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Analyzing Risks And Managing Quality Assurance

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Abstract

Quality is a key requirement of the Standards for all development activities, internal quality control are very diverse in their size, available resources, and the product complexity. Clearly, quality assurance is the sum of internal quality control and external quality assessment . Our motive is to built into a good quality system primarily through the audit and review systems. The overriding requirement is that the systems must reflect the established practices of the organization, improved where necessary to bring them into line with current and future requirements. A systematic, functional, quality model like TQM should be genuinely explored and exploited. *Also, a consistent approach in assessing and managing risk is crucial to successful quality management.* A lack of standard risk management analysis methodologies and assessments results in enterprise-wide waste of time, money, and resources.

Keywords: Quality, quality assurance, quality assessment, risk assessment**.**

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Introduction

Everyone is committed to quality; Quality requires devoir particularly from top management. Close cooperation of management and staff is required in order to make it happen.

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Quality assurance = Internal quality control + External quality assessment

Quality control it includes the enactment of a quality standard or specifications for each aspect of the procedure, determination of how close to the proximate quality standard product is, and then catching any paramount reformatory actions to bring the procedures up to the imperious standard.

In practice, **internal quality** control is designed to check that a software will produce the twin result or outcome if the test or procedure is done on different occasions, or by different technicians (between-operator variation).

Quality of a software product is required to be improve or maintain with improvement in process and product standards.

Objective of Quality Control:

The basic objectives of quality control[4] are to maintain quality standards in order to cinch customer satisfaction and to reduce the costs correlate with the scrapping of defective goods.
Quality control has two different aspects:

Quality of design related to the appropriateness of the product for the customer's purpose. After establishing customer requirements or the customer's insight of quality it is personified in production design and requirement.

Quality of conformance related to the extent to which the goods that are produced conform to the condition laid down. This aspect of quality concerns steadiness of the product.

There is a tradeoff between the costs associated with the maintenance of quality and the costs resulting from failures. Quality control involves the use of resources in the inspection process. To this has to be added the costs of prevention (special investigation in to failure, personnel training, and maintenance) which have to be balanced against the cost of failure (scrap, reworking, sorting rejects, loss of sales, after-sales service, serving complaints, additional operations).

However, software quality[3] control costs can be reduced by the inspection of variables in the production process. These include the raw materials that go in to the production process, work in progress and the machinery used.

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Quality Assessment System:

In order to evaluate as well as improve the quality-system maturity of a software product line there are many quality-assessment systems, quality-audit systems as well as international, local as well as standards that vary in level of scope, depth and the purpose. Quality Assessment System in software product line is a system or method to measure and evaluate the expertise quality of a software product. It enables the quality of virtuosity between software projects to be objectively compared through a pre-eminent system.

It is an overall management plan to guarantee the integrity of data(The"system")

Key factors affecting Quality Assessment in a software are:

- **Uniformity**
  - **Accuracy**
    A major obstacle for managers of software projects is to be able to make accurate predictions. For example, how long will a project take, how much attempt will it require; and how many defects will a particular software contain.
  - **Precision**
    Precision is defined in terms of systematic and random errors. The more common definition associates accuracy with systematic errors and precision with random errors.
- **Right result**
  - **First time**
    It refers to the very first time the product is used
  - **Every time**
    Every time the system is bought to use.

Quality audit- It is the review of theatrical procedures, often in the form of checking the standard operating procedures as shown in figure 1. [2]

Inspecting and reviewing [] products is very important, a software product would not be successful and sustainable without this productivity. Clients would not be fascinated in your service and would abase your product if you cannot produce reliable good, making it a simple concept..
The basic objectives are to create perfect products that are checked and reviewed to the highest standard.

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Figure 1: Quality Audit Stages

Total Quality Management

The total in TQM applies to the whole organization. Therefore, unlike an ISO 9000 initiative which may be limited to the processes producing deliverable products,

TQM applies to every activity in the organization. Also, unlike ISO 9000, TQM covers the soft issues such as ethics, attitude and culture.

When should TQM be adopted?

TQM can be adopted at any time after executive management has seen the error of its ways, opened its mind and embraced the philosophy. It cannot be attempted if management perceives it as a quick fix, or a tool to improve worker performance.

How should TQM be adopted?

Before TQM is even contemplated

TQM will force change in culture, processes and practice. These changes will be more easily facilitated and sustained if there is a formal management system in place. Such a system will provide many of the facts on which to base change and will also enable changes to be implemented more systematically and permanently.

