

BSC IMPLEMENTATION AT SOFTWARE PROJECT

14955



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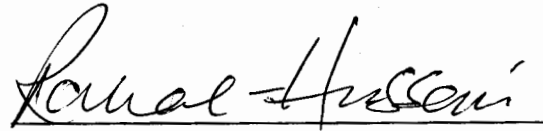
FINAL APPROVAL

It is certified that we have read the thesis, entitled "*BSC Implementation at Software Project*", submitted by **Mr. Muhammad Farooq** (01-FAS/MSSE/03) and **Mr. Zaheer Ahmad** (62-FAS/MSSE/F04). It is our judgment that thesis is of sufficient standard to warrant its acceptance by the International Islamic University Islamabad for MS Degree in Software Engineering.

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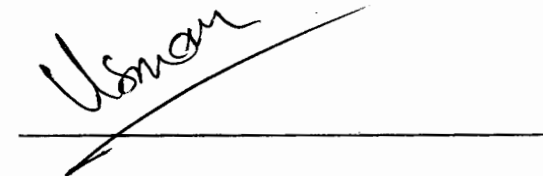
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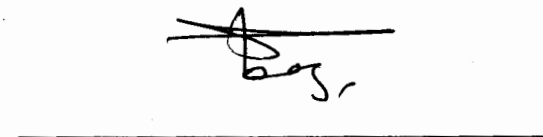
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*In
the
Name
of*
ALLAH
The Most Merciful
The Most Beneficent

*A Thesis Submitted to the Department of Computer Science,
Faculty of Basic and Applied Sciences, International Islamic
University, Islamabad, Pakistan, as a partial fulfillment of the
Requirements for the Award of the Degree of*

MS in Software Engineering

To
The Holiest man ever born,
PROPHET MUHAMMAD (PEACE BE UPON HIM)
& To

OUR DEAREST PARENTS & FAMILY
Who are an embodiment of diligence and honesty,
Without their prayers and support
This dream could have never come true

& To
PRECIOUS FRIENDSHIP
That has made us laugh, held us when we cried
and always, always, be among us

DECLARATION

We hereby declare and affirm that this thesis neither as a whole nor as part thereof has been copied out from any source. It is further declared that we have completed this thesis on the basis of our personal efforts, made under the guidance of our supervisors. If any part of this thesis is proven to be copied or a reproduction of some other work or found to be guilty of plagiarism of any kind, we shall stand by the consequences.

No portion of the work presented in this thesis has been submitted to get a degree or qualification from any other University or Institute of learning.



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ABSTRACT

Balanced Scorecard (BSC: Kaplan and Norton, 1992) is the most popular framework to measure and manage performance of an organization. BSC looks at the organization in four perspectives (Financial, Customer, Internal Processes, and Learning & Growth). BSC approach has been adopted by many IT companies to measure and improve the performance in multi dimensions. Some companies have adopted the BSC with alteration in its original framework. Some literature also exists which shows the alteration in the original framework of BSC, but there is not any real application of BSC presented with evidence which demonstrate its inadequacy in four perspectives at software project level. In this research a case study was conducted in which original BSC with its four perspectives is implemented on a software project level. The detailed analysis of performance measurements of software project which helps to observe whether the original BSC framework is needed or it should be altered.

In this thesis our main object was to find out that, whether the BSC is adequate for software project or not. As some researchers have altered it by stated that, the BSC have not adequate for software project because it does not contain the project management theoretical knowledge base and all project management tasks. So, we implemented the original framework of BSC at software project in software development company and tried to demonstrate that whether there is need for its alteration or not. During the case study we have designed BSC at three levels of BIS, a corporate level BSC has been designed by us keeping in view the organization's vision and mission statement and then BSC for software development unit was designed by cascading the corporate level BSC and finally, BSC at software project level was designed. We have only implemented the BSC at project level and collected two types of data, the performance data of project against four perspective of BSC and the data about managerial activities performed by the Project Manager to improve the performance across the BSC.

TABLE OF CONTENTS

CONTENTS		PAGE#
1.	Chapter One: INTRODUCTION	1
1.1.	The original Balanced Scorecard	3
1.1.1.	Theory behind the Balanced Scorecard	5
1.1.2.	Balanced Scorecard as a Measurement Tool	6
1.1.3.	Balanced Scorecard as a Strategic Management System	7
1.3.	Thesis Layout	7
2.	Chapter Two: LITERATURE SURVEY & PROBLEM STATEMENT	9
2.1.	Literature Survey	9
2.2.	Problem Statement	12
3.	Chapter Three: CASE STUDY	13
3.1.	Research Methodology	13
3.2.	Limitation of case study	14
3.3.	Introduction about company (Buraq Integrated Solution)	14
3.4.	Mission Statement of BIS	15
3.5.	Strategy Statements of BIS	15
3.6.	Balanced Scorecard at corporate level of BIS	15
4.6.1.	Financial Perspective	16
4.6.2.	Customer Perspective	16
4.6.3.	Internal Process Perspective	16
4.6.4.	Learning & Growth Perspective	16
3.7.	Balanced Scorecard at software development unit	18
4.7.1.	Financial Perspective	18
4.7.2.	Customer Perspective	18
4.7.3.	Internal Process Perspective	19
4.7.4.	Learning & Growth Perspective	19
3.8.	Implementation of BSC at software development project	21
3.8.1.	Introduction about software project (eDox)	21

3.8.2.	Balance Scorecard at software project level	21
3.8.2.1.	Financial Perspective	22
3.8.2.2.	Customer Perspective	22
3.8.2.3.	Internal Process Perspective	23
3.8.2.4.	Learning & Growth Perspective	23
3.9.	Data Collection	24
3.10.	Data Analysis	24
4.	Chapter Four: CONCLUSION	31
4.1.	Future Work	33
5.	REFERENCES	34
6.	APPENDIX	37
	Appendix-A (BSC at all levels of Company: BIS)	37
	Appendix-B (Data Gathering Performa)	38
	Appendix-C (Performance of eDox Project against the each objectives of Project BSC)	62
	Appendix-D (Performance analysis of eDox Project against four perspective of Project BSC)	68
	Appendix-E (Overall performance of eDox Project against four perspective of Project BSC)	71
	Appendix-F (Mapping of project management's nine areas defined in PMBoK with the performance of eDox Project in the BSC)	72

CHAPTER ONE

1. INTRODUCTION

Balanced Scorecard (BSC) is one of the most important and widely adopted performance measurement methods, and especially its recently evolving usage for IT governance makes it an attractive tool to measure and evaluate IT contribution to performance of a firm (Stefan & Daniel, 2006).

A recent survey determined that companies use an average of 13 management tools or frameworks at the corporate level. Many of these are tools intended to help measure or monitor the performance of an organization, and within this list the most popular performance related framework is the Balanced Scorecard (57% reporting use of a Balanced Scorecard) (Gavin, Dirk, & Henrik, 2005).

One of the benefits of the Balanced Scorecard lies in its inherent flexibility. Norton and Kaplan (1996) have presented different balanced scorecard frameworks for different types of enterprise such as governmental establishment, non-profit organizations and strategic business units found within a particular organization. The same customization of the balanced scorecard can also be used when applying it to projects. Wendy, Larkin, and Ontario (2001) have suggested that, in the application of the Balanced Scorecard to projects, project can conceptually and simply be seen as a mini-company. Thus it can be theorized that the project-based balanced scorecard can be used as both an indication of the performance of a project, as well as complete project management methodology tool.

Some software organizations have recently tried to use the Balanced Scorecard with some alteration for achieving better results, since Software Process Improvement (SPI) and SPI models are not goals in themselves, but just elements in the overall strategy of the company (Buglione, Abran, & Meli, 2001). There have been done few attempts to build an ICT Balanced Scorecard for Software Intensive Organizations (SIOs), such as the Balanced IT Scorecard (BITS) (Reo, 1999a, 1999b, 2000) proposed by the European Software Institute (ESI) - it provides a new version of the four original perspectives (financial, customer, internal process, infrastructure and innovation) and adds a fifth the "People perspective", and the Balanced Scorecard of Advanced Information Services Inc.

(Ferguson, Leman, Perini, Renner, & Seshagiri, 1999) that considered the "employee" element as a distinct perspective, thereby expanding the analysis to five perspectives (financial, customer, employee, internal business process, learning and growth). Buglione, Abran, and Meli, (2001) stated that a key issue that needs to be addressed in the design and implementation of a Balanced Scorecard (BSC) for ICT companies is the identification of measures representative of the software itself, and meaningful for the development of business indicators. To address operational measurement issue in the ICT field, the functional size measurement (FSM) was used as the key measurement method for normalizing other measurement results across reference values and supports the "measure-indicator" issue in an ICT Balanced Scorecard. Rosemann, and Wiese (1999) have altered the BSC and added fifth Project Perspective for measuring the performance of ERP software. They stated that the individual project requirements like identification of critical path, definition of milestone, evaluating the efficiency of the project organization will cover by this project perspective which presents all the project management tasks.

Some companies have adopted the BSC and integrated it with some other approaches for better results. Dolins, (2006) adopted the BSC to determine the value of software project by mapping the three dimensions (strategic, informational, and transactional) of IT benefits with BSC. Bricknal, Gunilla, Hans, and Kalevi (2007) looked at the use of BSC and how it can be used to align the business and IT strategies. They have related Business Performance Management to BSC and broken down strategies, objectives, targets and measurements on both the business and IT sides of the company. Stefan and Daniel, (2006) have stated that BSC is one the most important and widely adopted performance measurement methods. Especially, its recent evolving usage for IT governance makes it an attractive tool to measure and communicate IT contribution to performance of a firm. They proposed an integrated approach of BSC and Bayesian Belief Network. Buglione and Abran (2000) have tried to integrate the best of BSC and Goal Question Metrics (GQM), and proposed a common measurement framework where the integration of BSC and GQM allows for a more detailed focus on the organizational measurement, facilitating the alignment between the strategic and project levels.

1.1. The Original Balanced Scorecard:

Kaplan and Norton (1996) defined the Balanced Scorecard (BSC) as a multi-dimensional framework for describing, implementing and managing strategy at all levels of an enterprise by linking objectives, initiatives and measures to an organization's strategy. The scorecard then provides an enterprise view of an organization's overall performance: it integrates the financial measures with other key performance indicators around customer perspectives and internal business processes, and around organizational growth, learning and innovation. It is to be noted that the BSC is not a static list of measures, but rather a framework for implementing and aligning complex programs of change, and, indeed, for managing strategy-focused organizations. To sum-up, a scorecard is to be used to facilitate the translation of strategy into action.

The BSC provides a framework for studying causal links based on internal performance measurement through a set of goals, drivers and indicators grouped into four different perspectives:

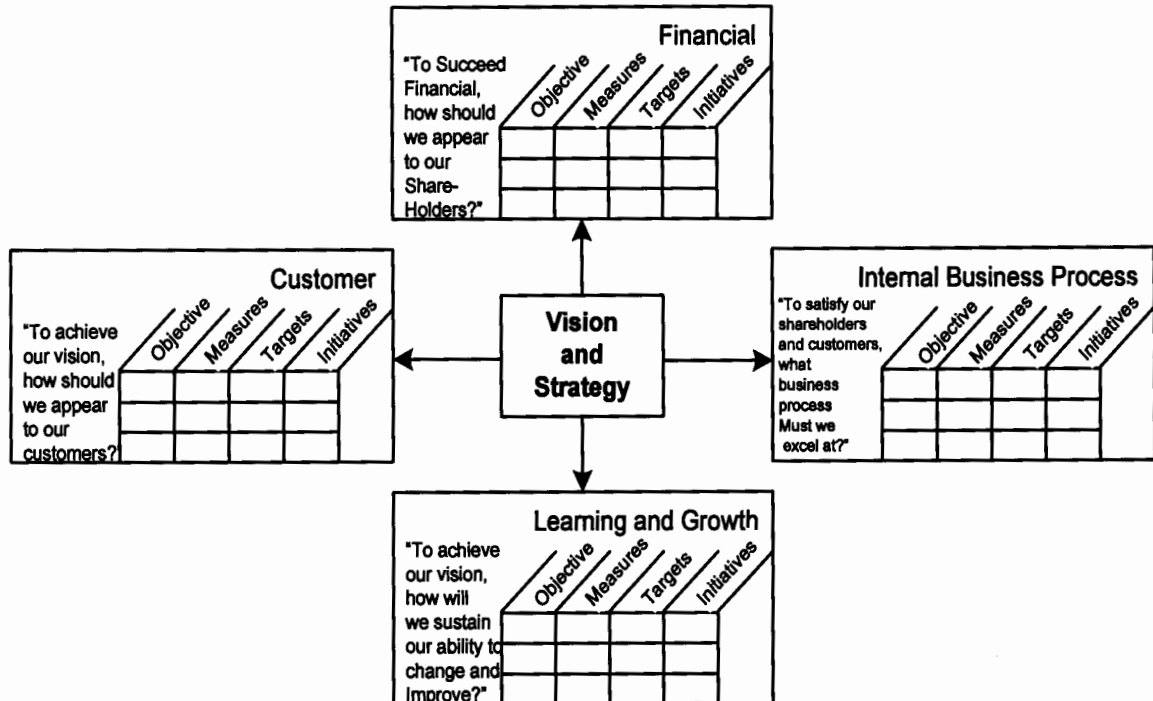


Figure # 1: Balanced Scorecard (Kaplan & Norton, 1992)

- **Financial:** typically relates to profitability - measured by Return On Investment (ROI) , Return On Capital Employed (ROCE) and Economic Value Added (EVA) for instance,
- **Customer:** includes several core or generic measures of the successful outcomes of company strategies - for instance, customer satisfaction, customer retention, and market and account share in targeted segments,
- **Internal processes:** focus on the internal processes that will have the greater impact on customer satisfaction and on achieving the organization's financial objectives,
- **Learning and growth:** identifies the infrastructure the organization has to build in order to create long-term growth and improvement through people, systems and organizational procedures.

