The Function of Quality Audit in Project Management

By:

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As I write this article, our internal quality audit team is in the middle of planned and scheduled internal quality audits of 92 projects and 11 business processes. Why is quality audit mandatory in an organization that has an established quality management system?

This article illustrates the function of quality audit in project management.

One of the "project management areas" of the PMBOK Guide is "Project Quality Management" (1). It has three sections, namely: quality plan, quality assurance, and quality control. Quality audit is under "quality assurance."

Let's lay out some relevant definition of terms. Foremost is "Quality" which is defined as the "degree to which a set of inherent characteristics fulfills requirements" (2). What is referred to here is "something"—say, that which is produced or has been produced like a product or service—that has characteristics either "inherent" (e.g., the natural sweetness of an orange juice) or "assigned" (e.g., artificial food coloring added to a juice drink). A particular product (e.g., an engineering drawing) or a service (e.g., haircut) has certain "characteristics" that may or may not fulfill (or satisfy) a requirement (or expectation).

If two persons are engaged in a transaction pertaining to a product or service—i.e., one is a producer or service provider and the other is a receiver—then a form of "social contract" is involved. For example, if I ride in a taxi, the driver brings me to a place I tell him and I pay him afterwards—there is an unwritten "contract" involved between me and the driver. However, if a government, for instance, needs to construct a highway for its purpose, a legal "contract" is required between said government and a contractor.

Quality and contract are intertwined.

A written contract between two parties usually carries two kinds of specifications: technical (e.g., length of road to be paved with cement is 50 kilometers) and commercial (e.g., contract awarder will pay contractor's mechanical inspector US$12,000 per month). A specification provides the details of a requirement—hence, it is "specific," no more no less.

ISO 19011:2002 defines "audit" as a "systematic, independent and documented process for obtaining audit evidence … and evaluating it objectively to determine the extent to which the audit criteria … are fulfilled" (2). Here, "audit" does not pertain whatsoever to "financial audit" but rather does refer to an "audit criteria" which is defined as a "Set of policies, procedures or requirements" (2) of an organization. Any company in the construction industry most likely has a quality management system in place and is probably an ISO 9001:2000/2008-certified company. The government of the State of Qatar requires all prospective and current contractors to have a quality management system (QMS) compliant with the requirements of ISO 9001:2000/2008 standard (3).

A Contract defines what needs to be produced (product or service) and by whom (the Contractor). The fulfillment of all the "requirements" (quality) of a Contract is achieved through a "Project" which determines all the "activities" or "work" (the scope of work) needed to be done within a finite time frame (schedule) and at a reasonable budget (cost). A methodical and systematic execution of a "Project Management Plan" (PMP) or "Project Quality Plan" (PQP) is of critical importance because one of the conditions of a Contract is monetary penalty imposed onto a Contractor for every day of delay in the schedule.

When a Contract is technically converted into a Project, a team is organized to execute various plans pertaining to a project at hand.

A Contract usually requires a PMP or a PQP for medium- and large-size contracts worth millions or billions of US dollars. A PQP carries, among other information, a "Project Charter," Scope of Work, organization structure, and a mini quality management system (QMS) patterned from a Contractor's corporate QMS (if it is an ISO-certified company) that identifies the business processes, procedures and work instructions, and forms used exclusively for the project. A flexible PMP or PQP governs the entire project from start to turnover.

Three or six months after the commencement of a project, internal quality audits are planned and executed accordingly.

Who should instruct or require the audit of an organization's policies, management system, business processes, and procedures? Either one of three entities.
In a "first-party" audit, a company has its own internal quality audit functional unit that is instructed to conduct quality audits on its own identified business processes and/or projects.

In a "second-party" or "supplier quality" audit, a contract awarder usually instructs an external independent quality auditor to conduct quality audits on its contractor based on pre-defined audit criteria. There are also instances when a contract awarder uses its own quality auditors to audit its contractor.
In a "third-party" or "surveillance" (also called "certification") audit, a company that has developed its quality management system and is intent on obtaining compliance certificate to ISO 9001:2008 standard calls for an external quality assessor/auditor (also called an ISO "Registrar") to assess its QMS after which a recommendation for issuance of a certificate of compliance is declared and subsequently achieved by the aspiring company. After the issuance of Certificate of registration to ISO 9001:2008 compliance, surveillance audits at agreed intervals within a three-year period follow.

When "evaluating" or "assessing" a quality management system, four necessary questions are asked, namely: (a) is the process identified and appropriately defined? (b) are responsibilities assigned? (c) are the procedures implemented and maintained? (d) is the process effective in achieving the required results? (4).