The first steps

In order to focus all efforts in any TQM initiative and to yield permanent benefits, a company must answer some fundamental questions:

- Purpose
- Vision
- Mission
- Values

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– Objectives

Methodology

There are a number of approaches to take towards adopting the TQM philosophy.
Examples of tools include:

- Flowcharting
- Statistical process control (SPC)
- Pareto analysis
- Cause and effect diagrams
- Employee and customer surveys

Examples of techniques include:

- Benchmarking
- Cost of quality
- Quality function deployment
- Failure mode effects analysis
- Design of experiments

The continuous process of reducing or eliminating errors in manufacturing, streamlining supply chain management, improving the customer experience and ensuring that employees are up-to-speed with their training. Total quality management aims to hold all parties involved in the production process as accountable for the overall quality of the final product or service.

Total quality management (TQM) was developed by William Deming, a management consultant whose work had great impact on Japanese manufacturing. While TQM shares much in common with with the Six Sigma improvement process, it is not the same as Six Sigma. While it focuses on ensuring that internal guidelines and process standards reduce errors, Six Sigma looks to reduce defects.

The total quality management (TQM) concept represents a fundamental change in the definition and treatment of quality in software development.

TQM advocates: Continuous process improvements through process measurements.

includes all members of an organization in improving processes, products, services, and the culture they work in.

The primary TQM tool for continuous improvement is the PDCA Cycle as shown in figure 3:

– **Plan** – In this phase, the quality team defines the problem, gathers and analyzes data, sets measurements and formulates solutions to improve quality.
– **Do** - The team implements the new process and test the results against the desired results.

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- **Check-** The team measures effectiveness and makes adjustments to refine the new quality process until the desired results are achieved.
- **Act** - The new improved process is implemented, all parties are notified and trained on the new process and metrics are set in place to monitor the quality process effectiveness.

Figure 2: TQM Strategy

When these practices are brought to actual use the product so form results in better and proficient quality

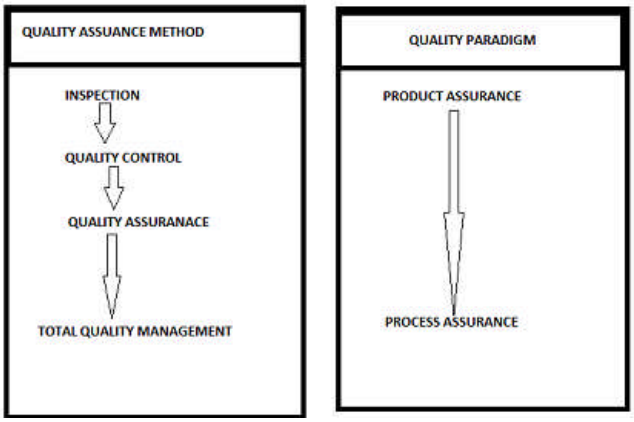

Figure 3: Quality Assurance related to Total Quality Management

When these steps are applied on a software product sequence wise starting from quality control to total quality management

Considering an example of a “Data Sharing Portal” in which teachers and students have their separate accounts Teachers can upload marks and attendance of students and respective student can check his/her marks accordingly, when we apply a whole set of procedures to the project we see better and proficient results and also reach to a conclusion that risks should be considered when quality of as product is taken into consideration as shown in Figure 4.

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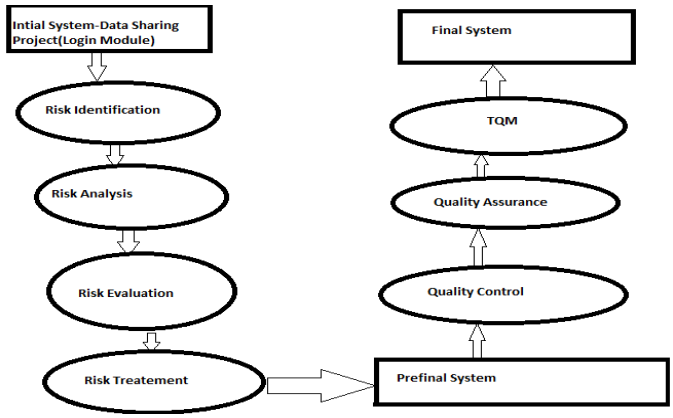

FIGURE 4: RISK IN CORRELATION TO QUALITY MANAGEMENT

II.PROPOSED WORK

Risk Management for Project

A risk is any anticipated unfavorable event or circumstances that occur while project is underway if a risk becomes true ,it can hamper the successful and timely completion of a project

Risk management consists of three essentials activities Risk Identification, Risk Assessment, Risk Containment while Quality management can be thought of as the process of designing and executing products and services effectively, efficiently, and economically.