A good BSC should tell the story of the organization's strategy. Three criteria help in determining whether or not this objective has been achieved:

- **Cause-and-effect relationship:** every measure selected should be part of a cause-and-effect relationship (causal relationship chain) which represents the strategy.
- **Performance Drivers:** the drivers of performance (lead indicators) tend to be unique since they reflect what is different about the strategy of a company. They should be properly mixed with lag indicators.
- **Linked to financial indicators:** while there is a proliferation of new strategic goals such as quality, customer satisfaction and innovation, these goals must also be translate into measures which are ultimately linked to financial measures.

1.1.1. Theory behind the Balanced Scorecard:

During the industrial age, roughly from 1850 to about 1975, companies succeeded by how well they could capture the benefits from economies of scale and scope. Technology mattered, but, ultimately, success accrued to companies that could embed the new technology into physical assets that offered efficient, mass production of standard products. During the industrial age, the financial control systems were developed in major companies to facilitate and monitor efficient allocations of financial and physical capital. A summary financial measure such as return-on-capital-employed (ROCE) could both direct a company's internal capital to its most productive use and monitor the efficiency by which operating divisions used financial and physical capital to create value for shareholders.

The emergence of the information era, however, in the last decades of the 20th century, has made obsolete many of the fundamental assumptions of industrial age competition. The information age environment for both manufacturing and service organisations requires new capabilities for competitive success. The ability of a company to mobilise and exploit its intangible assets has become far more decisive than investing and managing tangible, physical assets.

Industrial age companies created a sharp distinction between two groups of employees. The intellectual elite – managers and engineers – used their analytical skills to design products and processes, select and manage customers, and supervise day-to-day operations. The second group was composed of the people who actually produced the products and delivered the services. This direct labour work force was a principal factor of production, which performed its tasks under supervision of the first group. Today automation and productivity have increased the number of people performing analytic functions: engineering, marketing, management and administration. Therefore, the people are more viewed as problem solvers, not as variable costs. In other words, information age has brought about the concept of knowledge management.

As for today, financial performance and efficiency in production are just not enough to gain sufficient competitive advantage, but more and more attention needs to be paid to intangible sides of business.

For at least 15 years, the leading management journals have published articles about how to build up a mechanism that would enable to control all the aspects of a company's performance. One of the most versatile tools for that purpose is Balanced Scorecard.

Kaplan and Norton (1992) introduced the Balanced Scorecard which used a balanced measurement system that comprises "the old" financial side and three "new" perspectives of:

- Business processes (operational efficiency);
- Growth and learning (knowledge management);
- Customers (satisfaction and image of company to outside partners).

1.1.2. Balanced Scorecard as a measurement tool

The Balanced Scorecard provides managers with thorough instrumentation, need navigate to future competitive success. Today, organisations are competing in complex environments so that an accurate understanding of their goals and the methods for attaining those goals is vital. The Balanced Scorecard translates an organisation's mission and strategy into a comprehensive set of performance measures that provides the framework for a strategic measurement and management system. Kaplan and Norton (1996) stated that, the Balanced Scorecard enables companies to track financial results while simultaneously monitoring progress in building the capabilities and acquiring the intangible assets they need for future growth.

Kaplan and Norton (1996) have mentioned that the Balanced Scorecard is not just a measurement system, but comprises a whole new way of looking at business. During the implementation of a Balanced Scorecard, it requires so many improvement efforts throughout the organisation that it might be called a whole new management system.

1.1.3. Balanced Scorecard as a Strategic Management System

The Balanced Scorecard emphasises that financial and non-financial measures must be part of the information system for employees at all levels of the organisation. Front-line employees must understand the financial consequences of their decisions and actions; senior executives must understand the drivers of long-term financial success. The objectives and measures for the Balanced Scorecard are more than a somewhat ad hoc collection of financial and non-financial performance measures; they are derived from a top-down process driven by the mission and strategy of the business unit. The Balanced Scorecard should translate a business unit's mission and strategy into tangible objectives and measures. The measures represent a balance between external measures for shareholders and customers, and internal measures of critical business processes, innovation, and learning and growth. The measures are balanced between outcome measures—the results from past efforts—and the measures that drive future performance. Moreover, the scorecard is balanced between objective, easily quantified outcome measures and subjective, somewhat judgmental, performance drivers of the outcome measures.

The Balanced Scorecard is more than a new measurement system. Innovative companies use the scorecard as the central, organising framework for their management processes. Companies can develop an initial Balanced Scorecard with narrow objectives: to gain clarification, consensus, and focus on their strategy, and then to communicate that strategy throughout the organisation. The real power of the Balanced Scorecard, however, occurs when it is transformed from a measurement system to a management system.

1.3. Thesis Layout

The thesis is structured as: chapter 2 presents the literature survey which we have studied during our research work relevant to our research topic and also presents the problem statement which appeared during the literature survey. Chapter 3 discusses the research methodology and case study. In the case study, we designed the BSC at corporate level and then we designed the BSC at Software Development Unit level and finally we designed and implemented the BSC at Software Project. In this chapter we analysed the

performance data of software project gathered through the Project Level BSC. Chapter 4 provides the conclusion about the implementation of BSC at Software Project and future works.

CHAPTER TWO

2. LITERATURE SURVEY & PROBLEM STATEMENT

2.1. Literature Survey:

Kaplan and Norton (1996) stated that the Balanced Scorecard specifically focuses on four perspectives (Financial, Customer, Internal Process and Learning & Growth) and balancing long term and short term goals of an organization . Sudipto (2007) observed that the organization which does not have a robust framework to deploy a “Balanced” set of goals at the project level fails to achieve organizational alignment and integration.

Buglione, Abran, and Meli (2001) have reported that some software organizations have recently tried to use the Balanced Scorecard for achieving better results, since Software Process Improvement (SPI) and SPI models are not goals in themselves, but just elements in the overall strategy of the company.

There have been done few attempts to build an ICT Balanced Scorecard for Software Intensive Organizations (SIOs), such as the Balanced IT Scorecard (BITS) proposed by the European Software Institute (Reo, 1999a, 1999b, 2000). They provided a new version of Balanced Scorecard with perspectives financial, customer, internal process, infrastructure & innovation, and added a fifth the “people perspective”. Reo (2000) has stated about people perspective (a fifth perspective) that:

“in fact, personnel are the prime materia of software developmen. The knowledge and experience of people represent a most important asset and should not be relegated to the infrastructure level. Competence, satisfaction and retention are the three drivers to reaching higher productivity levels.”

Ferguson, Leman, Perini, Renner, and Seshagiri (1999) have proposed ICT Balanced Scorecard by considering the "employee" element as a distinct perspective, thereby expanding the analysis to five perspectives (financial, customer, employee, internal

business process, learning and growth). They have stated about the employee perspective that:

“its objective is to consistently meet or exceed employee expectation for training, compensation, communication, work environment, performance management, and career development.”

Buglione, Abran and Meli (2001) felt that a key issue that needs to be addressed in the design and implementation of a Balanced Scorecard (BSC) for ICT companies is the identification of measures representative of the software itself, and meaningful for the development of business indicators. To address operational measurement issue in the ICT field, the functional size measurement (FSM) was used as the key measurement method for normalizing other measurement results across reference values and it supports the “measure-indicator” issue in an ICT Balanced Scorecard.

Rosemann and Wiese (1999) have altered the BSC and added fifth Project Perspective for measuring the performance of ERP software. They stated that the individual project requirements like identification of critical path, definition of milestone, evaluating the efficiency of the project organization are covered by this project perspective which presents all the project management tasks.

Brock, Hendricks, Linnell and Smith (2003) have argued that original BSC framework presented by Kaplan and Norton in 1992 is inadequate for the project, because it does not contain a sufficient theoretical knowledge base application to projects. Specifically, the four Balance Scorecard perspective do not adequately reflect the relevant project management focus areas, areas that have been more suitably defined in the CRPMBok and PMBoK. To overcome the limitation of the BSC, they proposed a new four-tier model (Project, Strategically Alignment, Project Process, Project Foundation) to improve the rate of IT project success through a balance management. The proposed balanced model consists of two primary divisions to project management, the internal focus and the external focus. The internal focus consists of all people processes and practices that reside within the domain of the project itself and are relevant during the lifecycle (project process) of the project. The external focus consists of the influencing factors outside of

the project itself, but within the domain of the organization that initiated it. Within these two divisions are four further sub-divisions, namely the project, strategic alignment, and program management, project processes and the project foundation.

Dolins (2006) has adopted the BSC to determine the value of software project by mapping the three dimensions (strategic, informational, and transactional) of IT benefits. He mapped a set of measures for quantifying value to a categorization of IT benefits. The set of measures is obtained from the BSC process, where they are currently used to measure employ and project productivity. He stated that the mapping will help IT executive, managers, and researches in determining how their IT application can provide benefits and then how to measure its value.

Bricknal, Gunilla, Hans, and Kalevi (2007) have looked at the use of BSC and how it can be used to align the business and IT strategies. They have made a study of the pharmaceutical company using the method called the Business Performance Management. The authors have related this method to BSC and compared how they have broken down strategies , objectives, targets and measurements on both the business and IT sides of the company to see if they have alignment between business and IT. They have analyzed the result of case study and taking into consideration the apparent difficulties of aligning business with IT, the difficulty to broken down IT strategy to lower level and keeping them aligned with business strategy. They found this a good reason to see how the company has not accomplished this.

Stefan and Daniel (2006) have stated that BSC is one the most important and widely adopted performance measurement methods. Especially, its recent evolving usage for IT governance makes it an attractive tool to measure and communicate IT contribution to the firm's performance. The authors have stated that corporate causalities relationship are the integral part that is modeled within the BSC, but these causalities relationship within the BSC are not thoroughly introduced in theory nor applied in practice in a sound way. They proposed an integrated approach of BSC and Bayesian Belief Network. In this integrated

approach, they used causal modeling of Bayesian Belief Network to improve the BSC methodology and to support organization in introducing a Balanced Scorecard

2.2. Problem Statement:

Balance Scorecard has been adopted for software companies with alteration in its original framework, but there are no results presented of implementation of original BSC framework on software projects and the need for its alteration. Brock, Hendricks, Linnell and Smith (2003) argued that the Balanced Scorecard in its application to projects in present form does not contain a sufficient theoretical knowledge base applicable to projects. They also argued that, specifically, the four Balanced Scorecard perspectives do not adequately reflect the relevant project management focuses areas.

Many researchers have written the inadequacy of BSC for Software Projects but they did not demonstrate the application of original BSC on software project. The problem is that, there is no real application of original BSC framework on software project in software development company, which presents the results that show either the need of any alteration in BSC or inadequacy of BSC for software project.

We designed and implemented the original framework of Balanced Scorecard on software project in software development company, and we analyzed the results that either the BSC is successfully managing the performance of software project or there is a need for some alteration in its framework.

CHAPTER THREE

3. CASE STUDY

3.1. Research Methodology:

We have decided to investigate in a scientific way rather than rely on common wisdom/argument about the inadequacy of original framework of BSC for software development projects. There are three types of scientific investigations those are survey, a case study and formal experiment. We have decided to conduct a case study and our choice for adopting case study approach was due to the fact that we had no control on the variables, due to limitations by company, which can affect the out comes and there was not a retrospective material available of BSC implementation on software projects in Pakistan.

We applied Balanced Scorecard on software project in software development company to measure the performance of the software project. As BSC follows the vision, mission and strategies of the company, so, first we had to design the BSC at company level. Some companies may have more than one business units. To design the BSC at project level, we had to design the BSC at concerning sub business unit level by cascading it with company level of BSC. Then, in final, we constructed and implemented the BSC at project level by cascading it with the higher levels of BSCs.

All the information and the data about the company and project were provided by the Project Manager of the concerning project. The performance data of the project against four perspectives of the BSC was collected on the performa designed by us. The performance data was calculated by the Project Manager.

In the end, the performance data was analyzed to examine the BSC at project level whether it is adequately performing its role. The performance validity by BSC at project level was examined through the level of managerial activities (defined in PMBoK)

performed by the Project Manager to improve the performance of the project against the objectives defined in Project BSC.

3.2. Limitations of case study:

Before considering the case study it is necessary that certain limitations be discussed. The BSC was not already implemented in the company in which our case study was conducted. The Balanced Scorecard designed by us at corporate level and unit level was not implemented. Only the Balanced Scorecard at project level was implemented.

The data regarding project performance against the defined objective in Project BSC was provided by the project manager himself, so, there might be a potential for biased data capture.

During the project, our interaction remained to Project Manager only. The managerial activities performed by the Project Manager were his own decision to improve the performance towards the objectives.

