B-C)** | **9759.89** | **7363.53** | **5583.61** | **985.97** | **(1341.38)** |
| **17** | Cap. Exp. From Revenue | 6617.00 | 5884.00 | 4480.00 | 859.19 | 2844.27 |
|  | **Surplus / (Deficit)** | **3142.89** | **1479.53** | **1103.61** | **126.78** | **(4185.65)** |
| **18** | Income tax provision | 200.00 | 200.00 | 200.00 | – | – |
|  | **Net profit after tax** | **2942.89** | **1279.53** | **903.61** | **126.78** | **(4185.65)** |
| **19** | Dividend to Govt. Fund | 500.00 | 500.00 | 300.00 | – |  |
|  | **Net Deficit / Surplus** | **2442.89** | **779.53** | **603.61** | **126.78** | **(4185.65)** |

***Customer connection:***

At the end of June, 2008 the total customers of Dhaka WASA are 256375, of which 245283 are from Dhaka city and 11032 from Narayangonj city. Moreover there are 1209 street tap in Dhaka and 434 in Narayangonj.

***The Total customer numbers of last five years is shown here –***

|  |  |
| --- | --- |
| **Years** | **Total Connection Number** |
| **2003 – 2004** | 210771 |
| **2004 – 2005** | 219726 |
| **2005 – 2006** | 227994 |
| **2006 – 2007** | 244097 |
| **2007 – 2008** | 246375 |

***Customer Statistics:***

***Revenue Income and Expenditure:***

|  |  |
| --- | --- |
| **Customer type** | **Total customer** |
| **Domestic** | 272002 |
| **Commercial** | 8562 |
| **Industrial** | 1764 |
| **Community** | 1309 |
| **Office** | 825 |
| **Total** | 284461 |

The overall development of Dhaka WASA shows a positive improvement of service zone range and quality standard. Presently WASA established a taskforce to strengthen the billing and collection system. To bring the mobility of activities WASA has taken strong monitoring system and other necessary initiatives.

***Summary of Income & Expenditure (Million taka):***

|  |  |  |  |
| --- | --- | --- | --- |
| ***Head*** | ***Income*** | ***Expenditure*** | ***Profit/Loss*** |
| **2001-2002** | 1,756.980 | 1,756.012 | 0.968 |
| **2002-2003** | 1,954.679 | 1,945.819 | 8.866 |
| **2003-2004** | 2,256.527 | 2,228.486 | 28.041 |
| **2004-2005** | 2,693.917 | 2,680.632 | 13.285 |
| **2005-2006** | 3,056.381 | 3,050.510 | 5.871 |
| **2006-2007** | 3,286.279 | 3,286.268 | 0.011 |
| **2007-2008** | 3,694.612 | 4,364.851 | (670.239) |
| **2008-2009** | 4,230.609 | 4,105.578 | 125.031 |

***Research, Planning and Development***

The research, planning and development wing is very important in all function of Dhaka WASA. All responsibility of future planning, development and research function is being operated under this wing. By this wing all planning and implementation of projects are taken. This wing in controlled by the Deputy managing Director (Research, Planning and Development). The functions those are performed by the wing are –

  Give consultancy of all kind of engineering matter to managing director.

  Implementation of all projects by the head of the department of the wing.

  Confirmation and fostering of government rules and instruction about engineering and technical matter.

  To ensure the implementation that is taken by the board and managing director of the controlling department.

  Supervision of the function of planning, design, research and construction department.

  Provide help to prepare project and planning of technical matter.

Under this wing the function is directed by an additional engineer, four supervisors engineer and director of all projects.

A total of 12 development projects are included in annual development functions of Dhaka WASA in fiscal year 2007 – 2008. Among these projects 6 are water supply related investment projects, 2 sewerage and 3 drainage related projects. There is also a technical assistance project.

