Chapter 4
Quality Practices for Managing Software Development in Information System

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ABSTRACT

Information Systems are developed and acquired in business organization in order to achieve the competitive advantage. A good quality information system plays vital role in providing good product and service value to its customers. This study intends to discuss suitable quality practices which could not only support development of a good quality software product but also linked up well with the strategic needs of the organizational business. It first presents what industry recommends for quality practices of software development. Then a framework has been presented that links Information System's development process improvement with strategic needs of an organization. It also demonstrates development of a primarily process improvement activity i.e. "process improvement plan" depicting how business goals leads to an adaptation of process framework like Capability Maturity Model for Development (CMMI-DEV) while using multi-model PI approach and the benefits achieved with its adaptation targeting development of a Quality Information System.

INTRODUCTION

CMMI-DEV's relevant process areas have been highlighted where an organization could use Balance Score Card technique while setting its strategic goals and monitoring their performance related to Information System development. It also highlights the ability of framework through which benefits of achieving competitive advantage could also be monitored. The new version of Information System management framework "Control Objectives for Information and Related Technology" (COBIT) - 5 by Information Systems Audit and Control Association (ISACA)

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has also been highlighted and its relevant process area mapping with Capability Maturity Model Integration (CMMI) for Development (DEV) has also been covered, so that users could easily make their choice of selecting both the suitable frameworks for managing quality development in Information System.

In last varying benefits are reported for using different software development methodologies in multimodal process improvement scenarios. It states agile methods are good for achieving goals quicker. Methods like Team Software Process (TSP), Rational Unified Process (RUP), and CMMI have also achieved their goals, and deliver very few defects.

In last conclusion has been made that the presented framework options are to fill in existing gaps in-between strategic management and Information System development fields and that it has been verified from the statistics that no single software engineering method appears to be perfect therefore multi model process Improvement approach is best to be used for the development of a quality information system.

The "Information Technology" based system depends intensely on "Software Development" activities due to the rapid changing advances in technological interfaces and also to cope up with the day to day business challenges in today's global business market. Therefore a quality development of software is unavoidable now days.

This chapter discusses important aspects related to current trends of using software development practices and their changing impacts on quality software development. These current trends comprise of possible Software Process Improvement (SPI) methods and the possible metrics used for the quantification of Software development quality benefits and the organizational performance improvement in order to achieve the competitive advantage in market.

It discusses how to cover up major gaps in between Information System development and business process that effect over all business system's quality. These gaps are related to the involvement of collaboration of Information System's related Strategic management, the performance monitoring of IT organization and finally with Software Development unit that exists in an IT setup.

BACKGROUND

Information Technology and an Information System

Information technology (IT) is a combination of computer technology including both hardware and software along with communication technology i.e. data and networks. IT is used to build an Information System (IS).

Definition: A collection of elements like people, data, processes, communications, and information technology works together to support business operations by solving problems and helps management and users in making decisions.

Types of IS and Roles in Decision Making

Day to day business operations in and organization generates data that an IS processes in to strategic or tactical information that helps the management in effective decision making. Its biggest advantage is that Information can flow up in the MIS information pyramid faster and more effectively.

Three Levels of Decision-Making of an Organization

There exist three levels of information management in any organization.

1. **Executive level:** It comes on the top level of management pyramid and at this level