3.3. Introduction about Company (Buraq Integrated Solutions):

Buraq Integrated Solutions (BIS) has been heavily involved in Consultancy, Software Development, Networking and Manpower Training since 1990. Presently BIS has offices at Rawalpindi, Sydney & Jeddah. BIS is at CMM Level 3, and having 100 employees. BIS is growing at an accelerated rate, primarily because of forward-looking vision and exceptional leadership of BIS.

BIS offers solutions at enterprise level in the forms of DMS, Office Automation, GIS Development etc. BIS is carrying on all the future projects as well as provides technical support to previous customers.

3.4. Mission Statement of the BIS:

To provide fast and most reliable integrated computer services on turn key basis utilizing state-of-the-art solutions to meet the challenges of dynamically growing present and future business requirements of the customer. BIS strives for clients' delight and relationship based on integrity and mutual trust. Buraq Integrated Solutions aims to gain sustainable competitive advantages by creating teamwork environment. Further, Buraq Integrated Solutions is committed to provide superior education, training and environment for personal and professional growth to provide the highest quality products/services.

3.5. Strategy Statements of the BIS:

- i). To meet the challenges of dynamically growing present and future business requirements of the customer, provide fast and most reliable integrated computer services utilizing state-of-the-art solution.
- ii). Based on integrity and mutual trust, it always strives for clients' delight and good relation.
- iii). To create a teamwork environment to achieve sustainable competitive advantages.
- iv). To provide superior education, training and environment for high quality of product/services.
- v). Consistently growing profits, efficient cost-structure, leadership returns and financially sounds of BIS

3.6. Balanced Scorecard at Corporate Level of BIS:

We have developed a BSC at the corporate level of BIS. The Balanced Scorecard approach says that the success of an organization is dependent upon balancing various aspects of the organization to achieve overall success. We must look at the organization from four basic perspectives. We translated strategic goals into action goals across four perspectives to achieve the organizations' vision and mission. These action goals against four perspective of balanced scorecard are as:-

3.6.1. Financial Perspective:

- Be financially sustainable in the service of our mission.
- Making decisions in the best long-term interests of our financial shareholders.

3.6.2. Customer Perspective:

- Build and maintain the good long-term relationships with our customers.
- Provide reliable integrated services to our customers.
- Deliver creative and effective customized solutions to payers.
- Provide innovative and high quality of products/services.

3.6.3. Internal Process Perspective:

- Follow the defined processes model.
- Uphold the proper defined procedures.
- Optimize the mix of our workforce and teamwork environment to achieve competitive advantage.

3.6.4. Learning & Growth Perspective:

- Provide proper education and training for high quality of services/products.
- Improve business practices & efficiencies acting with integrity, high ethical standards and motivation.
- Building an environment that encourages open communication, participation, honesty and candor.

BSC AT CORPORATE LEVEL OF BIS

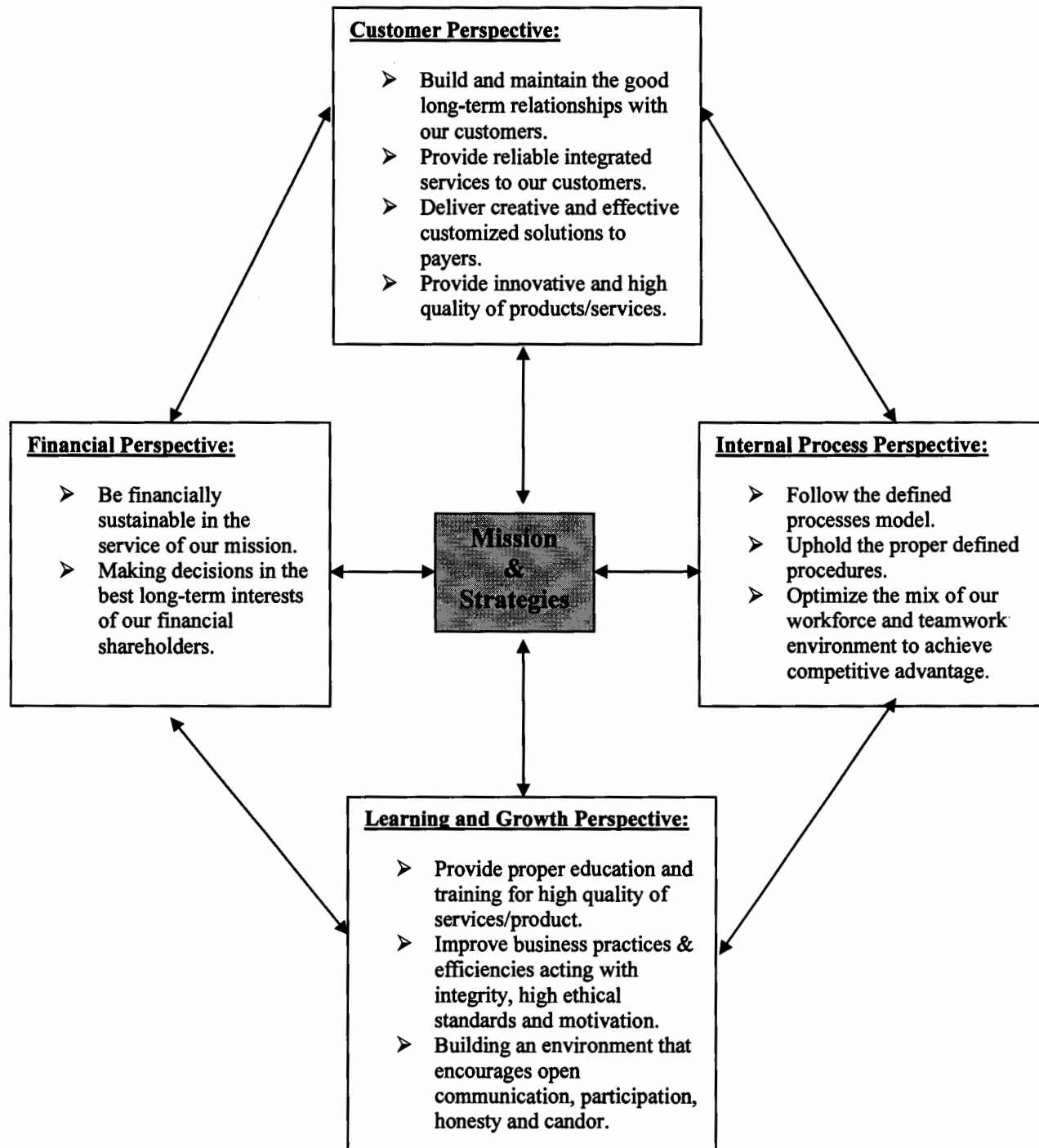


Figure # 2 (Corporate Level BSC of BIS)

3.7. Balanced Scorecard at Software Development Unit:

If we look at Buraq Integrated Solutions (BIS), the company has four Sub Business Units:-

- i. Consultancy Unit
- ii. Software Development Unit
- iii. Networking Unit
- iv. Training Unit

Our main concern is to implement the BSC at Software Development Project. We will construct a BSC at Software Development Unit level by cascading it with the BSC at corporate level so that the organizational strategic goals should be aligned.

Strategic objectives across four perspective of Software Development Unit are as under which are cascaded with the corporate level strategic objectives:

3.7.1. Financial Perspective:

- Making clear and sound business decisions.
- Planning and managing well.
- Optimum utilization of resources.
- Efficiency in prediction capabilities.
- Introducing variety of products.
- Attract and maintain the valued customers.

3.7.2. Customer Perspective:

- Fully satisfy customer requirements and aggressively resolve problems in the light of present and future needs to deliver best value services.
- Delivering what we promise.
- Achieving customer satisfaction.

- Deliver services consistent in value & quality.
- Strong orientation to service and the customer.

3.7.3. Internal Process Perspective:

- Follow the defined/standard rules and regulations.
- Anticipating, shaping and effectively responding to relevant external forces and events.
- Being responsive to the needs of customers
- Being reliable, dependable and trustworthy.
- Manage business risk.
- Communicating clearly, consistently, and openly with everyone we deal with.
- Use performance metrics to drive best business practices and achieve high quality results.

3.7.4. Learning & Growth Perspective:

- Emphasizing the positives, celebrating successes and strengths, and constantly striving to improve our performance.
- Be a great place to work where motivated, prepared staff, share goals, care deeply about their work, and support one another and the people they serve.
- Recognize and reward exemplary performances
- Reduce cost and improve quality through leadership and teamwork.
- Contribute to human services research and innovation.
- Employee Satisfaction.
- Train and develop our employees

BSC AT SOFTWARE DEVELOPMENT UNIT

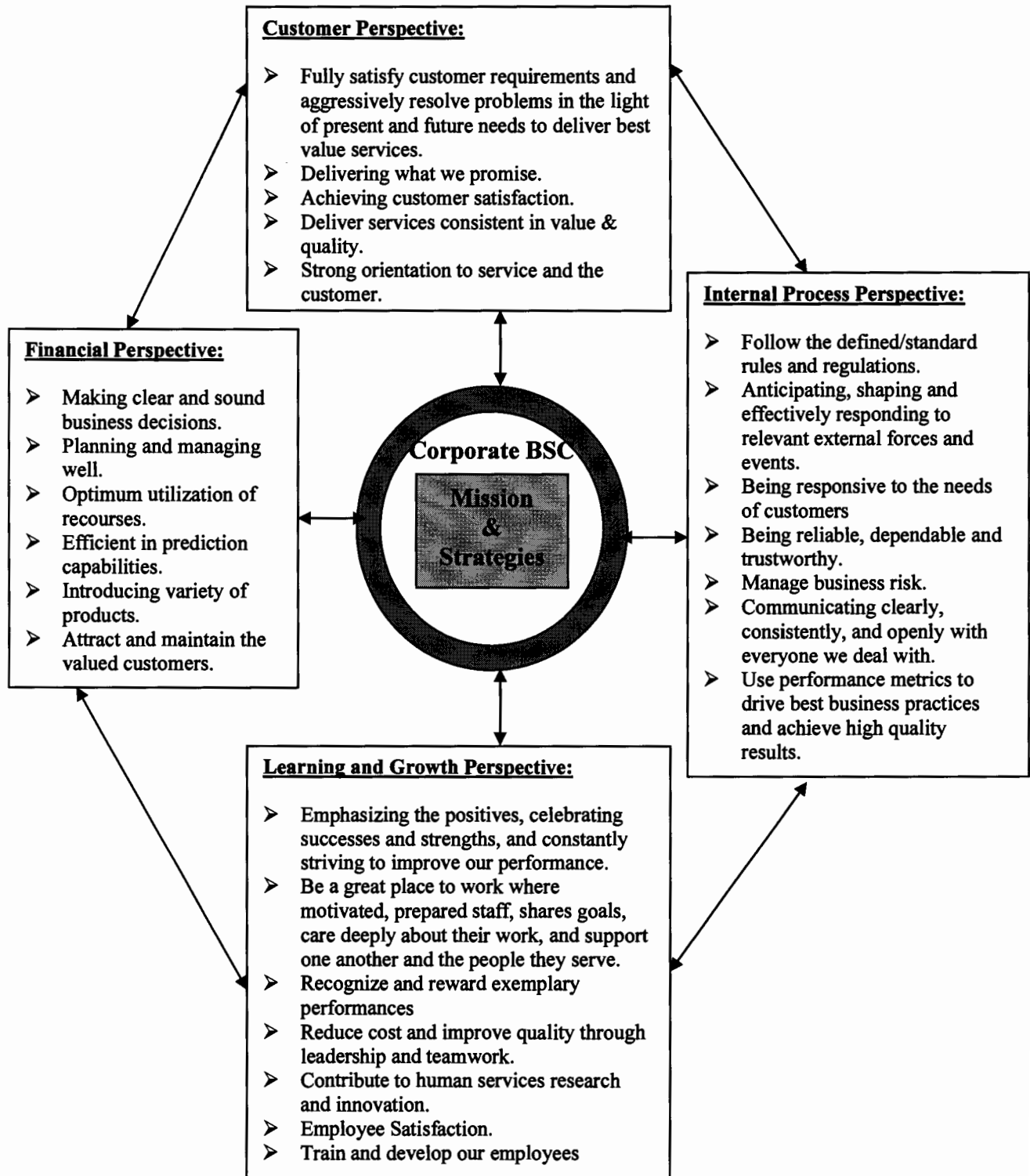


Figure # 3 (Software Development Unit Level BSC of BIS)

3.8. Implementation of BSC at Software Project:

3.8.1 Introduction about Software Project (eDox):

The Buraq Integrated Solution is also a software development company and there are many software projects under development like eDox, eFax, eCollege. We will implement the BSC on eDox software project. eDoX is the most flexible and easiest to use document management and archiving software available today. Storing and retrieving large numbers of paper documents has, up until now, been an onerous task. eDoX solves the problems faced when using a manual document filing system alongside an electronic document system.

The Project Manager, Nishat Ahmed has estimated the project completion time about 4 months and started it in the first week of August 2007. The Project Manger deputed the team consisting of 25 members to develop the eDox software project. The Manager has adopted spiral software engineering process model to develop the software project.

3.8.2. BSC at software Project Level (eDox):

The project level's strategic objectives are developed using the Balanced Scorecard approach and cascaded with strategic objectives of BSC at Software Development Unit of BIS. Performance measures against each strategic objective are defined which support the accomplishment of respective strategic objective.