***a)      Water supply related investment projects:***

* Reconstruction and development project of water supply system.
* Sayedabad water supply project.
* Emergency rehabilitation and expansion of water supply system.
* Dhaka water supply sector development project
* Purchase of generator for water pumps of Dhaka city

***b)      Sanitation related investment projects:***

* Emergency interim sewerage line building and reconstruction project
* Flood affected sewerage rehabilitation project

***c)      Drainage related investment projects:***

* Project to reduce water blockage of Dhaka metropolitan city
* Project to reserve regulating pond near to Kallyanpur Storm Water Pumping
* The project for storm water drainage system in Dhaka city

***d)      Technical Assistance projects:***

* TPP for project preparation facilities of Dhaka WASA

***Implementation Progress:***

Total allotment of annual development project was taka 168.58 crore. Among these, the amount of government financing was taka 139.96 crore. Total amount of expenditure of in the year was taka 148399 crore. 90% amount of total allotment has been used. As a result 96% of real progress has achieved.

***Proposed Projects:***

To solve future water problems pointed out by Dhaka WASA’s survey and research it is preparing to implement some projects. They are –

* Singayer oil field project (tk. 300 crore)
* Khilkhet water treatment plant (tk. 2500 crore)
* Pagla water treatment plant (tk. 2500 crore)
* North Dhaka STR projuct (tk. 850 crore)
* Eastern Bypass project (tk. 900 crore)
* Dasenkandi sewerage treatment plant (tk. 500 crore)
* Pollution control measures of Gulshan, Baridhara lake diverting drainage outlet of lake to the drainage channel (Gulshan area tk. 50 crore)
* Dhaka water supply and sewerage project (tk. 1160 crore)

***Dhaka*** ***WASA’s projects under implementation or to be implemented in future:***

1. Project to reduce water blockage of Dhaka Metropolitan city (amended)
2. Project to reserve regulating pond near to Kallyanpur Storm Water Pumping (amemded)
3. Sayedabad water filtering construction project
4. Emergency rehabilitation and expansion of water supply system
5. Dhaka water supply sector development project
6. Interim emergency sewerage line building and reconstruction project
7. Improvement of storm water drainage system in Dhaka city
8. Dhaka water supply and sewerage project
9. Reconstruction and development of water supply system of Narayangonj town
10. Technical assistance project for management support to Dhaka WASA.

***IT and e-Governance***

***Functions of Computer Centre:***

Necessary steps to make Dhaka WASA’s website more modern and informative. Such as –

  In 1992 a computer centre has been established to computerize water and sewerage billing system. Since then revenue zone 5 billing preparation started through computer one after one all zones have brought under this system.

  After contracting out the revenue zones 3, 4, and 5 in 1997 and 2003 the centre operating billing system provided by the centre.

  To facilitate clients with easier bill repayment Dhaka WASA had been preparing monthly basis bill since last 5 years.

  Under government decision Dhaka WASA already signed with two private organizations to outsource all the billing functions.

  To make computer billing system more faster Dhaka WASA expended 30000000 taka for buying hardware, software, update billing software, LAN connection in modes and revenue zones, WAN in booths of banks and upgrading the present software. New billing system started from 2009.

***After completion of the activities expected benefits are –***

a)      Revenue income will increase

b)      Transparency in billing functions

c)      Restoration of billing ledger in computer

d)     After networking all the offices and zones “Paperless Office Management (PMO)” would be possible. And information transfer will be easier.

e)      Online connection with booth will help to instantly update the customer database.

f)       Clients can find all billing information on the website, can download all bills, and pay through SMS/pay centre. It will help to fulfill the citizen’s charter.

g)      After completing all these Dhaka WASA will be able to enter into the world of Modern Technology.

Other then billing, computer centre is also operating future fund, payroll, including overtime and income tax, achieved holydays, personal MIS, electricity bill checking, collection of information about cases, renewal of privately owned tube well, analyzing & renew billing information, preparing monthly MIS etc.

Dhaka WASA already signed with an organization to computerize accounting and store inventory, upgrading Personal Information Management System (PIMS). All functions will be fully computerized by the coming fiscal year.

To introduce Geographical Information System (GIS) Dhaka WASA contracted with an organization. It will provide WASA with all information about water pipe. Presently water, sanitation and drainage are being trying to bring under GIS.

To bring more functions under computerized system WASA is outsourcing to make new software. It will contain File and Office Management System, information reservation relating to house allotment, generator fuel, vehicle, library, Sayedabad water refinery station test report etc. all functions are planned to be made fully computerized by coming fiscal year.

Dhaka WASA head office is brought under network since 5 years. Every officer is given broadband internet connection. Beside this Dhaka WASA developed its own website.  WASA’s functions like, all sorts of forms, citizen’s charter, tender, advertisement are published on the website.

