DEVELOPMENT OF KEY PERFORMANCE INDICATOR (KPI) REPORTS FOR WATER BILLING SYSTEM IN BUSINESS INTELLIGENCE APPLICATION

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ABSTRACT

In today's world, in order to achieve strategic objectives and to track enterprise performance, large amount of data gets analyzed thus becoming an essential business activity to improve decision-making. Key Performance Indicators (KPIs) are associated with specific purpose, so that work progress towards organization's objectives or mission can be measured. However, huge and small business requires such indicators to be carried out in the form of data warehousing (DW)/business intelligence (BI) applications. To develop KPI Reports for Utility Billing Information System (UBIS), which further facilitates activities for Water Billing Department, becomes the main objective of this research. A list of requirements that is needed to develop this kind of reports was identified in order to achieve the stated objective. Furthermore, in order to design and develop DW for UBIS, DW/BI developing process was used, the dimensional model (DM) of the UBIS-KPI was defined and its DW model was designed. Moreover, the prototype of a BI application was developed based on the proposed DW model. To ensure that UBIS user's requirements are satisfactorily met, Computer System Usability Questionnaires (CSUQ) was used to evaluate the prototype. Finally, providing guidance to BI developers and supporting decision making of Water Billing department serves as the key contribution of this study.

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LIST OF ABBEREVIATIONS

KPI	Key Performance Indicator
BI	Business Intelligence
CSUQ	Computer System Usability Questionnaires
DW	Data Warehouse
DM	Dimensional Model
ERD	Entity Relational Diagram
ETL	Extract- Transfer-Load
LDM	Logical Data Map
MDX	Multi-Dimensional Expressions
OLAP	On-Line Analytical Processing
OLTP	On-Line Transaction Processing
PWD	Public Work Department
RAD	Rapid Application Development
UBIS	Utility Billing Information System
UBIS-KPI	Utility Billing Information System-Key Performance Indicator
WB	Water Billing
WBS	Water Billing System
WSB	Water Supply Branch
XML	Extensible Markup Language

CHAPTER ONE

INTRODUCTION

1.1 Introduction

One of the main reasons that led to the selection of this study is its concentration towards the subject of developing KPI-reports for WBS using BI applications. In this chapter, we identify the objectives, significance and the scope of this study based on the illustration and study background of the selected field.

1.2 Study Background and Motivation

In order to satisfy the strategic plan and exacting performance goals, performance management is used to trace the organizational progress as well as to monitor the progress of their organization's performance by managers and decision-makers (Kennerley & Neely, 2002). Gorbach et al. (2006), noted that using Key Performance Indicators (KPIs) was one of the recent ways by which, business estimated the health of an activity by measuring its progress against predefined goals. Managers and decision-makers are measuring the success against some pre-defined goals using KPI as the common application in business intelligence (BI) whereby, each KPI has an actual value against a target value that represents the goal. In addition, the goal should be well thought-out to the success of any business or organization. In order to determine the health of an organization, the actual value is compared to the target value. Each KPI can give one aspect of business growth when KPIs are grouped to give the overall health of

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