3.8.2.1. Financial Perspective

The objectives and their performance measures of financial perspective are following:

	Objectives	Performance Measures
F1	Accuracy in estimations	% accuracy in the cost estimation % accuracy in the time estimation % accuracy in the effort estimation
F2	Well organize the project team	Production of the project team Project team collaboration
F3	Effective and efficient optimization of recourse utilization	% recourse utilization allocated to project Effectiveness of expenditures
F4	Perform requirement change management	% changes performed by change management procedure

3.8.2.2. Customer Perspective:

The objectives and their performance measures of customer perspective are defined as following:

	Objectives	Performance Measures
C1	Satisfy the customer with quality	How much customer is satisfied with quality?
C2	Satisfy the customer with in-time delivery	How much customer is satisfied with in-time delivery?
C3	Support the customer by providing effective service	Response time to customer request Level of communication with customer
C4	For best valued service satisfy customer's current and future requirements	Current requirement entertained Future requirements entertained
C5	Our efforts will focus on providing the right solutions	Level of focus on demanded solution
C6	Retain customer partnership and innovation	Reviews performed with customers Project briefings to customer Progress visible to customer

3.8.2.3. Internal Process Perspective:

The objectives and their performance measures of internal process perspective are shown below:

Objectives		Performance Measures
P1	Process should be visible	Processes documented
		Plan each process before execution
P2	Ensure the timeliness of the activities in the project for intime delivery to the customer	Number of activities, reviews that were completed during the period
		More effort performed on critical activities
		Manage unplanned/vacant working days
P3	Increase the sustainability, integrity, and reliability to give quality of service	Expert reviews
		Test performed
		Defects rectified

3.8.2.4. Learning and Growth Perspective:

The objectives and their performance measures of learning and growth perspective are following:

Objectives		Performance Measures
L1	Highly skilled, flexible and competent workforce	Training in the relevant technologies
		Training about the domain field
L2	Encourage the project team	Level of appreciation
		Level of rewards
L3	Motivate and develop highest quality project team	Salary Satisfaction
		Work distribution
		Facilities provided
L4	Develop friendly team environment	Level of coordination among the team
		Level of supporting among the team

3.9. Data Collection:

We require two types of information from the Project Manager of eDox project. One type of information is based on the performance measurement data and the other information is the list of managerial activities performed by the project manager to improve the performance in the light of achievement of the strategic objectives defined against the four perspectives of the Project BSC.

A quantitative data collection technique has been adopted to collect the performance data against each performance measure defined in eDox project BSC. We decided to measure the performance after every two weeks period. As the eDox Project was for 4 months duration, so the project was divided into 8 chunks of performance duration. Each performance measure was assigned a target value in percentage, which remained fixed through out the project against all the chunks of performance duration. So, during the each performance duration, the Project Manager has to achieve the same target. All the measures are also taken in the percentage.

List of managerial activities performed by the Project Manager to improve the performance towards the defined targets were also collected alongwith the performance measurement data.

The performance data with the lists of managerial activities were collected on the defined performa (Appendix-B) which contains all the strategic objectives, their performance measures and targets.

3.10. Data Analysis:

For estimating the overall performance of the eDox project through BSC (Appendix-C), we assigned the weightage to its four perspectives as financial perspective 25%, customer perspective 30%, internal perspective 30% and learning & growth 15% with the consensus of Project Manager. We also assigned the weightage in percentage to each

performance measure with respect to their perspectives. We calculated the mean of all the performance chunks against each performance measures and then we calculated the performance level of each performance measure against its weightage/rate. For calculation of performance of each perspective of Project BSC, we calculated the sum of each performance level against that perspective. In the end, Appendix-C shows the overall performance of eDox project by adding the performance levels of four perspectives of Project BSC.

The validity of calculated performance of eDox project through BSC is examined through the level of managerial activities (Appendix-D) defined in PMBoK, performed by the Project Manager to improve the performance of the project against the objectives defined in Project BSC.

Appendix-D shows the mapping of project management nine areas with the activities performed by the project manager to improve the performance of project towards the objectives defined in four perspectives of the project level balanced scorecard. Mapping table shows the level of usage of each management area during the project to improve the performance against BSC approach. Level of usage of Project Management Knowledge Areas has been categorized in four usage levels i.e. Poor Use (1% to 25%), Partial Use (26% to 50%), Moderate Use (51% to 75%) and Highly Use (76% to 100%).

The objective "*Processes should be visible*" (P1) of Internal Process Perspective was measured by the measurement "*% Processes documented*" and "*% plan each process before its execution*". To improve the processes visible some managerial activities have been performed like documenting all the processes and activities needed to identify, define. To become the each process visible it was identified, combine, unify and coordinate with other processes before its execution. The objective "*Changes should be managed*" (F5) was measured by measurement "*% Changes performed by change management procedure*". To improve the performance toward this objective (F5) some managerial activities like reviewing all changes requests, approving changes and controlling changes were exercised. These managerial activities are related to the

Integration Management area of PMBoK (2004) and used in this project integrated with BSC at a Partial level of usage (Appendix-D).

The objective "Our effort will focus on providing the right solutions" (C5) of Customer Perspective was measured by the measurement "Level of focus on demanded solution". Our efforts towards right solution have been retained and improved by defining the scope definition and scope controlling that have given the vision about the work that were actually required to do and that not to do. Another objective "*Changes should be managed*" (F5) of Financial Perspective was measured by the measurement "% changes performed by defined procedure". To improve the performance toward this object (F5) some managerial activities like scope defining, scope controlling were also exercised. These managerial activities are belonging to the Scope Management area of PMBoK (2004) and used in this project integrated with BSC at a Partial Level of usage (Appendix-D).

The objective "*accuracy in estimation*" (F1) of Financial Perspective was measured by the measurements of "*% accuracy in the time estimation*". Time estimation has a great financial impact. For improvement in accuracy in the time estimation, some managerial activities have been performed like *defining the activities* those could be estimated and need to be performed to produce the various project deliverables, *estimating the duration* of the defined activities, and *estimating the recourses* required for their completion. To improve the performance toward the objective "*Ensure the timelines of the activities in the project for in-time delivery to the customer*" (P2) of Internal Process Perspective, some managerial activities have been performed like *sequencing the defined activities* and noted down their dependencies to avoid from any deadlock, and estimated the type and quantity of resources for each activity completion so that there might not be any delay in in-time delivery. To improve the in-time delivery, *activities were reviewed* which had to complete during the period, and for those defined activities the *schedule was controlled* so that there should not be any unprocessed change in the performance of any activity. All these managerial activities performed to improve the performance towards the achievement of the objectives (F1, P2) are related to the Time Management

area of PMBoK (2004) and used in this project integrated with BSC at a Highly Level of usage (Appendix-D).

The objective “*accuracy in estimation*” (F1) of Financial Perspective was measured by the measurement “accuracy in the cost estimation”. To improve the performance towards this objective, some managerial activities have been performed like defining the activities needed to be performed to produce the various project deliverables, developing an approximation of the cost of the resources needed to complete project activities. Another objective “to ensure project resources are allocated in a cost-effective way” (F4) was measured by the measurement “level of effectiveness of expenditures”. The effectiveness of expenses is improved by the activities of estimating influencing values of expenditure, by controlling the factors that create cost variations and by controlling change to the project budget. These managerial activities performed to improve the performance towards the achievement of the objectives (F1, F4) are related to Cost Management area of PMBoK (2004) and used in this project integrated with BSC at a Moderate Level of usage (Appendix-D).

Objective “*satisfy the customer with quality*” (C1) of Customer Perspective was measured by the measurement “how much customer is satisfied with quality”. To satisfy the customer, quality of service is improved with reviewing the milestones in the presence of customers. In doing so, the quality is improved with customer satisfaction and got the customer verification. Another objective “*increase the sustainability, integrity and reliability to give quality of service*” (P3) was measured by the measurement “expert reviews”, “test performed” and “defect rectified”. To improve the performance towards this objective (P3) some managerial activities have been performed like identifying the quality standards, applying the planned systematic quality activities of testing, reviewing and debugging, and monitoring the results to determine whether they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance. All these activities performed to improve the performance towards the achievement of the objective (C1, P3) are related to Quality Management are of PMBoK

(2004) and used in this project integrated with BSC at a Highly Level of usage (Appendix-D).

The objective “*well organize the project team*” (F2) was measured by the measurement “*production of the project team*” and “*project team collaboration*”. To improve the performance towards this objective (F2) some management activities have been exercised like identifying and documenting roles, responsibilities, reporting relationships, arranging the recourses needed to complete the project. Another objective “*encourage the project team*” (L2) was measured by measurement of “*level of appreciation*” and “*level of rewards*”. Performance has been improved towards the team encouragement by some activities like providing the feedback, resolving the issues, appreciating on achievements, rewarding in the recognition of effective services. The objective “*highly skilled flexible and competitive work force*” (L1) was measured by the measurement “*training in the relevant technologies*” and “*training about the domain field*”. Another objective “*motivate and develop highest quality project team*” (L3) was measured by the measurement of “*salary satisfaction*”, “*work distribution*” and “*facilities provided*”. And the objective “*develop friendly team environment*” (L4) was measured by the measurement “*level of coordination among the team*”, “*level of supporting among the team*”. It has been observed that the performance towards these objectives (L1,L3,L4) has been improved by improving the competency of team members by providing the training in required technologies and domain field, encouraging by providing the competitive salaries packages and other facilities, and improving the interaction among the team members by providing corporate environment. These managerial activities which were performed to improve the performance towards the objectives (F2, L2, L1, L3, L4) are related to the HR management of PMBoK and used in this project integrated with BSC at a Highly Level of usage (Appendix-D).

Objective “*support the customer providing the effective services*” (C3) was measured by the measurement “*response time to the customer request*” and “*level of communication with customer*”. To improve the performance towards those objectives, some managerial activities have been performed like making needed information available to the customer in a timely manner, making the effective communication with customer to satisfy the

customer requirement and to resolve the issues faced by the customer. Another objective “*develop friendly team environment*” (L4) was measured by the measurements of “*level of coordination among the team*” and “*level of supporting among the team*”. Improvement towards the friendly team environment is observed by increasing the communication among team to satisfy the requirements and to resolve the issues faced by the team members. All these activities are related to communication management knowledge area of PMBoK and used in this project integrated with BSC at a Moderate Level of usage (Appendix-D).

The objective “*ensure the timeliness of the activity in the project for in-time delivery to the customer*” (P2) was measured by the measurements “number of activities reviews that were completed during the period”, “more effort performed on critical activities”, “manage unplanned/vacant working days”. To improve the performance towards this objective, some managerial activities like deification of activities that might be required more efforts to complete with in their estimated time, identification critical activities by critical path needed to be completed with in defined time period, and also identifying the unplanned working days. All these activities are related to Risk Management area of PMBoK and used in this project integrated with BSC at a Partial Level of usage (Appendix-D).

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The results analysis shows that the performance of the eDox project has been improved towards its objectives defined in BSC framework through the activities, some of which are managerial activities also related to the project management area of PMBoK. It has also been observed that majority of project management knowledge area are used to some extent depending on the nature of the project and its defined objectives. As we know that BSC framework has not sufficient theoretical knowledge of project management areas but the analysis proves that BSC is not making any hurdle to utilize the managerial activities of project management areas to manage and improve the performance. Finally, we leaned that the BSC in its original form has successfully measured the performance of a software project because all the improvement activities defined in four perspectives reflect the relevant project management focus areas, the areas defined in the PMBoK. So,

there is no need to alter the original framework of BSC for software project to give it the theoretical knowledge about the project management.

Rosemann and Wiese (1999) in their paper have altered the BSC and added the fifth Project Perspective. They stated that the individual project requirements (identification of critical path, definition of milestone, evaluating the efficiency of the project organization) are covered by this project perspective which presents all the project management tasks. We have already demonstrated above that the BSC at software project level also performs the relevant management activities defined in the project management focus areas. So, there is no need for altering the BSC by adding the new Project perspective.

CHAPTER FOUR

4. CONCLUSION

Balanced Scorecard (BSC) is one of the most important and widely adopted performance measurement approaches, and especially its recently evolving usage for IT governance makes it an attractive tool to measure and evaluate IT contribution to performance of a firm. Many attempts were made to implement Balanced Scorecard for IT projects with some alteration in its original framework of four perspectives for achieving better results, since Software Process Improvement (SPI) and SPI models are not goals in themselves, but just elements in the overall strategy of the company. But, historically to the best of our knowledge there is no research present for implementation of original BSC at software project level that demonstrates the evidence for alteration in the original framework of BSC.

In this thesis our main object was to find out that, whether the BSC is adequate for software project or not. As some researchers have altered it by stated that, the BSC have not adequate for software project because it does not contain the project management theoretical knowledge base and all project management tasks. So, we implemented the original framework of BSC at software project in software development company and tried to demonstrate that whether there is need for its alteration or not. During the case study we have designed BSC at three levels of BIS, a corporate level BSC has been designed by us keeping in view the organization's vision and mission statement and then BSC for software development unit was designed by cascading the corporate level BSC and finally, BSC at software project level was designed. We have only implemented the BSC at project level and collected two types of data, the performance data of project against four perspective of BSC and the data about managerial activities performed by the Project Manager to improve the performance across the BSC.