Computer centre is also responsible for maintenance of organization’s 5 servers, 200 computers and other computer accessories. A training centre provides training to WASA’s officers and staffs. It has a plan to create a fully equipped computer lab. Lab will provide necessary solution and advice. If necessary the centre will provide training to other public sector government officials.

***Miscellaneous Activities***

***Human Resource Development:***

Dhaka WASA is constantly trying to increase work skill of its officers and staffs. Various training in home and abroad have introduced. Dhaka WASA Lalmatia Training Institute trained 178 officers and staffs under 9 courses with different duration by 2007 and 2008.

***Role of Dhaka WASA on Cyclone –SIDR:***

On 15 December 2007 a destructive SIDR attack on the total coastal area. It caused severe harm to corps and thousands of people died. As a result the affected areas found lack of pure drinking water. Dhaka WASA gave an helping hand to ensure pure water there. Dhaka WASA supplied bottle water “Shanti” and water refinery equipments in affected areas of Khulna and Barisal. Under the program Dhaka WASA supplied a total of 91247 liters bottle water. Beside this to purify water Dhaka WASA supplied 50 metric tons of lime in the affected districts.

***Library Development:***

Dhaka WASA operating a library since its birth. At present various initiatives are taken to make this library more modern and attractive one. Presently the library has more than 800 books.

***Medical Centre Service:***

To provide primary medical treatment to Dhaka WASA’s officers, staffs and their family members it has a medical centre. This centre provide general treatment and medicine to Dhaka WASA’s officers and staffs. There are two doctors to provide these services.

***Citizen’s Charter:***

Dhaka WASA has a citizen’s charter to provide necessary services to its clients. The charter comprises of –

1. Mission and vision of Dhaka WASA
2. Dhaka WASA’s promises
3. Services provided by Dhaka WASA
4. Service delivery system
5. Rules of application for sanitation connection
6. Rules and system for new meter placement
7. Deep tube well under ownership of individuals and institutions
8. Billing and collection system
9. Collection of due bills
10. Notice for break of water supply
11. Water supply with vehicles
12. Ensuring water quality standard
13. Supplying bottle water
14. Complaints receiving and solving
15. Return of mortgage

***Future Planning of Dhaka WASA***

***Future work plan is taken to fulfill 100% water demand by 2013. For this, various mid-term development activities are taken. According to priority –***

  Construction of water purification centre

  Establish and reestablish deep tube wells

  Construct and reconstruct pipeline, etc activities are constantly taken.

***To increase sewerage facilities from 30% to 45% future work plan in priority –***

  Construction of sewerage refinery

  Construction of sewerage line

  Reconstruction of sewerage line

  Construction of sanitation lifts station. All these activities are already taken.

***To increase drainage facility from 60% to 80% by 2012 future work plan in priority –***

  Canal development

  Construction of storm sewer line

  Reconstruct storm line, etc activities are already under implementation

Future plan is also constantly taken to facilitate water resource is slum area by 2012. To develop slum dwellers’ standard of life from 10% to 32% future planning made according to priority. 2500 connections in 1500 slum are to be given.

implementation

[ɪmplɪmɛnˈteɪʃ(ə)n]

NOUN

1. the process of putting a decision or plan into effect; execution.

"she was responsible for the implementation of the plan"

*synonyms:*

[execution](https://www.bing.com/search?q=define+execution&FORM=DCTRQY) · [application](https://www.bing.com/search?q=define+application&FORM=DCTRQY) · carrying out · carrying through · [performance](https://www.bing.com/search?q=define+performance&FORM=DCTRQY) · [enactment](https://www.bing.com/search?q=define+enactment&FORM=DCTRQY) · [administration](https://www.bing.com/search?q=define+administration&FORM=DCTRQY) · [fulfilment](https://www.bing.com/search?q=define+fulfilment&FORM=DCTRQY) · [fulfilling](https://www.bing.com/search?q=define+fulfilling&FORM=DCTRQY) · [discharge](https://www.bing.com/search?q=define+discharge&FORM=DCTRQY) · [accomplishment](https://www.bing.com/search?q=define+accomplishment&FORM=DCTRQY) · [achievement](https://www.bing.com/search?q=define+achievement&FORM=DCTRQY) · [realization](https://www.bing.com/search?q=define+realization&FORM=DCTRQY) · [contrivance](https://www.bing.com/search?q=define+contrivance&FORM=DCTRQY) · [prosecution](https://www.bing.com/search?q=define+prosecution&FORM=DCTRQY) · [effecting](https://www.bing.com/search?q=define+effecting&FORM=DCTRQY) · [enforcement](https://www.bing.com/search?q=define+enforcement&FORM=DCTRQY) · [imposition](https://www.bing.com/search?q=define+imposition&FORM=DCTRQY) · [effectuation](https://www.bing.com/search?q=define+effectuation&FORM=DCTRQY)

