Chapter 15
Software Development for Information System – Achieving Optimum Quality with Security

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ABSTRACT

Information Systems acquisition, implementation, and development have been taking place in business organization to gain the competitive advantage. Rapid advancement of Technology is also popping up unethical issues involving violations of End users' data protection and privacy. This article discusses standard quality practices adhere to which a good quality software product is guaranteed while supporting the organizational strategic needs. It presents a framework that bridges Quality software development process improvement with strategic needs of an organization. Standard practices under consideration includes Capability Maturity Model for Development (CMMI-DEV) while using multi-model Process Improvement approach where an organization could use Balance Score Card technique while setting its strategic goals and monitoring their performance related to Information System development, and also link it with Information System management framework "Control Objectives for Information and Related Technology" (COBIT) - 5 released by Information Systems Audit and Control Association (ISACA), so that users could easily switch between the two standards. In last benefits are reported for using quality practices to realize attainment of competitive advantage.

INTRODUCTION

The "Information Technology" based system depends intensely on "Software Development" activities due to the rapid changing advances and also to cope up with the day to day business challenges in today's global business market (Kroenke, 2009). Therefore, a quality development of software is unavoidable

nowadays. Whereas highly successful software projects circumstances have shown the ability to acquire accurate estimates in the beginning, good grip on Project management and control activities and effective Quality Control (Jones, 2017).

This study 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 the market.

It discusses how to cover up major gaps in between Information System development and business process that effect overall 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 being aware of IT Asset's protection.

LITERATURE REVIEW

Day to day business operations in an organization generates data that an Information System (IS) processes into 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. There exist three levels of information management in any organization (Laudon & Laudon, 2011). The first one is "Executive level that comes on the top level of management pyramid and at this level of management long-term and unstructured decisions takes place. The Second level is a Managerial level that comes on the middle level of management pyramid and at this level of management semi-structured decisions take place covering weeks and months. The Third level is an Operational level that lies at bottom of the management pyramid where structured decisions need to be taken on daily basis.

There are mainly two broad categories of IS which are utilized at aforementioned three levels of "Information Management" in any organization. Let's take a quick look at different possible types of an IS which are used at different management levels of an organizations (Tiến, 2012).

1. **Management Support System:** It supports managerial level strategic decision making for achieving competitive advantage and business level tactical decision making. It further comprises of Management Information System (MIS) which facilitates managers with pre-specified analysis and reporting tools, Executive Information System (EIS) which facilitates executives with strategic as well as tactical information management and Decision Support System (DSS) that facilitates executives with strategic as well as tactical information management. It provides interactive support for non-routine decisions what-if analysis for End-users through text and graphs.
2. **Operation Support System:** It supports business processes and operations. It further comprises of Enterprise Communication System (ECS) that facilitates operations through team collaboration and communication, Process Control Systems (PCS) which supports operations and monitor and control industrial and manufacturing process. And Transaction Processing Systems (TCS) which supports operations, and updates operational databases.

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