We analyzed that the overall performance of the eDox software project has been improved towards its objectives defined in BSC framework through the managerial

activities those are also related to the project management areas of PMBoK. It has also been observed that majority of project management knowledge areas were used to some extent depending on the nature of the software project and its defined objectives. Some researchers have pointed out that the BSC framework not contain a sufficient theoretical knowledge of project management areas, but, our analysis shows that BSC is not making any hurdle to utilize the managerial activities of project management areas to manage and improve the performance of software project. Finally, we learned that the BSC in its original form has successfully measured and improved the performance of a software project because all the improvement activities defined in four perspectives reflect the relevant project management focus areas, the areas defined in the PMBoK. So, there is no need to alter the original framework of BSC for software project to give it the theoretical knowledge about the project management or to consider the project it self.

As, we have developed the BSC at three levels of BIS (corporate level, software development unit level and software project level) by translating the BIS's mission and strategy into action against four perspectives of BSC. So, through the BSC the mission of the company has translated into operational level, the company has realized that every one's activities in the company to achieve the objectives across the four perspectives of BSC were putting some values to contribute to the company's achievements to its mission. Through the BSC implementation, the company has generated some future values regarding the customer retention, quality of software / processes, employee satisfaction skill improvement and market value.

The Project Manager and other employees have learned about how to document the objectives and strategies at each level with BSC framework, efficiently estimate, document the associated measures of the performance and to focus on the targets of objectives to improve the performance by making decisions.

During the case study, we have realized that there must be a proper team for BSC which will be the responsible to design and implement the BSC at all the level of company. The

BSC team should to monitor and control the variable, which can put the values for outcomes.

4.1. Future Work:

The outcome of our research has led to purpose some suggestions for future research in the area of BSC implementation at software project level. Our research was conducted on single case study. The original framework of BSC is needed to be tested by implementing it on multiple software projects and in different companies. In our research, we have no control on variables, due to some risk by company, which can affect the outcome. So, some experimental investigation about BSC implementation on software project is needed.

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APPENDIX – A (BSC at all Levels of Company: BIS)

<p>To provide fast and most reliable integrated computer services on turn key basis utilizing state-of-the-art solutions to meet the challenges of dynamically growing present and future business requirements of the customer. BIS strives for client's delight and relationship based on integrity and mutual trust. Buraq Integrated Solutions aims to gain sustainable competitive advantages by creating teamwork environment. Further, Buraq Integrated Solutions is committed to provide superior education, training and environment for personal and professional growth to provide highest quality products/ services.</p>			
<p><input checked="" type="checkbox"/> Be financially sustainable in the service of our mission</p> <p><input checked="" type="checkbox"/> Making decisions in the best long-term interests of our financial shareholders</p>	<p><input checked="" type="checkbox"/> Build and maintain the good long-term relationships with our customers</p> <p><input checked="" type="checkbox"/> Provide reliable integrated services to our customers</p> <p><input checked="" type="checkbox"/> Deliver creative and effective customized solutions to payers</p> <p><input checked="" type="checkbox"/> Provide innovative and high quality of products/services</p>	<p><input checked="" type="checkbox"/> Follow the defined processes model</p> <p><input checked="" type="checkbox"/> Uphold the proper defined procedures</p> <p><input checked="" type="checkbox"/> Optimize the mix of our workforce and teamwork environment to achieve competitive advantage</p>	<p><input checked="" type="checkbox"/> Provide proper education and training for high quality of services/product</p> <p><input checked="" type="checkbox"/> Improve business practices & efficiencies acting with integrity, high ethical standards and motivation</p> <p><input checked="" type="checkbox"/> Building an environment that encourages open communication, participation, honesty and candor.</p>
<p><input checked="" type="checkbox"/> Making clear and sound business decisions</p> <p><input checked="" type="checkbox"/> Planning and managing well</p> <p><input checked="" type="checkbox"/> Optimum utilization of resources</p> <p><input checked="" type="checkbox"/> Efficient in prediction capabilities</p> <p><input checked="" type="checkbox"/> Introducing variety of products</p> <p><input checked="" type="checkbox"/> Attract and maintain the valued customers</p>	<p><input checked="" type="checkbox"/> Fully satisfy customer requirements and aggressively resolve problems in the light of present and future needs to deliver best value services</p> <p><input checked="" type="checkbox"/> Delivering what we promise</p> <p><input checked="" type="checkbox"/> Achieving customer satisfaction</p> <p><input checked="" type="checkbox"/> Deliver services consistent in value & quality</p> <p><input checked="" type="checkbox"/> Strong orientation to service and the customer</p>	<p><input checked="" type="checkbox"/> Follow the defined/standard rules and regulations</p> <p><input checked="" type="checkbox"/> Anticipating, shaping and effectively responding to relevant external forces and events</p> <p><input checked="" type="checkbox"/> Being responsive to the needs of customers</p> <p><input checked="" type="checkbox"/> Being reliable, dependable and trustworthy</p> <p><input checked="" type="checkbox"/> Manage business risk</p> <p><input checked="" type="checkbox"/> Communicating clearly, consistently, and openly with everyone we deal with</p> <p><input checked="" type="checkbox"/> Use performance metrics to drive best business practices and achieve high quality results</p>	<p><input checked="" type="checkbox"/> Emphasizing the positives, celebrating successes and strengths, and constantly striving to improve our performance</p> <p><input checked="" type="checkbox"/> Be a great place to work where motivated, prepared staff, shares goals, care deeply about their work, and support one another and the people they serve</p> <p><input checked="" type="checkbox"/> Recognize and reward exemplary performances</p> <p><input checked="" type="checkbox"/> Reduce cost and improve quality through leadership and teamwork</p> <p><input checked="" type="checkbox"/> Contribute to human services research and innovation</p> <p><input checked="" type="checkbox"/> Employee Satisfaction</p> <p><input checked="" type="checkbox"/> Train and develop our employees</p>
<p><input checked="" type="checkbox"/> Accuracy in estimations</p> <p><input checked="" type="checkbox"/> Well organize the project team</p> <p><input checked="" type="checkbox"/> Effective and efficient optimization of recourse utilization</p> <p><input checked="" type="checkbox"/> Perform requirement change management</p>	<p><input checked="" type="checkbox"/> Satisfy the customer with quality</p> <p><input checked="" type="checkbox"/> Support the customer by providing effective service</p> <p><input checked="" type="checkbox"/> For best valued service satisfy customer's current and future requirements</p> <p><input checked="" type="checkbox"/> Our efforts will focus on providing the right solutions</p> <p><input checked="" type="checkbox"/> Retain customer partnership and innovation</p>	<p><input checked="" type="checkbox"/> Process should be visible</p> <p><input checked="" type="checkbox"/> Ensure the timeliness of the activities in the project for intimate delivery to the customer</p> <p><input checked="" type="checkbox"/> Increase the sustainability, integrity, and reliability to give quality of service</p>	<p><input checked="" type="checkbox"/> Highly skilled, flexible and competent workforce team</p> <p><input checked="" type="checkbox"/> Encourage the project team</p> <p><input checked="" type="checkbox"/> Motivate and develop highest quality project team</p> <p><input checked="" type="checkbox"/> Develop friendly team environment</p>

APPENDIX – B
(Data Gathering Proforma)

Performance Measurement of Project through Balanced Scorecard, and managerial activities performed during the period from 11-08-2007 to 25-08-2007				
F1	% accuracy in the cost estimation	70	Deep analysis of the Project. Defining the activities.	
	% accuracy in the time estimation	60	Defining the resources need for each activity. Estimating the cost of each activity. Estimating the activities duration.	
	% accuracy in the effort estimation	70	Estimating total man-hours for each activity. Analysis with previous project's cost.	
F2	Production of the project team	50	Acquiring quality of team member. Balancing the cross functional team. Identifying roles of team members.	
	Project team collaboration	40	Arranging the recourses needed. Defining the reporting relationships. Defining the workflow. Minimizing the communication gape.	
F3	% recourse utilization allocated to project	50	Deciding team's requirements for the project. Resource usage planning. Resource utilization scheduling.	
	Effectiveness of expenditures	60	Defining expenditure management process. Estimating influencing values of expenditure.	
F4	% changes performed by change management procedure	50	Reviewing all changes requests. Approving changes. Scope defining.	
C1	How much customer is satisfied with quality	60	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.	
C2	How much customer is satisfied with in-time delivery	40	Documenting the progress Inform the customer about progress Immediate reply with customer services	
C3	Response time to customer request	60	Insuring needed information available to the customer. Effective communication.	
	Level of communication with customer	80	Quick responding to the customer.	

C4	Current requirement entertained	60	Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement.
	Future requirements entertained	30	
C5	Level of focus on demanded solution	80	Defining the scope. Strictly follow the contract.
C6	Reviews performed with customers	50	Reviewing in the presence of customer Inform the progress to the customer Frequent meetings with customer. Customizing according to customer.
	Project briefings to customer	70	
	Progress visible to customer	70	
P1	Processes documented	80	Identifying the Processes. Defining the Processes. Documenting the Processes. Identifying the processes. Combining the processes. Unifying the processes.
	Plan each process before execution	50	
P2	Number of activities reviews that were completed during the period	50	Sequencing the activities. Observing dependencies. Estimate the type and quantity of resources. Identifying the activities which required more efforts. Identification critical activities by critical path.
	More effort performed on critical activities	50	
	Manage unplanned/vacant working days	60	
P3	Expert reviews	70	Identifying the quality standards. Applying the systematic quality activities of testing, Define QA standards. Following the predefined QA standards.
	Test performed	40	
	Defects rectified	80	
L1	Training in the relevant technologies	50	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Training about the domain field	50	
L2	Level of appreciation	40	Providing the feedback. Resolving the issues. Appreciating on achievements. Rewarding in the recognition of effective services.
	Level of rewards	20	

L3	Salary Satisfaction	20	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	20	Providing attractive facilities.
	Facilities provided	30	Providing corporate environment. Divide the work load.
L4	Level of coordination among the team	40	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	50	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

**Performance Measurement of Project through Balanced Scorecard,
and managerial activities performed during the period from 26-08-2007 to 08-09-2007**

F1	% accuracy in the cost estimation	70	Reviewing the activities. Defining the new activities.
	% accuracy in the time estimation	60	Identifying resources needed for each activity. Estimating the activities duration. Estimating the cost of each activity.
	% accuracy in the effort estimation	70	Estimating total man-hours for each activity. Analysis with previous estimation.
F2	Production of the project team	55	Reviewing the acquired team members. Reviewing the roles of team members. Identifying the resources needed. Reviewing the reporting relationships.
	Project team collaboration	40	Reviewing the workflow. Minimizing the communication gap. Rearranging the resources needed. Performing effective team work.
F3	% resource utilization allocated to project	60	Reviewing resource usage planning. Reviewing resource utilization scheduling. Tracking the project resources utilization. Reducing the unnecessary idle time of resources. Reviewing expenditure management process. Estimating influencing values of expenditure.
	Effectiveness of expenditures	60	Controlling the factors that create cost variations. Controlling change to the project budget. Accountability analysing.
F4	% changes performed by change management procedure	70	Reviewing all changes requests. Approving changes. Controlling changes. Scope controlling .
C1	How much customer is satisfied with quality	60	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.
C2	How much customer is satisfied with in-time delivery	40	Documenting the progress Inform the customer about progress Immediate reply with customer services

C3	Response time to customer request	60	Insuring needed information available to the customer. Effective communication.
	Level of communication with customer	80	Resolving the issues faced by the customer. Quick responding to the customer.
C4	Current requirement entertained	60	Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement.
	Future requirements entertained	30	Trying to understand the future requirements. Find out the solution for future requirements.
C5	Level of focus on demanded solution	70	Controlling the scope. Strictly follow the contract.
C6	Reviews performed with customers	40	Reviewing in the presence of customer Inform the progress to the customer
	Project briefings to customer	60	Frequent meetings with customer. Customizing according to customer.
	Progress visible to customer	70	
P1	Processes documented	85	Reviewing the Processes. Documenting the Processes.
	Plan each process before execution	50	Combining the processes. Unifying the processes.
P2	Number of activities reviews that were completed during the period	50	Reviewing the sequence of activities. Reviewing the dependencies of activities. Estimating the type and quantity of resources. Reviewing the activities.
	More effort performed on critical activities	60	Controlling the schedule of activities. Identifying the activities which required more efforts. Identification critical activities by critical path. Identifying the unplanned working days.
	Manage unplanned/vacant working days	60	
P3	Expert reviews	70	Identifying the quality standards. Applying the systematic quality activities of testing, reviewing and debugging, and monitoring.
	Test performed	50	Define QA standards.
	Defects rectified	80	Following the predefined QA standards.
L1	Training in the relevant technologies	60	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Training about the domain field	55	Providing attractive facilities. Providing corporate environment.