automation

[ɔːtəˈmeɪʃ(ə)n]

NOUN

1. the use or introduction of automatic equipment in a manufacturing or other process or facility.

"unemployment due to the spread of automation"

digitization

[dɪdʒɪtʌɪˈzeɪʃ(ə)n]

NOUN

1. the conversion of text, pictures, or sound into a digital form that can be processed by a computer.

"the digitization of the rare map collection at the library" ·

[[more]](javascript:void(0);)

* + adaptation of a system, process, etc. to be operated with the use of computers and the internet.

"as digitization continues, data will become more valuable than ever before" ·

information

[ɪnfəˈmeɪʃ(ə)n]

NOUN

1. facts provided or learned about something or someone.

"a vital piece of information"

*synonyms:*

[details](https://www.bing.com/search?q=define+details&FORM=DCTRQY) · [particulars](https://www.bing.com/search?q=define+particulars&FORM=DCTRQY) · [facts](https://www.bing.com/search?q=define+facts&FORM=DCTRQY) · [figures](https://www.bing.com/search?q=define+figures&FORM=DCTRQY) · [statistics](https://www.bing.com/search?q=define+statistics&FORM=DCTRQY) · [data](https://www.bing.com/search?q=define+data&FORM=DCTRQY) · [knowledge](https://www.bing.com/search?q=define+knowledge&FORM=DCTRQY) ·

[[more]](javascript:void(0);)

* + *law*

a charge lodged with a magistrates' court.

"the tenant may lay an information against his landlord"

1. what is conveyed or represented by a particular arrangement or sequence of things.

"genetically transmitted information"

* + *computing*

data as processed, stored, or transmitted by a computer.

system

[ˈsɪstəm]

NOUN

1. a set of things working together as parts of a mechanism or an interconnecting network; a complex whole.

"the state railway system" ·

[[more]](javascript:void(0);)

*synonyms:*

[structure](https://www.bing.com/search?q=define+structure&FORM=DCTRQY) · [organization](https://www.bing.com/search?q=define+organization&FORM=DCTRQY) · [order](https://www.bing.com/search?q=define+order&FORM=DCTRQY) · [arrangement](https://www.bing.com/search?q=define+arrangement&FORM=DCTRQY) · [complex](https://www.bing.com/search?q=define+complex&FORM=DCTRQY) · [apparatus](https://www.bing.com/search?q=define+apparatus&FORM=DCTRQY) · [network](https://www.bing.com/search?q=define+network&FORM=DCTRQY) · [administration](https://www.bing.com/search?q=define+administration&FORM=DCTRQY) · [institution](https://www.bing.com/search?q=define+institution&FORM=DCTRQY)

1. a set of principles or procedures according to which something is done; an organized scheme or method.

"a multiparty system of government" ·

[[more]](javascript:void(0);)

*synonyms:*

[method](https://www.bing.com/search?q=define+method&FORM=DCTRQY) · [methodology](https://www.bing.com/search?q=define+methodology&FORM=DCTRQY) · [technique](https://www.bing.com/search?q=define+technique&FORM=DCTRQY) · [process](https://www.bing.com/search?q=define+process&FORM=DCTRQY) · [procedure](https://www.bing.com/search?q=define+procedure&FORM=DCTRQY) · [approach](https://www.bing.com/search?q=define+approach&FORM=DCTRQY) ·

[[more]](javascript:void(0);)

1. *(the system)*

the prevailing political or social order, especially when regarded as oppressive and intransigent.

