Smart water meter for Decision Support

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Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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Name of the Student Signature of the Student

Date:

Supervised by

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Dedication

This thesis is dedicated to my Mother I K Amarasekara and Wife A H Pitiyage for their endless love, encouragement and support.

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Abstract

In recent years, the demand for water has increased in households. Consumer's awareness regarding daily water consumption is very low. Traditional water meter unable get daily consumption efficient manner and water consumption has been calculating once in a month. It has been calculated by manually. With the advancement of information technology, over the past years there has not been any attempt to enhance manual meter reading to automate within Sri Lanka.

The main objective of this project is to propose and implement system to identify customer behaviors and pattern of consume water using Smart Water Meter System (SWMS). As developing nations, the technology of employing smart water meters new to the society. Cost savings and improved operational efficiency of meter reading personnel was achievable.

In some cases, existing water meters are fixed in the backyards and difficult in granting access to enter the premises. In such a situation, meter reading personal has to wait until the customer opens the gate. There are cases where the customer has locked and out of the premises and unable to get the meter reading. In such a situation the meter reader calculates the bill using an average monthly reading as the current month consumption. Customer's point of view this calculation will not be feasible when the actual reading exceeds the monthly consumption as charges may vary according to the tariff category they belong. These customers have been instructed to read their meters themselves and inform to a substation after receiving the monthly bill for alteration. This will be an extra cost to the billing as an officer has to be appointed to solve these matters.

The proposed system consists of Smart Water Meter (Developed using The Arduino Uno - microcontroller board, Flow Sensor, GSM Modem SIM900A and Wi-Fi Shield) native Android mobile application and a Web application. Instant meter reading has been saved to memory in the control board and periodical time interval data will be uploading to the cloud system. Customer can be logging to the cloud system and able to view daily consumption and analytical information during the given period. As additional feature meter reader can download meter reading via Wi-Fi to hand held device using Meter Reader mobile application.

With this system, it is expected to facilitate consumer to make better service and save the water as resource and reduce meter reading cost of the National Water Supply and Drainage Board.

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