L2	Level of appreciation	40	Providing the feedback. Resolving the issues.
	Level of rewards	20	Appreciating on achievements. Rewarding in the recognition of effective services.
L3	Salary Satisfaction	30	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	20	Providing attractive facilities.
	Facilities provided	35	Providing corporate environment. Divide the work load.
L4	Level of coordination among the team	40	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	60	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

**Performance Measurement of Project through Balanced Scorecard,
and managerial activities performed during the period from 09-09-2007 to 22-09-2007**

F1	% accuracy in the cost estimation	60	Reviewing the activities. Defining the new activities.
	% accuracy in the time estimation	50	Identifying resources needed for each activity. Estimating the activities duration. Estimating the cost of each activity.
	% accuracy in the effort estimation	70	Estimating total man-hours for each activity. Analysis with previous estimation.
F2	Production of the project team	70	Reviewing the acquired team members. Reviewing the roles of team members. Identifying the resources needed. Reviewing the reporting relationships.
	Project team collaboration	60	Reviewing the workflow. Minimizing the communication gaps. Rearranging the resources needed. Performing effective team work.
F3	% resource utilization allocated to project	70	Reviewing resource usage planning. Reviewing resource utilization scheduling. Tracking the project resources utilization. Reducing the unnecessary idle time of resources. Reviewing expenditure management process. Estimating influencing values of expenditure.
	Effectiveness of expenditures	70	Controlling the factors that create cost variations. Controlling change to the project budget. Accountability analysing.
F4	% changes performed by change management procedure	80	Reviewing all changes requests. Approving changes. Controlling changes. Scope controlling .
C1	How much customer is satisfied with quality	50	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.
C2	How much customer is satisfied with in-time delivery	50	Documenting the progress Inform the customer about progress Immediate reply with customer services

C3	Response time to customer request	50	Insuring needed information available to the customer. Effective communication. Resolving the issues faced by the customer. Quick responding to the customer.
	Level of communication with customer	70	
C4	Current requirement entertained	70	Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement. Trying to understand the future requirements. Find out the solution for future requirements.
	Future requirements entertained	40	
C5	Level of focus on demanded solution	60	Controlling the scope. Strictly follow the contract.
C6	Reviews performed with customers	20	Reviewing in the presence of customer Inform the progress to the customer Frequent meetings with customer. Customizing according to customer.
	Project briefings to customer	40	
	Progress visible to customer	40	
P1	Processes documented	50	Reviewing the Processes. Documenting the Processes. Combining the processes. Unifying the processes.
	Plan each process before execution	60	
P2	Number of activities reviews that were completed during the period	60	Reviewing the sequence of activities. Reviewing the dependencies of activities. Estimating the type and quantity of resources. Reviewing the activities. Controlling the schedule of activities. Identifying the activities which required more efforts. Identification critical activities by critical path. Identifying the unplanned working days.
	More effort performed on critical activities	70	
	Manage unplanned/vacant working days	65	
P3	Expert reviews	50	Identifying the quality standards. Applying the systematic quality activities of testing, reviewing and debugging, and monitoring. Define QA standards. Following the predefined QA standards.
	Test performed	60	
	Defects rectified	60	

L1	Training in the relevant technologies	70	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Training about the domain field	30	Providing attractive facilities. Providing corporate environment.
L2	Level of appreciation	50	Providing the feedback. Resolving the issues.
	Level of rewards	40	Appreciating on achievements. Rewarding in the recognition of effective services.
L3	Salary Satisfaction	40	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	30	Providing attractive facilities. Providing corporate environment.
	Facilities provided	40	Divide the work load.
L4	Level of coordination among the team	50	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	70	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

**Performance Measurement of Project through Balanced Scorecard,
and managerial activities performed during the period from 23-09-2007 to 06-10-2007**

F1	% accuracy in the cost estimation	70	Reviewing the activities. Defining the new activities.
	% accuracy in the time estimation	60	Identifying resources needed for each activity. Estimating the activities duration. Estimating the cost of each activity.
	% accuracy in the effort estimation	70	Estimating total man-hours for each activity. Analysis with previous estimation.
F2	Production of the project team	50	Reviewing the acquired team members. Reviewing the roles of team members. Identifying the resources needed. Reviewing the reporting relationships.
	Project team collaboration	40	Reviewing the workflow. Minimizing the communication gaps. Rearranging the resources needed. Performing effective team work.
F3	% resource utilization allocated to project	50	Reviewing resource usage planning. Reviewing resource utilization scheduling. Tracking the project resources utilization. Reducing the unnecessary idle time of resources. Reviewing expenditure management process. Estimating influencing values of expenditure.
	Effectiveness of expenditures	60	Controlling the factors that create cost variations. Controlling change to the project budget. Accountability analysing.
F4	% changes performed by change management procedure	50	Reviewing all changes requests. Approving changes. Controlling changes. Scope controlling .
C1	How much customer is satisfied with quality	60	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.
C2	How much customer is satisfied with in-time delivery	40	Documenting the progress Inform the customer about progress Immediate reply with customer services

C3	Response time to customer request	60	Insuring needed information available to the customer. Effective communication.
	Level of communication with customer	80	Resolving the issues faced by the customer. Quick responding to the customer.
C4	Current requirement entertained	60	Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement.
	Future requirements entertained	30	Trying to understand the future requirements. Find out the solution for future requirements.
C5	Level of focus on demanded solution	80	Controlling the scope. Strictly follow the contract.
C6	Reviews performed with customers	50	Reviewing in the presence of customer Inform the progress to the customer
	Project briefings to customer	70	Frequent meetings with customer. Customizing according to customer.
	Progress visible to customer	70	
P1	Processes documented	80	Reviewing the Processes. Documenting the Processes.
	Plan each process before execution	50	Combining the processes. Unifying the processes.
P2	Number of activities reviews that were completed during the period	50	Reviewing the sequence of activities. Reviewing the dependencies of activities. Estimating the type and quantity of resources. Reviewing the activities.
	More effort performed on critical activities	50	Controlling the schedule of activities. Identifying the activities which required more efforts. Identification critical activities by critical path. Identifying the unplanned working days.
	Manage unplanned/vacant working days	60	
P3	Expert reviews	70	Identifying the quality standards. Applying the systematic quality activities of testing, reviewing and debugging, and monitoring.
	Test performed	40	Define QA standards.
	Defects rectified	80	Following the predefined QA standards.

L1	Training in the relevant technologies	50	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Training about the domain field	50	Providing attractive facilities. Providing corporate environment.
L2	Level of appreciation	40	Providing the feedback. Resolving the issues.
	Level of rewards	20	Appreciating on achievements. Rewarding in the recognition of effective services.
L3	Salary Satisfaction	20	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	20	Providing attractive facilities. Providing corporate environment.
	Facilities provided	30	Divide the work load.
L4	Level of coordination among the team	40	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	50	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

**Performance Measurement of Project through Balanced Scorecard,
and managerial activities performed during the period from 07-10-2007 to 20-10-2007**

F1	% accuracy in the cost estimation	70	Reviewing the activities. Defining the new activities.
	% accuracy in the time estimation	70	Identifying resources needed for each activity. Estimating the activities duration. Estimating the cost of each activity.
	% accuracy in the effort estimation	80	Estimating total man-hours for each activity. Analysis with previous estimation.
F2	Production of the project team	70	Reviewing the acquired team members. Reviewing the roles of team members. Identifying the resources needed. Reviewing the reporting relationships.
	Project team collaboration	70	Reviewing the workflow. Minimizing the communication gaps. Rearranging the resources needed. Performing effective team work.
F3	% resource utilization allocated to project	80	Reviewing resource usage planning. Reviewing resource utilization scheduling. Tracking the project resources utilization. Reducing the unnecessary idle time of resources. Reviewing expenditure management process. Estimating influencing values of expenditure.
	Effectiveness of expenditures	80	Controlling the factors that create cost variations. Controlling change to the project budget. Accountability analysing.
F4	% changes performed by change management procedure	90	Reviewing all changes requests. Approving changes. Controlling changes. Scope controlling .
C1	How much customer is satisfied with quality	60	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.
C2	How much customer is satisfied with in-time delivery	60	Documenting the progress Inform the customer about progress Immediate reply with customer services

C3	Response time to customer request	50	<p>Insuring needed information available to the customer. Effective communication.</p> <p>Resolving the issues faced by the customer. Quick responding to the customer.</p>
	Level of communication with customer	60	
C4	Current requirement entertained	80	<p>Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement.</p> <p>Trying to understand the future requirements. Find out the solution for future requirements.</p>
	Future requirements entertained	40	
C5	Level of focus on demanded solution	60	<p>Controlling the scope. Strictly follow the contract.</p>
C6	Reviews performed with customers	25	<p>Reviewing in the presence of customer Inform the progress to the customer Frequent meetings with customer. Customizing according to customer.</p>
	Project briefings to customer	50	
	Progress visible to customer	55	
P1	Processes documented	60	<p>Reviewing the Processes. Documenting the Processes. Combining the processes. Unifying the processes.</p>
	Plan each process before execution	70	
P2	Number of activities reviews that were completed during the period	70	<p>Reviewing the sequence of activities. Reviewing the dependencies of activities. Estimate the type and quantity of resources. Reviewing the activities.</p> <p>Controlling the schedule of activities. Identifying the activities which required more efforts. Identification critical activities by critical path. Identifying the unplanned working days.</p>
	More effort performed on critical activities	80	
	Manage unplanned/vacant working days	70	
P3	Expert reviews	65	<p>Identifying the quality standards. Applying the systematic quality activities of testing, reviewing and debugging, and monitoring. Define QA standards.</p> <p>Following the predefined QA standards.</p>
	Test performed	60	
	Defects rectified	70	

L1	Training in the relevant technologies	90	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Training about the domain field	40	Providing attractive facilities. Providing corporate environment.
L2	Level of appreciation	60	Providing the feedback. Resolving the issues.
	Level of rewards	45	Appreciating on achievements. Rewarding in the recognition of effective services.
L3	Salary Satisfaction	50	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	40	Providing attractive facilities. Providing corporate environment.
	Facilities provided	50	Divide the work load.
L4	Level of coordination among the team	60	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	80	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

**Performance Measurement of Project through Balanced Scorecard,
and managerial activities performed during the period from 21-10-2007 to 03-11-2007**

F1	% accuracy in the cost estimation	80	Reviewing the activities. Defining the new activities.
	% accuracy in the time estimation	70	Identifying resources needed for each activity. Estimating the activities duration. Estimating the cost of each activity.
	% accuracy in the effort estimation	80	Estimating total man-hours for each activity. Analysis with previous estimation.
F2	Production of the project team	80	Reviewing the acquired team members. Reviewing the roles of team members. Identifying the resources needed. Reviewing the reporting relationships.
	Project team collaboration	75	Reviewing the workflow. Minimizing the communication gaps. Rearranging the resources needed. Performing effective team work.
F3	% resource utilization allocated to project	85	Reviewing resource usage planning. Reviewing resource utilization scheduling. Tracking the project resources utilization. Reducing the unnecessary idle time of resources. Reviewing expenditure management process. Estimating influencing values of expenditure.
	Effectiveness of expenditures	80	Controlling the factors that create cost variations. Controlling change to the project budget. Accountability analysing.
F4	% changes performed by change management procedure	100	Reviewing all changes requests. Approving changes. Controlling changes. Scope controlling .
C1	How much customer is satisfied with quality	70	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.
C2	How much customer is satisfied with in-time delivery	65	Documenting the progress Inform the customer about progress Immediate reply with customer services

C3	Response time to customer request	60	<p>Insuring needed information available to the customer. Effective communication.</p> <p>Resolving the issues faced by the customer. Quick responding to the customer.</p>
	Level of communication with customer	60	
C4	Current requirement entertained	90	<p>Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement.</p> <p>Trying to understand the future requirements. Find out the solution for future requirements.</p>
	Future requirements entertained	50	
C5	Level of focus on demanded solution	70	<p>Controlling the scope. Strictly follow the contract.</p>
C6	Reviews performed with customers	30	<p>Reviewing in the presence of customer Inform the progress to the customer Frequent meetings with customer. Customizing according to customer.</p>
	Project briefings to customer	55	
	Progress visible to customer	60	
P1	Processes documented	70	<p>Reviewing the Processes. Documenting the Processes. Combining the processes. Unifying the processes.</p>
	Plan each process before execution	80	
P2	Number of activities reviews that were completed during the period	75	<p>Reviewing the sequence of activities. Reviewing the dependencies of activities. Estimatint the type and quantity of resources. Reviewing the activities.</p> <p>Controlling the schedule of activities. Identifying the activities which required more efforts. Identification critical activities by critical path. Identifying the unplanned working days.</p>
	More effort performed on critical activities	85	
	Manage unplanned/vacant working days	70	
P3	Expert reviews	70	<p>Identifying the quality standards. Applying the systematic quality activities of testing, reviewing and debugging, and monitoring. Define QA standards. Following the predefined QA standards.</p>
	Test performed	70	
	Defects rectified	80	

L1	Training in the relevant technologies	95	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Training about the domain field	50	Providing attractive facilities. Providing corporate environment.
L2	Level of appreciation	60	Providing the feedback. Resolving the issues.
	Level of rewards	50	Appreciating on achievements. Rewarding in the recognition of effective services.
L3	Salary Satisfaction	50	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	45	Providing attractive facilities. Providing corporate environment.
	Facilities provided	60	Divide the work load.
L4	Level of coordination among the team	70	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	80	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

**Performance Measurement of Project through Balanced Scorecard,
and managerial activities performed during the period from 04-11-2007 to 17-11-2007**