"don't try bucking the system"

[Information system - Wikipedia](https://en.wikipedia.org/wiki/Information_system)

[Digital Attendance || Dhaka Wasa (DWASA) Innovation Idea for a2](https://www.youtube.com/watch?v=pNkaCul3DvQ) - https://www.youtube.com/watch?v=pNkaCul3DvQ

sewer

[ˈsuːə]

NOUN

*sewer (noun) · sewers (plural noun)*

1. an underground conduit for carrying off drainage water and waste matter.

*synonyms:*

[drain](https://www.bing.com/search?q=define+drain&FORM=DCTRQY) · [sluice](https://www.bing.com/search?q=define+sluice&FORM=DCTRQY) · [sluiceway](https://www.bing.com/search?q=define+sluiceway&FORM=DCTRQY) · [culvert](https://www.bing.com/search?q=define+culvert&FORM=DCTRQY) · [spillway](https://www.bing.com/search?q=define+spillway&FORM=DCTRQY) · [flume](https://www.bing.com/search?q=define+flume&FORM=DCTRQY) · [channel](https://www.bing.com/search?q=define+channel&FORM=DCTRQY) · [conduit](https://www.bing.com/search?q=define+conduit&FORM=DCTRQY) · [pipe](https://www.bing.com/search?q=define+pipe&FORM=DCTRQY) · [duct](https://www.bing.com/search?q=define+duct&FORM=DCTRQY) · [chute](https://www.bing.com/search?q=define+chute&FORM=DCTRQY) · [trough](https://www.bing.com/search?q=define+trough&FORM=DCTRQY) · [trench](https://www.bing.com/search?q=define+trench&FORM=DCTRQY) · [ditch](https://www.bing.com/search?q=define+ditch&FORM=DCTRQY) · [furrow](https://www.bing.com/search?q=define+furrow&FORM=DCTRQY) · [cut](https://www.bing.com/search?q=define+cut&FORM=DCTRQY)

Sewer commonly refers to a part of [sewerage](https://en.wikipedia.org/wiki/Sewerage), the infrastructure that conveys sewage.

[Sewage](https://en.wikipedia.org/wiki/Sewage), wastewater produced by a community of people

History

Adam Smith

An important early (1776) description of processes was that of economist Adam Smith in his famous example of a pin factory. Inspired by an article in Diderot's Encyclopédie, Smith described the production of a pin in the following way:[7]

”One man draws out the wire; another straights it; a third cuts it; a fourth points it; a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on is a peculiar business; to whiten the pins is another ... and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them.”

Peter Drucker

In the latter part of the twentieth century, management guru Peter Drucker focused much of his work on simplification and decentralization of processes, which led to the concept of outsourcing. He also coined the concept of the "knowledge worker — as differentiated from manual workers — and how knowledge management would become part of an entity's processes.[9][10]

A business process, business method or business function is a collection of related, structured activities or tasks by people or equipment in which a specific sequence produces a service or product (serves a particular business goal) for a particular customer or customers.

A business process may often be visualized (modeled) as a flowchart of a sequence of activities with interleaving decision points.

Overview

A business process begins with a mission objective (an external event) and ends with achievement of the business objective of providing a result that provides customer value. Additionally, a process may be divided into sub-processes (process decomposition), the particular inner functions of the process. Business processes may also have a process owner, a responsible party for ensuring the process runs smoothly from start to finish.

Broadly speaking, business processes can be organized into three types, according to von Rosing

**Operational processes**, which constitute the core business and create the primary value stream, e.g., taking orders from customers, opening an account, and manufacturing a component

**Management processes**, the processes that oversee operational processes, including corporate governance, budgetary oversight, and employee oversight

**Supporting processes**, which support the core operational processes, e.g., accounting, recruitment, call center, technical support, and safety training.

A slightly different approach to these three types is offered by Kirchmer: [2]

**Operational processes**, which focus on properly executing the operational tasks of an entity; this is where personnel "get the things done"

**Management processes**, which ensure that the operational processes are conducted appropriately; this is where managers "ensure efficient and effective work processes"

**Governance processes**, which ensure the entity is operating in full compliance with necessary legal regulations, guidelines, and shareholder expectations; this is where executives ensure the "rules and guidelines for business success" are followed

A complex business process may be decomposed into several sub-processes, which have their own attributes but also contribute to achieving the overall goal of the business. The analysis of business processes typically includes the mapping or modeling of processes and sub-processes down to activity/task level.