If we look at process quality, we see that objective gaps imply higher deltas in the process, which means higher risk: more variances, or higher variation, lead to less uniformity in product or service and poor quality.

“By reducing the risk of deltas, we reduce objective gaps and variation, and increase process quality”

There are three main types of operational risks[1]:
Enterprise risk—Risk related to the operation of a business, execution strategy, systemic issues, and material issues
Project risk—Risk related to the planning and delivery of a product or service, and of not being able to meet project “triple constraints,” i.e., scope/quality, schedule, and cost, including technology and other factors
Process risk—Risk relating directly to planning and delivery of a product or service and of not being able to meet process stability, process capability, and continuous improvement—meaning the inability to achieve consistent outcomes

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The critical elements of risk management identified in ISO 31000_are:

Risk identification—Identifies the sources of risk, risk events, and their potential consequences
Risk analysis—Analyzes the causes and source of the risks and the likelihood that they will occur
Risk evaluation—Determines whether risks need to be addressed and treated
Risk treatment—Determines strategies and tactics to mitigate or control risks

Risk Identification

Brainstorming is a technique that is best accomplished when the approach is unstructured (the facilitator encourages random inputs from the group). Group members verbally identify risks that provide the opportunity to build on others' ideas.

Surveys are a technique where lists of questions are developed to seek out risk in a particular area. A limitation of this method is that people inherently don't like to complete surveys and may not provide accurate information

Interviews are an effective way to identify risk areas. Group interviews can assist in identifying the baseline of risk on a project. The interview process is essentially a questioning process. It is limited by the effectiveness of the facilitator and the questions that are being asked.

Working Groups are great way to analyze a particular area or topic in a discussion process to identify risks that may not be obvious to the risk identification group[7].

Experiential Knowledge is the collection of information that a person has obtained through their experience. Caution must be used when using any knowledge based information to ensure it is relevant and applicable to the current situation.

Documented Knowledge is the collection of information or data that has been documented about a particular subject. This is a source of information that provides insight into the risks in a particular area of concern.

Risk Lists are usually lists of risks that have been found in similar municipalities and/or similar situations

Risk Trigger Questions are lists of situations or events in a particular area of a municipality that can lead to risk identification.

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Lessons Learned is experiential knowledge that has been organized into information that may be relevant to the different areas within the organization

Outputs from Risk-Oriented Analysis - There are various types of risk orien00ted analysis. Two such techniques are fault tree analysis and event tree analysis.

Historical Information is basically the same as documented knowledge. The difference is that historical information is usually widely accepted as fact.

Engineering Templates are a set of flow charts for various aspects of the development process. These templates are preliminary in nature and are intended as general guidance to accomplish a top down assessment of activities.

Risk Analysis: In IT, a risk analysis report can be used to align technology-related objectives with a company's business objectives. A risk analysis report can be either quantitative or qualitative.

Risk Assessment

The Objective of risk assessment is to rank the risk in terms of their damage causing potential
The Likelihood of Risk Coming True (r)
The consequence of the problems associated with that Risk (s)
Based on these two factors ,the priority of each risk can be computed as

$$P=r*s$$

Risk Containment

There are three main Strategies for risk Containment
Avoid the risk -This may take several forms such as discussion with customer to reduce the scope of work
Transfer the Risk - This involves getting the risky component developed by third party
Risk Reduction – This involves planning ways to contain the damage due to risk
For this we may choose the risk levarge

Risk leverage = risk exposure before reduction – risk exposure after reduction divided by Cost of reduction

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References

[1] http://www.qualitydigest.com/inside/quality-insider-column/linking-quality-management-and-risk-management.html#
[2] http://www.biomedcentral.com/1471-2393/8/28/figure/F1?highres=y
[3] http://en.wikipedia.org/wiki/Software_quality_
[4] http://softwaretestingfundamentals.com/software-quality-assurance/
[5] Calero, C., Ruiz, J., & Piattini, M. (2005). Classifying web metrics using the web quality model. Online
[6] Information Review, 29(3): 227–248.
[7] https://standards.ieee.org/develop/wg.html