F1	% accuracy in the cost estimation	80	Reviewing the activities. Defining the new activities.
	% accuracy in the time estimation	70	Identifying resources needed for each activity. Estimating the activities duration. Estimating the cost of each activity.
	% accuracy in the effort estimation	80	Estimating total man-hours for each activity. Analysis with previous estimation.
F2	Production of the project team	90	Reviewing the acquired team members. Reviewing the roles of team members. Identifying the resources needed. Reviewing the reporting relationships.
	Project team collaboration	75	Reviewing the workflow. Minimizing the communication gaps. Rearranging the resources needed. Performing effective team work.
F3	% resource utilization allocated to project	90	Reviewing resource usage planning. Reviewing resource utilization scheduling. Tracking the project resources utilization. Reducing the unnecessary idle time of resources. Reviewing expenditure management process. Estimating influencing values of expenditure.
	Effectiveness of expenditures	90	Controlling the factors that create cost variations. Controlling change to the project budget. Accountability analysing.
F4	% changes performed by change management procedure	100	Reviewing all changes requests. Approving changes. Controlling changes. Scope controlling .
C1	How much customer is satisfied with quality	80	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.
C2	How much customer is satisfied with in-time delivery	70	Documenting the progress Inform the customer about progress Immediate reply with customer services

C3	Response time to customer request	70	Insuring needed information available to the customer. Effective communication.
	Level of communication with customer	70	Resolving the issues faced by the customer. Quick responding to the customer.
C4	Current requirement entertained	90	Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement.
	Future requirements entertained	50	Trying to understand the future requirements. Find out the solution for future requirements.
C5	Level of focus on demanded solution	80	Controlling the scope. Strictly follow the contract.
C6	Reviews performed with customers	40	Reviewing in the presence of customer Inform the progress to the customer
	Project briefings to customer	60	Frequent meetings with customer. Customizing according to customer.
	Progress visible to customer	70	
P1	Processes documented	80	Reviewing the Processes. Documenting the Processes.
	Plan each process before execution	80	Combining the processes. Unifying the processes.
P2	Number of activities reviews that were completed during the period	80	Reviewing the sequence of activities. Reviewing the dependencies of activities. Estimate the type and quantity of resources. Reviewing the activities.
	More effort performed on critical activities	90	Controlling the schedule of activities. Identifying the activities which required more efforts. Identification critical activities by critical path. Identifying the unplanned working days.
	Manage unplanned/vacant working days	80	
P3	Expert reviews	80	Identifying the quality standards. Applying the systematic quality activities of testing, reviewing and debugging, and monitoring.
	Test performed	80	Define QA standards.
	Defects rectified	90	Following the predefined QA standards.

L1	Training in the relevant technologies	95	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Training about the domain field	55	Providing attractive facilities. Providing corporate environment.
L2	Level of appreciation	70	Providing the feedback. Resolving the issues.
	Level of rewards	50	Appreciating on achievements. Rewarding in the recognition of effective services.
L3	Salary Satisfaction	55	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	50	Providing attractive facilities. Providing corporate environment.
	Facilities provided	60	Divide the work load.
L4	Level of coordination among the team	80	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	85	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

**Performance Measurement of Project through Balanced Scorecard,
and managerial activities performed during the period from 18-11-2007 to 30-11-2007**

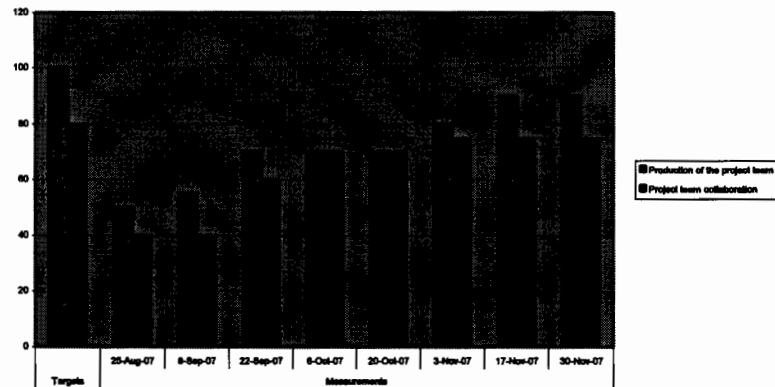
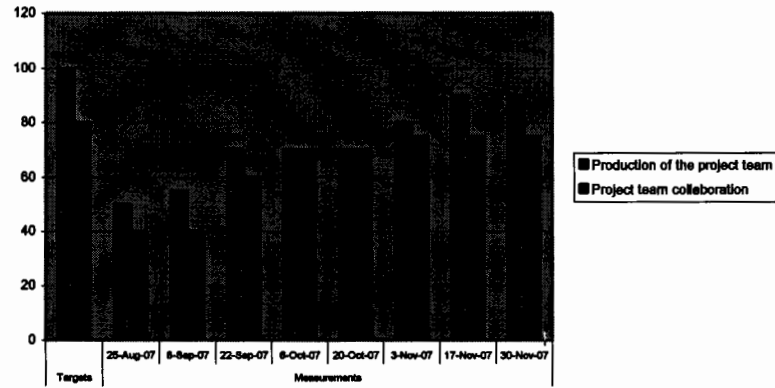
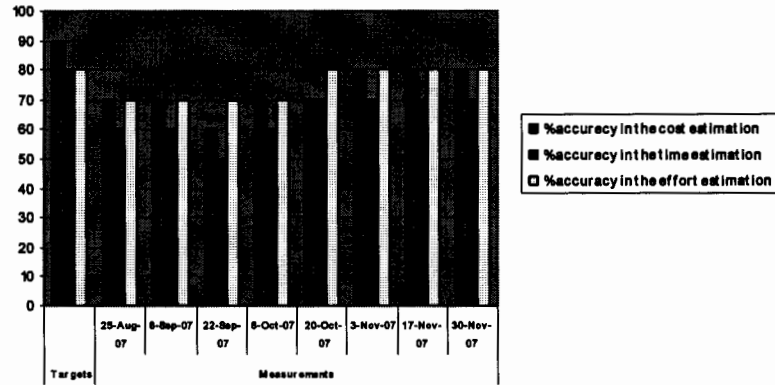
F1	% accuracy in the cost estimation	80	Reviewing the activities. Defining the new activities.
	% accuracy in the time estimation	70	Identifying resources needed for each activity. Estimating the activities duration. Estimating the cost of each activity.
	% accuracy in the effort estimation	80	Estimating total man-hours for each activity. Analysis with previous estimation.
F2	Production of the project team	90	Reviewing the acquired team members. Reviewing the roles of team members. Identifying the resources needed. Reviewing the reporting relationships.
	Project team collaboration	75	Reviewing the workflow. Minimizing the communication gaps. Rearranging the resources needed. Performing effective team work.
F3	% resource utilization allocated to project	90	Reviewing resource usage planning. Reviewing resource utilization scheduling. Tracking the project resources utilization. Reducing the unnecessary idle time of resources. Reviewing expenditure management process. Estimating influencing values of expenditure.
	Effectiveness of expenditures	95	Controlling the factors that create cost variations. Controlling change to the project budget. Accountability analysing.
F4	% changes performed by change management procedure	100	Reviewing all changes requests. Approving changes. Controlling changes. Scope controlling .
C1	How much customer is satisfied with quality	90	Interviewing with customer. Presenting project prototype to the customer. Reviewing with customers. Getting customer verification.
C2	How much customer is satisfied with in-time delivery	75	Documenting the progress Inform the customer about progress Immediate reply with customer services

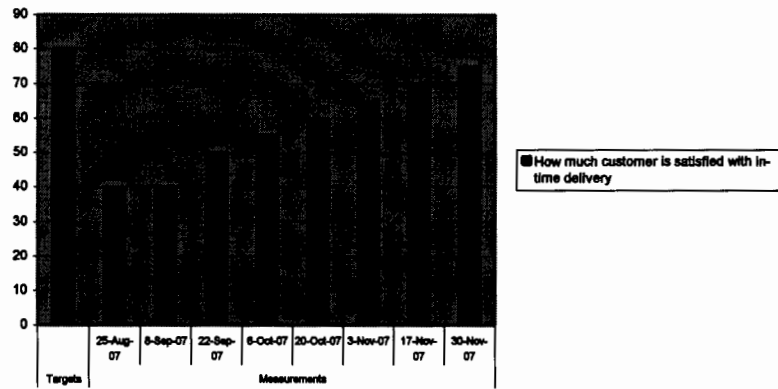
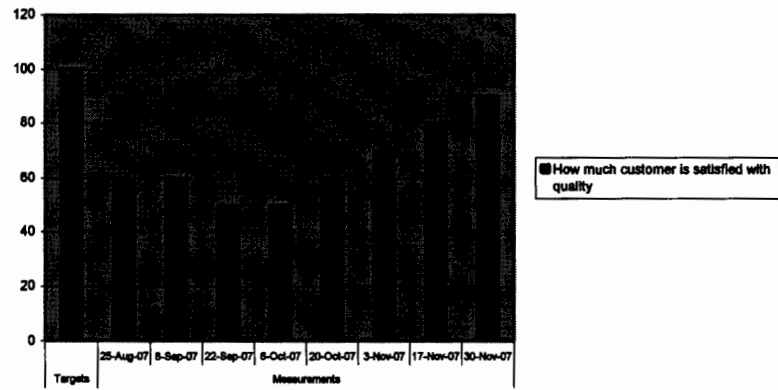
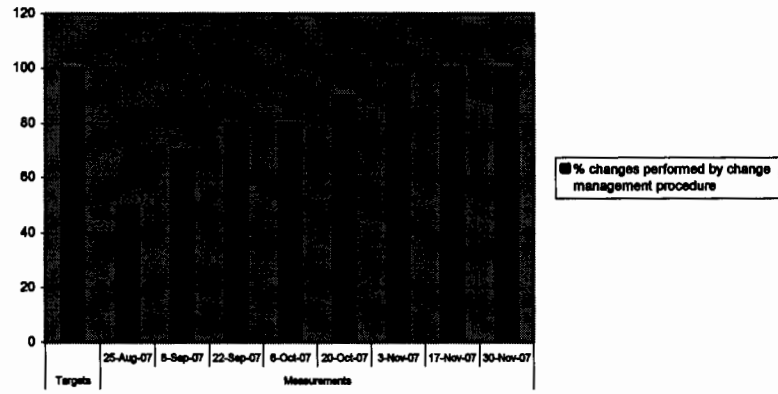
C3	Response time to customer request	70	Insuring needed information available to the customer. Effective communication.
	Level of communication with customer	80	Resolving the issues faced by the customer. Quick responding to the customer.
C4	Current requirement entertained	100	Documenting current and future requirements Reviewing current and future requirements Use prototype method to get complete current requirements. Agreement on the current requirement.
	Future requirements entertained	50	Trying to understand the future requirements. Find out the solution for future requirements.
C5	Level of focus on demanded solution	90	Controlling the scope. Strictly follow the contract.
C6	Reviews performed with customers	50	Reviewing in the presence of customer Inform the progress to the customer
	Project briefings to customer	70	Frequent meetings with customer. Customizing according to customer.
	Progress visible to customer	80	
P1	Processes documented	80	Reviewing the Processes. Documenting the Processes.
	Plan each process before execution	90	Combining the processes. Unifying the processes.
P2	Number of activities reviews that were completed during the period	80	Reviewing the sequence of activities. Reviewing the dependencies of activities. Estimatint the type and quantity of resources. Reviewing the activities.
	More effort performed on critical activities	90	Controlling the schedule of activities. Identifying the activities which required more efforts. Identification critical activities by critical path. Identifying the unplanned working days.
	Manage unplanned/vacant working days	90	
P3	Expert reviews	80	Identifying the quality standards. Applying the systematic quality activities of testing, reviewing and debugging, and monitoring.
	Test performed	80	Define QA standards.
	Defects rectified	100	Following the predefined QA standards.

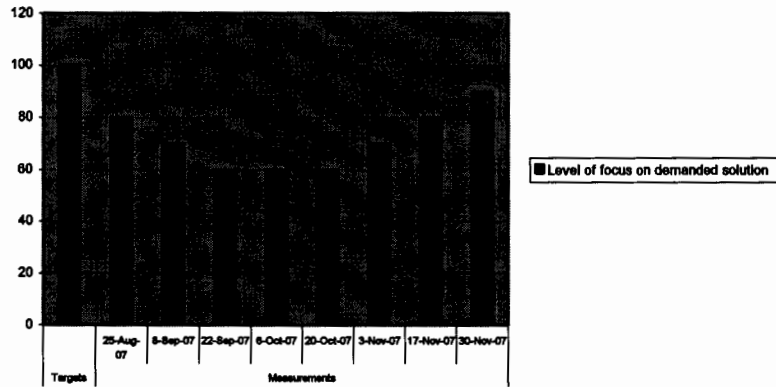
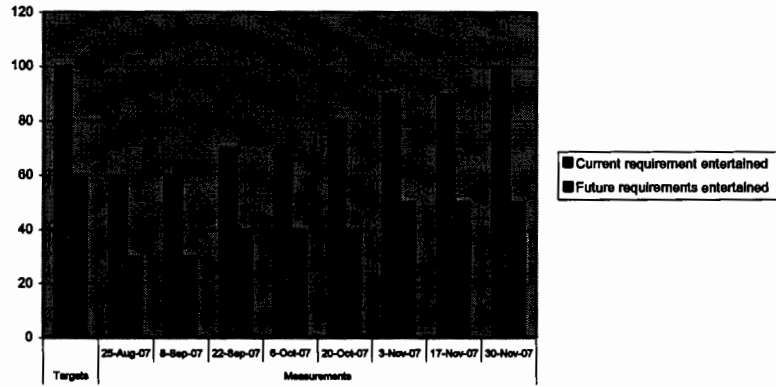
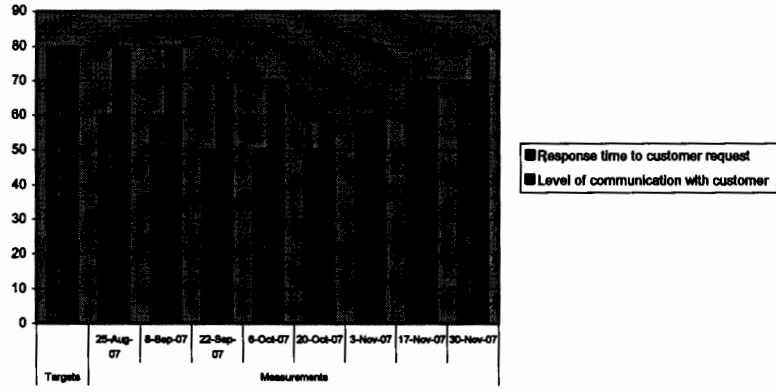
L1	Training in the relevant technologies	95	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Training about the domain field	55	Providing attractive facilities. Providing corporate environment.
L2	Level of appreciation	75	Providing the feedback. Resolving the issues.
	Level of rewards	55	Appreciating on achievements. Rewarding in the recognition of effective services.
L3	Salary Satisfaction	55	Providing the training in technologies and domain. Providing the competitive salaries packages.
	Work distribution	50	Providing attractive facilities. Providing corporate environment.
	Facilities provided	60	Divide the work load.
L4	Level of coordination among the team	80	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.
	Level of supporting among the team	90	Providing the training in technologies and domain. Providing the competitive salaries packages. Providing attractive facilities. Providing corporate environment.