While decomposing processes into process types and categories can be useful, care must be taken in doing so as there may be crossover. In the end, all processes are part of a largely unified outcome, one of "customer value creation."[6] This goal is expedited with business process management, which aims to analyze, improve, and enact business processes.[2]

Other definitions

Davenport (1993)[11] defines a (business) process as:

”a structured, measured set of activities designed to produce a specific output for a particular customer or market. It implies a strong emphasis on how work is done within an organization, in contrast to a product focus’s emphasis on what. A process is thus a specific ordering of work activities across time and space, with a beginning and an end, and clearly defined inputs and outputs: a structure for action. ... Taking a process approach implies adopting the customer’s point of view. Processes are the structure by which an organization does what is necessary to produce value for its customers.”

This definition contains certain characteristics a process must possess. These characteristics are achieved by a focus on the business logic of the process (how work is done), instead of taking a product perspective (what is done). Following Davenport's definition of a process we can conclude that a process must have clearly defined boundaries, input and output, that it consists of smaller parts, activities, which are ordered in time and space, that there must be a receiver of the process outcome- a customer - and that the transformation taking place within the process must add customer value.

**Hammer & Champy’s (1993)[12] definition can be considered as a subset of Davenport’s. They define a process as:**

**”Business Process is a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer.”**

Rummler & Brache (1995) [13] use a definition that clearly encompasses a focus on the organization’s external customers, when stating that

”a business process is a series of steps designed to produce a product or service. Most processes (...) are cross-functional, spanning the ‘white space’ between the boxes on the organization chart. Some processes result in a product or service that is received by an organization's external customer. We call these primary processes. Other processes produce products that are invisible to the external customer but essential to the effective management of the business. We call these support processes.”

The above definition distinguishes two types of processes, primary and support processes, depending on whether a process is directly involved in the creation of customer value, or concerned with the organization’s internal activities. In this sense, Rummler and Brache's definition follows Porter's value chain model, which also builds on a division of primary and secondary activities. According to Rummler and Brache, a typical characteristic of a successful process-based organization is the absence of secondary activities in the primary value flow that is created in the customer oriented primary processes. The characteristic of processes as spanning the white space on the organization chart indicates that processes are embedded in some form of organizational structure. Also, a process can be cross-functional, i.e. it ranges over several business functions.

Summarizing the four definitions above, we can compile the following list of characteristics for a business process:

Definability: It must have clearly defined boundaries, input and output.

Order: It must consist of activities that are ordered according to their position in time and space (a sequence).

Customer: There must be a recipient of the process' outcome, a customer.

Value-adding: The transformation taking place within the process must add value to the recipient, either upstream or downstream.

Embeddedness: A process cannot exist in itself, it must be embedded in an organizational structure.

Cross-functionality: A process regularly can, but not necessarily must, span several functions.

Frequently, identifying a process owner, (i.e., the person responsible for the continuous improvement of the process) is considered as a prerequisite. Sometimes the process owner is the same person who is performing the process.

Related concepts

Workflow

Workflow is the procedural movement of information, material, and tasks from one participant to another.[15] Workflow includes the procedures, people and tools involved in each step of a business process. A single workflow may either be sequential, with each step contingent upon completion of the previous one, or parallel, with multiple steps occurring simultaneously. Multiple combinations of single workflows may be connected to achieve a resulting overall process. [15]

Business process re-engineering

Main article: Business process re-engineering

Business process re-engineering (BPR) was originally conceptualized by Hammer and Davenport as a means to improve organizational effectiveness and productivity. It can involve starting from a "blank slate" and completely recreating major business processes, or involve comparing the "as-is" process and the "to-be" process and mapping the path for change from one to the other.[16] Often BPR will involve the use of information technology to secure significant performance improvement. The term unfortunately became associated with corporate "downsizing" in the mid-1990s. [17]

Business process management (BPM)

Though the term has been used contextually to mixed effect, "business process management" (BPM) can generally be defined as a discipline involving a combination of a wide variety of business activity flows (e.g., business process automation, modeling, and optimization) that strives to support the goals of an enterprise within and beyond multiple boundaries, involving many people, from employees to customers and external partners.[18] A major part of BPM's enterprise support involves the continuous evaluation of existing processes and the identification of ways to improve upon it, resulting in a cycle of overall organizational improvement.

