

***CHAPTER 06 - CASE SUDY: AUTOMATED &* Biometric Time Attendance MANAGEMENT System (Face Detection/Fingerprint)**



**6.1 Introduction:**

Time attendance systems are used to track and monitor when employees start and stop work. A time and attendance system enables an employer to monitor their employee working hours and late arrivals, early departures, time taken on breaks and absenteeism. It also helps to control labor costs by reducing over-payments, which are often caused by paying employees for time that are not working, and eliminates transcription error, interpretation error and intentional error. These systems can also be used to ensure compliance with labor regulations regarding proof of attendance. Similar & ILO standard staff duty roaster for all zonal offices and water or sewer treatment plants are recommendation

Modern digitized / automated time and attendance systems require employees to touch or swipe to identify themselves and record their working hours as they enter or leave the work area. Originally this consisted of using a (Radio-frequency identification) RFID electronic tag or a barcode badge but these have been replaced by biometrics (hand geometry, fingerprint, or facial recognition), and touch screens devices.

**6.2 Beginning of Biometric Attendance:**

July 2018, Dhaka WASA started its journey with biometric digital time attendance. Started with only 5 devices at Dhaka WASA head office (WASA Bhaban) 2 Number Devices at Saidabad Water Treatment Plant (SWTP)-1 & 2. Before COVID-19 Pandemic lockdown - Total Location covered: 32, Total Bio-Metric (Fingerprint) Device Installed: 48 (Including WASA head office).

**During lockdown:**

Government of Bangladesh declared lockdown from 26/03/2020. That’s why WASA all office stopped taking biometric attendance (Total Seven months) due to lockdown and so that the virus can’t speared by finger scanning devices.

**New Face detection Time attendance system:**

WASA authority took decision to replace biometric fingerprint attendance system with new technology 3D face detection attendance devices to avoid contagious contamination from finger touch.

Semi-Outdoor Multi-Biometric Time Attendance & Access Control Terminal which supports 3,000 face templates, 4,000 fingerprint templates and 10,000 cards – were to be installed.

New era of Face detection Time attendance system started on 2nd June 2020. DWASA installed 2 face detection devices at SWTP-1 & 2. Installed face detection attendance system at WASA Bhaban (Head Office) as well as different MODS zone, revenue zone, WTP etc. location.

**6.3 Customized Web based Realtime Attendance Software for DHAKA WASA:**

Connected Device in Different location WASA offices-

* WASA Bhaban/ Head office: 2 Devices
* MODS Zone-3 & Revenue Zone-3: 1 Device
* SWTP-1: 1 Device
* SWTP-2: 1 Device
* Total Device Connected: 5 Devices

**Features of present systems:**

* Dashboard for Management. (Currently available.)
* Scheduled Reporting to Management by E-Mail. (Currently available.)
* Online access of Staff & user. (Currently available.)
* Android & iOS Application. (On Demand)
* SMS alert (On Demand)

**6.4 Centralized customized Software feature:**

**USER MANAGEMENT:**

* User administration – Creating new users, input various information, photograph entry, about them, login authentication/ authorization.
* Multi user Role access with different privileges - .
* Role Based Access Control – various
* Role Based Input Control -

**STAFF ATTENDANCE:**

* Staff Attendance Entry - .
* Customized Reporting of Section Wise & Individual Staff Attendance - .
* Daily Absent & Absconding SMS Notification to Staff -
* Customized Reporting on Staff & Assigned Subject Mapping -

**SOFTWARE FEATURE:**

* Staff Management -
* Complete Admission Process - .
* Staffs Details Profile - .
* Customized Reporting on Staff -
* Attendance Automation -
* Staff Migration between Branch, Shift, & Section -

**ADVANCE SOFTWARE REPORT MAMAGEMENT:**

* Employee information report/details.
* Shift information.
* Leave information.
* Daily in/out report.
* Daily absent, present & leave report.
* Daily late report.
* Daily over time (OT) report.
* Daily summary OT information.