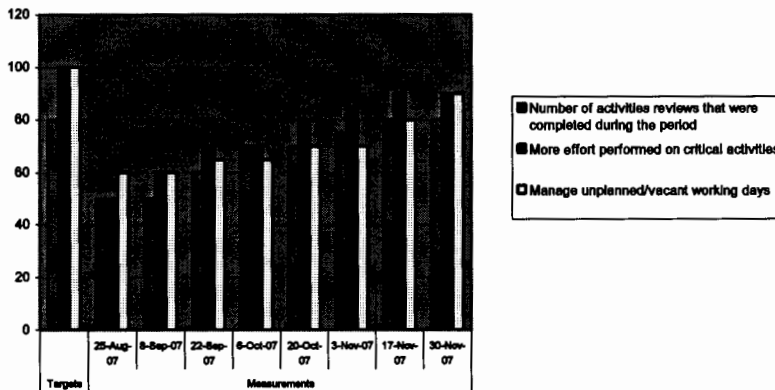
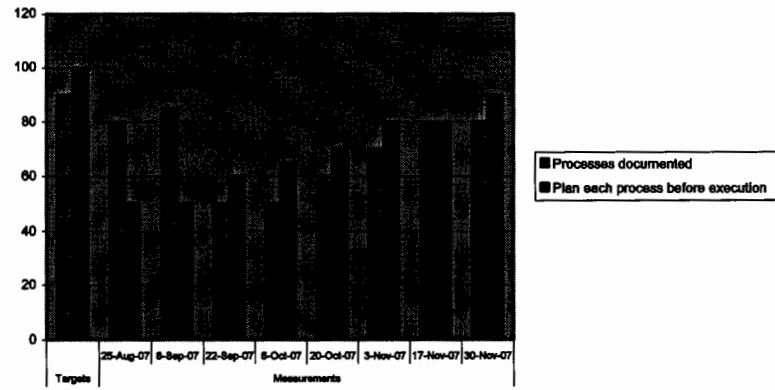
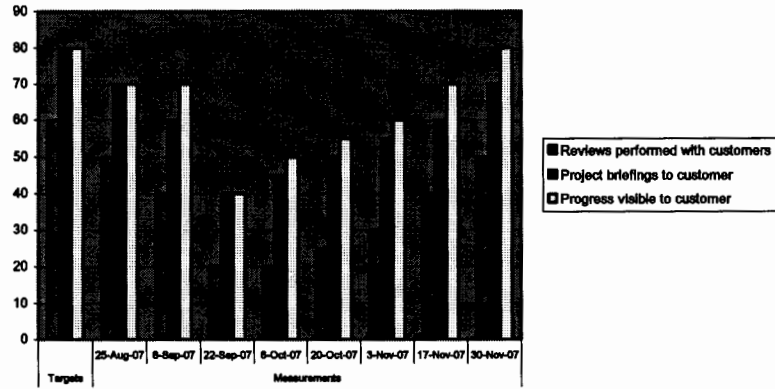
APPENDIX – C

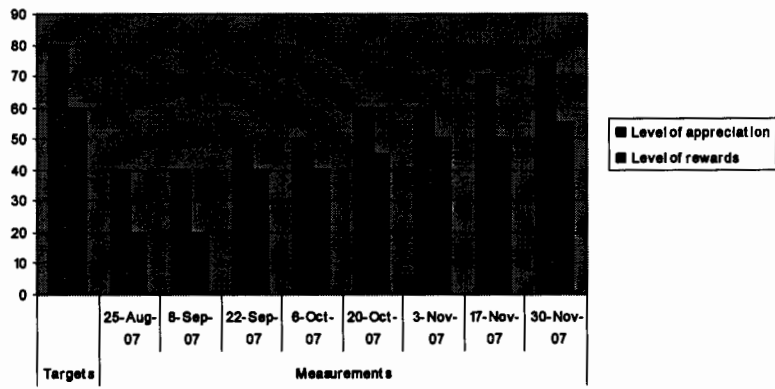
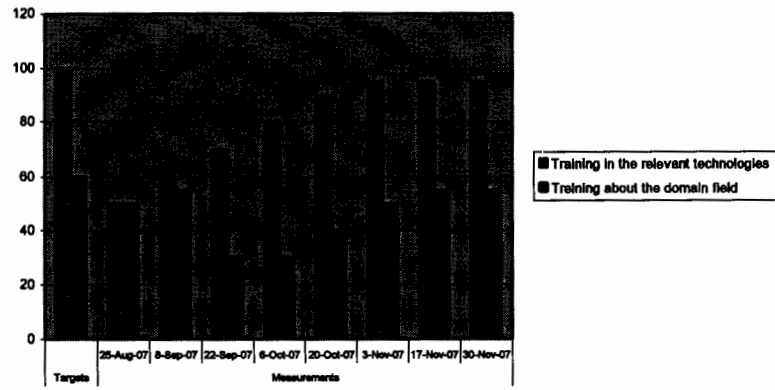
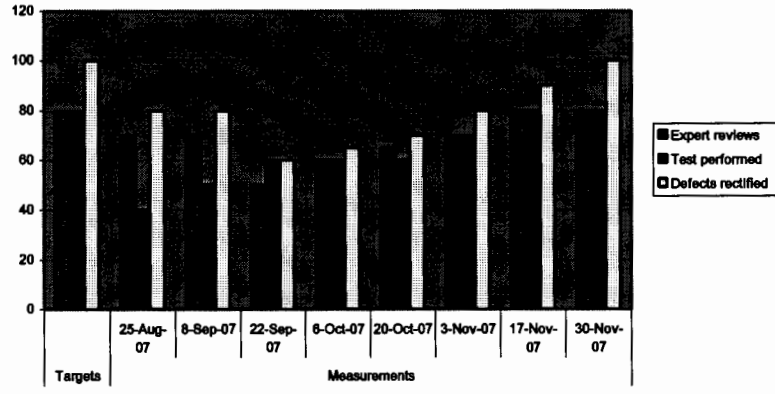
(Performance of eDox Project against the each objectives of Project BSC)

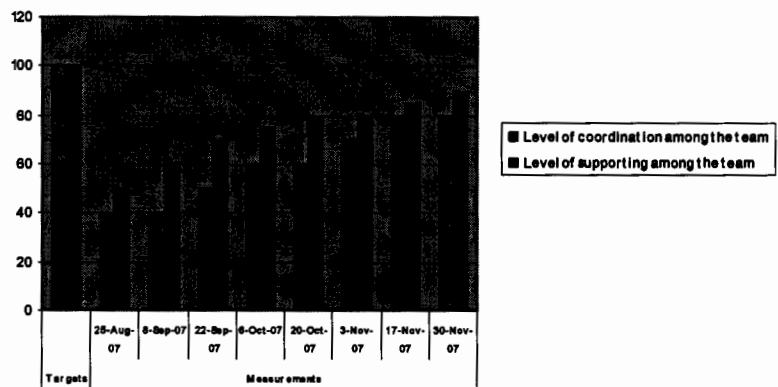
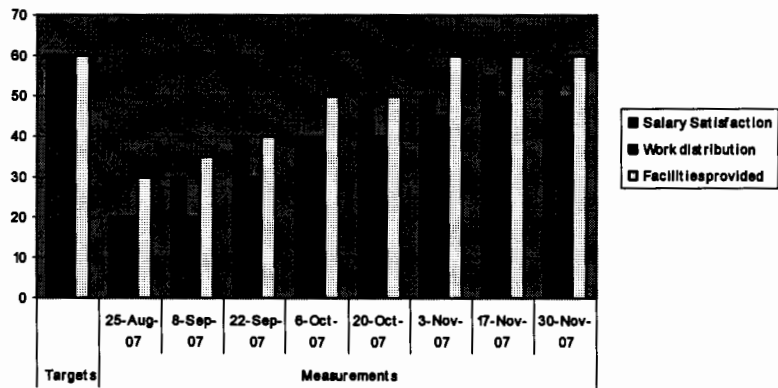












APPENDIX – D

(Performance analysis of the eDoX Project against four perspective of BSC)

Financial Perspective: (25%)												
F1	% accuracy in the cost estimation	3%	70	70	80	70	70	80	80	80	72.50	2.18
	% accuracy in the time estimation	3%	60	60	50	60	70	70	70	70	63.75	1.91
	% accuracy in the effort estimation	2%	70	70	70	70	80	80	80	80	75.00	1.50
F2	Production of the project team	2%	50	55	70	70	70	80	90	90	71.88	1.44
	Project team collaboration	2%	40	40	60	70	70	75	75	75	63.13	1.26
F3	% recourse utilization allocated to project	4%	50	60	70	70	80	85	90	90	74.38	2.98
	Effectiveness of expenditures	4%	60	60	70	80	80	80	90	95	76.88	3.08
F4	% changes performed by change management procedure	5%	50	70	80	80	90	100	100	100	83.75	4.19
Performance Level:											18.53	

Customer Perspective: (30%)													
C1		How much customer is satisfied with quality	6%	80	60	50	50	60	70	80	90	65.00	3.90
C2		How much customer is satisfied with in-time delivery	5%	40	40	50	55	60	65	70	75	56.88	2.84
C3		Response time to customer request	3%	60	60	50	50	50	60	70	70	58.75	1.76
		Level of communication with customer	3%	80	80	70	70	60	60	70	80	71.25	2.14
C4		Current requirement entertained	2%	60	60	70	70	80	90	90	100	77.50	1.55
		Future requirements entertained	2%	30	30	40	40	40	50	50	50	41.25	0.83
C5		Level of focus on demanded solution	5%	80	70	80	60	60	70	80	90	71.25	3.56
C6		Reviews performed with customers	2%	50	40	20	20	25	30	40	50	34.38	0.69
		Project briefings to customer	1%	70	60	40	45	50	55	60	70	56.25	0.56
		Progress visible to customer	1%	70	70	40	50	55	60	70	80	61.88	0.62
Performance Level:												18.45	

Internal Process Perspective: (30%)

P1	Processes documented	3%	80	85	50	50	60	70	80	80	69.38	2.08
	Plan each process before execution	4%	50	50	80	65	70	80	80	90	68.13	2.73
P2	Number of activities reviews that were completed during the period	2%	50	50	60	70	70	75	80	80	66.88	1.34
	More effort performed on critical activities	4%	50	60	70	70	80	85	90	90	74.38	2.98
	Manage unplanned/vacant working days	2%	60	80	65	65	70	70	80	90	70.00	1.40
P3	Expert reviews	5%	70	70	50	60	65	70	80	80	68.13	3.41
	Test performed	5%	40	50	80	80	60	70	80	80	62.50	3.13
	Defects rectified	5%	80	80	60	65	70	80	90	100	78.13	3.91
Performance Level:											20.96	

Learning & Growth Perspective: (15%)

L1	Training in the relevant technologies	3%	50	60	70	80	90	95	95	95	79.38	2.38
	Training about the domain field	2%	50	55	30	30	40	50	55	55	45.63	0.91
L2	Level of appreciation	2%	40	40	50	50	60	60	70	75	55.63	1.11
	Level of rewards	1%	20	20	40	40	45	50	50	55	40.00	0.40
L3	Salary Satisfaction	1%	20	30	40	40	50	50	55	55	42.50	0.43
	Work distribution	2%	20	20	30	40	40	45	50	50	36.88	0.74
	Facilities provided	1%	30	35	40	50	50	60	60	60	48.13	0.48
L4	Level of coordination among the team	1%	40	40	50	60	60	70	80	80	60.00	0.60
	Level of supporting among the team	2%	50	60	70	75	80	80	85	90	73.75	1.48
Performance Level:											8.63	

APPENDIX – E**(Overall performance of eDoX Project against four perspective of BSC)**

Weighting	25	30	30	15	100%
Actual Performance Level	18.53	18.45	20.96	8.53	66.47%