Knowledge management

Knowledge management is the definition of the knowledge that employees and systems use to perform their functions and maintaining it in a format that can be accessed by others. The Duhon and the Gartner Group have defined it as "a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers." [19]

Information technology as an enabler for business process management

Advances in information technology over the years, have changed business processes within and between business enterprises. In the 1960s, operating systems had limited functionality, and any workflow management systems that were in use were tailor-made for the specific organization. The 1970s-1980s saw the development of data-driven approaches, as data storage and retrieval technologies improved. Data modeling rather than process modeling was the starting point for building an information system. Business processes had to adapt to information technology because process modeling was neglected. The shift towards process-oriented management occurred in the 1990s. Enterprise resource planning software with workflow management components such as SAP, Baan, PeopleSoft, Oracle and JD Edwards emerged, as did business process management systems (BPMS) later.[24]

The world of e-business created a need to automate business processes across organizations, which in turn raised the need for standardized protocols and web services composition languages that can be understood across the industry. The Business Process Modeling Notation (BPMN) and Business Motivation Model (BMM) are widely used standards for business modeling.[2][3][4] The Business Modeling and Integration Domain Task Force (BMI DTF) is a consortium of vendors and user companies that continues to work together to develop standards and specifications to promote collaboration and integration of people, systems, processes and information within and across enterprises.[25]

The most recent trends in BPM are influenced by the emergence of cloud technology, the prevalence of social media, mobile technology, and the development of analytical techniques. Cloud-based technologies allow companies to purchase resources quickly and as required independent of their location. Social media, websites and smart phones are the newest channels through which organizations reach and support their customers. The abundance of customer data collected through these channels as well as through call center interactions, emails, voice calls, and customer surveys has led to a huge growth in data analytics which in turn is utilized for performance management and improving the ways in which the company services its customers.[26]

Importance of the process chain

Business processes comprise a set of sequential sub-processes or tasks with alternative paths, depending on certain conditions as applicable, performed to achieve a given objective or produce given outputs. Each process has one or more needed inputs. The inputs and outputs may be received from, or sent to other business processes, other organizational units, or internal or external stakeholders. [1]

Business processes are designed to be operated by one or more business functional units, and emphasize the importance of the “process chain” rather than the individual units.

In general, the various tasks of a business process can be performed in one of two ways: [1]

Manually by means of business data processing systems such as ERP systems

Typically, some process tasks will be manual, while some will be computer-based, and these tasks may be sequenced in many ways. In other words, the data and information that are being handled through the process may pass through manual or computer tasks in any given order.

Policies, processes and procedures

The above improvement areas are equally applicable to policies, processes, detailed procedures (sub-processes/tasks) and work instructions. There is a cascading effect of improvements made at a higher level on those made at a lower level. [27]

For example, if a recommendation to replace a given policy with a better one is made with proper justification and accepted in principle by business process owners, then corresponding changes in the consequent processes and procedures will follow naturally in order to enable implementation of the policies.

**Reporting as an essential base for execution**

Business processes must include up-to-date and accurate reports to ensure effective action.[28] An example of this is the availability of purchase order status reports for supplier delivery follow-up as described in the section on effectiveness above. There are numerous examples of this in every possible business process.

Business process owners and operatives should realize that process improvement often occurs with introduction of appropriate transaction, operational, highlight, exception or M.I.S. reports, provided these are consciously used for day-to-day or periodical decision-making. With this understanding would hopefully come the willingness to invest time and other resources in business process improvement by introduction of useful and relevant reporting systems.

A web page (or webpage) is a [hypertext](https://en.wikipedia.org/wiki/Hypertext) [document](https://en.wikipedia.org/wiki/Electronic_document) provided by a [website](https://en.wikipedia.org/wiki/Website) and displayed to a [user](https://en.wikipedia.org/wiki/User_(computing)) in a [web browser](https://en.wikipedia.org/wiki/Web_browser). A website typically consists of many web pages [linked](https://en.wikipedia.org/wiki/Hyperlink) together in a coherent fashion. The name "web page" is a metaphor of [paper pages](https://en.wikipedia.org/wiki/Page_(paper)) bound together into a [book](https://en.wikipedia.org/wiki/Book).