**6.5 SOFTWARE FEATURES:**

**ADVANCE SOFTWARE REPORT MAMAGEMENT:**

* Easy to use & fully customized.
* Ability to add employees easily.
* Reduces HR daily work & increases productivity.
* Integration attendance with fingerprint devices.
* Tracks up to date work status.
* Centralized monitoring.
* Enhanced Reporting Capabilities.
* Employee personal information.
* Attendance Management.
* Holiday Management.
* Leave Management.
* Employee wise leave day.
* General shifting and Employee wise shifting.
* Daily summary attendance information.
* Monthly in/out report.
* Monthly absent, present & leave report.
* Monthly late report.
* Employee over time (OT) calculation.
* Monthly over time (OT) report.
* Monthly summary OT information.
* Monthly summary attendance information.

**6.6 Software Architecture Details:**

**Cloud Based Solution & Software Tools:**

* Development in Frontend: HTML-5, CSS & Bootstrap CSS Framework.
* Development in Backend/ server side programming: PHP & PHP Codeigniter Framework
* Intelligent Technology will host the TIME ATTENDANCE MANAGEMENT CUSTOMIZED SOFTWARE Solution on Cloud Based server infrastructure
* User will access the application over the internet using Web Browser
* Distributed Faster Solution with Central Implementation.
* PHP programming language & PHP Codeigniter Framework
* Java-Script programming language & jQuery Framework of Javascript.
* Ajax & JSON
* Rest API

**6.7 Challenge to implement this software:**

* Old Finger Device connectivity is a problem
* All Pump House connectivity to this software
* Different Time Schedule in different office/zone
* Others software like Leave management integration
* Roaster duty/ Roaster Shifting.
* 24hours duty schedule (6AM-2PM, 2PM-10PM, 10PM-6AM)
* 12 hours schedule (8AM-8PM & 8PM-8AM)
* General Duty(9AM-5PM)
* Data Collection covering whole of DWASA

**6.8 Reasons to track employee hours:**

* Regular pays or Wages paid to employees are determined by the number of days or hours worked. Employers will want to be sure that they're accurately paying employees whether they're in the office or in a remote location.
* Overtime paid to most workers, whether hourly or salaried, are eligible for overtime pay when they work more than 40 hours per workweek. So, time tracking is important.
* Employees receive certain breaks & rest periods during their shifts. Tracking hours can show that employers are compliant with rules in providing these breaks.
* Companies that award paid time off for personal, vacation, and sick days based on work days, must calculate the earned time correctly.
* Tracking hours can help determine whether workers are arriving to the office on time.

**6.9 Benefits of automated time and attendance systems:**

* The biggest benefit of digital time and attendance tracking systems is that they eliminate the need for manual records. All the time data is collected electronically, with the desired data processing and calculations on demand.
* Since time and attendance software systems are automated, they cut down on the chance of human errors in calculations of labor and job costing. They also free up the person who was responsible for time and attendance tracking before to work on other tasks. Additionally, with fewer error comes lower risk of noncompliance with labor laws and regulations.
* Another positive is that these systems manage all your time needs – employee attendance etc. – in one program. This can be both cost-effective and a boost to productivity, as employees won't waste time toggling between different programs to ask for time off or look at their schedules. In short more efficient time tracking.
* With time and attendance software, we don't have to round the hours employees worked to more convenient numbers that work better with [payroll calculations](https://www.businessnewsdaily.com/12008-how-to-process-payroll.html) and pay rules. Our software of choice will automate and ensure the accuracy of all wage payments. In short - more accurate payroll processing.
* Most time and attendance tracking software platforms integrate with many other human resources tools, so they improve all workforce management tasks, not just attendance-related processes.

**6.10 These are the main drawbacks of automated time and attendance systems:**

* Cost- The biggest drawback of time-tracking systems is that they are more expensive than the manual method where employees write down their hours each day.
* Errors-Even the best software programs may occasionally malfunction. There's always a mild risk of tracking or calculation errors when you use any software for time and attendance systems.
* This system is heavily reliant on electricity supply and communication network.

**6.11 Future activity related to automated time and attendance systems:**

* Administrative, salary and other stakeholders should get through training on all hardware, software and how to use them for maximum benefit of DWASA.
* Software should be commercially available and licensed. Customization of software can be developed after gaining experience.
* All employees (Permanent, temporary, Master-roll, outsourced, contractual) should be included in this system.
* All biometric attendance machines should be covered by monitoring camera also.