A website (also written as web site) is a collection of [web pages](https://en.wikipedia.org/wiki/Web_page) and related content that is identified by a common [domain name](https://en.wikipedia.org/wiki/Domain_name) . All publicly accessible websites collectively constitute the [World Wide Web](https://en.wikipedia.org/wiki/World_Wide_Web). A website is hosted and published on a single or multiple web server. It is accessible via a network like the Internet or a private local area network via IP address.

There are also private websites that can only be accessed on a private network, such as a company's internal website for its employees or the clients only. A web portal is a web-based system that acts as a point of access to content, web pages, applications, services, etc., and in most cases requires prior sign-in/log-in. A web portal is focused on a specific target audience. Like websites, web portals are normally available via the Internet, though there are types of web portals that can only be accessed from a private network. We use websites and web portals every day in different scenarios.

A web application (or web app) is application software that runs on a web server, unlike computer-based software programs that are run locally on the operating system (OS) of the device. Web applications are accessed by the user through a web browser with an active network connection. Its frontend is usually created using languages like HTML, CSS, JavaScript, which are supported by major browsers. While the backend could use any server programming technologies. Unlike mobile apps, there is no specific Operating system or Devices for developing or using web applications.

SWOT Analysis of Dhaka WASA:

Strengths:

• Stable, experienced & dynamic Senior Management Team.

• Capable & experienced employees supported by a Training Centre established in 1980.

• 50+ years successful record in providing water & wastewater services for Dhaka.

• Major progress made under the 2009 “Turnaround Program” is continuing.

• Trust & support of GoB & Intl. Development Partners.

• Customer-oriented corporate culture.

• Implementing technology for efficiency & cost saving (computerization, MIS, GIS, SCADA, AMR, etc.)

• Long-term master plans for development of water & sewerage are in place & current.

• Major projects to substitute groundwater by surface water, rehabilitate water networks, reduce NRW & expand sewerage service are under construction and/or in advanced planning stage.

• A monopoly position in piped water supply & wastewater service for Dhaka City with assured revenue.

• Very Satisfactory Operating Ratio

• Water production capacity is more than water demand.

Weaknesses:

• Customer complaints about the quality of supplied water are too frequent.

• There are many weaknesses in current water quality monitoring, including:

1) Frequency of water quality monitoring in the networks vis-à-vis international norms;

2) Equipment, protocols & WQM equipment at water treatment plants;

3) Control of Drinking Water Treatment Chemicals;

• Monitoring of quality of surface water sources.

• Terms of employment for contract-based employees is leading to high employee turnover and loss of skills (e.g. DMA Management Staff).

• Sewerage coverage, 20% of Dhaka WASA Service Area, lags far behind water supply coverage.

• Although Dhaka WASA is striving to provide Quality service to the public, little is being done to publicize this.

• Water tariff is lower than the production cost.

Opportunities:

• Exploring potential for increasing efficiency and cost saving through outsourcing & PPP (Public Private Partnership).

• Expanding Dhaka WASA’s service area into surrounding urban, or urbanizing, areas to bring in new customers & revenue.

• Increasing sewerage coverage from the present 20% has potential for a very large increase in revenue.

• Devolution of some HQ responsibilities to MODS Zone Offices (Mini-WASAs) for closer ties to local communities.

• Taking advantage of Dhaka WASA’s internal expertise and facilities to supply services to other parties on a commercial basis.

Threats:

• Population migration to Dhaka City, rapid economic development & increasing water demands outstrip ability to increase & distribute water supply.

• Project implementation delays, due to external factors (road cutting, land acquisition, public & legal protests, etc.), lead to delays, increased costs and protracted Government approval process for budget increases.

• Delay to surface water supply projects and network rehabilitation projects, extends reliance on a diminishing groundwater resource & may result in deteriorating groundwater quality & water shortages and declining ground water table.

• Increasing surface water pollution of Dhaka City’s surrounding rivers (Buriganga, Shitalakshya etc). & consequent increase in the cost of water supply.

• Climate change & increased possibility for Droughts, dropping of water layer and flooding.

• Lack of inter-agency coordination between the organizations disrupts project success.