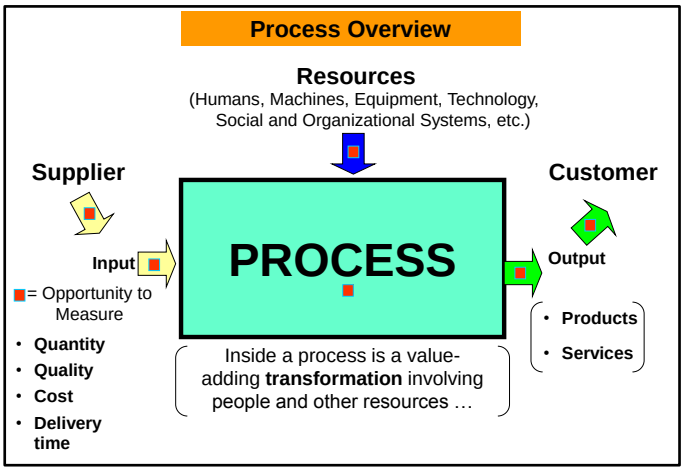
In designing and developing a quality management system, the first action being taken is to document the various business processes, associated procedures, and forms of an enterprise after which these components are integrated to form a "system."

Quality auditors are required to have an understanding of a process and a system.

"Everything in nature is a matter of process, of activity, of change" asserts a "process philosophy" (5). A. N. Whitehead, a process philosopher, maintains that "everything is a process." And a process "produces information." On the other hand, ISO 9000 succinctly states in its earlier version of its QMS standard in the 80s that "All work is done through a process."

A "process" as illustrated in Figure 1 and Figure 2 is defined by ISO as a "set of interrelated or interacting activities which transforms inputs into outputs" (2). A process can be imagined as any box that when supplied with something (an input) something goes on inside the box (the process) that enables it to produce something (an output). An entire company is considered a huge process box—it produces what it legally registered as its products or services. Inside a business process are resources—humans, machines, systems, etc., that interact directly or indirectly with each other until a required output is produced and handed to a receiver called a customer. Any documented business process when

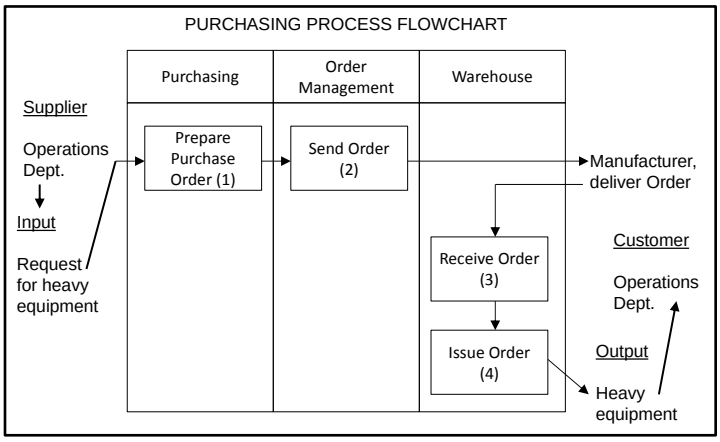
Figure 1 Process Overview



implemented produces information about its activities and performance and must, therefore, be measured of its effectiveness in either one or a combination of four major metrics: quantity, quality, cost, and time.

Figure 2 illustrates a high level cross-functional business process (also called a "block diagram" or a "process flowchart") using the concept shown in Figure 1. The process enables the procurement of heavy equipment that is meant for a customer which, in the first place, is the Operations Department of an imaginary company. Inside the entire process are three functional units (Purchasing, Order Management, and Warehouse)—joined together, they play individual roles and responsibilities until the request is issued and received. Each numbered small box inside the business process is actually a process in itself and can be viewed similarly like a big process box. Each process box (activity) is interdependent with each other.

Figure 2 Purchasing Process Flow



Quality auditors of the 2000/2008 versions of ISO 9001 are trained to focus their attention on a process or a system (illustrated in Figure 1 and Figure 2) when conducting quality audits.

Quality auditors are representatives of senior management sent to certain organizations to usually audit business processes, procedures and work instructions. In auditing business processes, a quality auditor seeks to answer three questions: (a) is the intent (purpose) defined? (b) is it implemented? (c) is it effective? (There is a difference between "evaluation" or "assessment" and "audit"—the former looks into the entire QMS while the latter delves into a particular business process or processes that form part of a QMS.)

Quality auditors do not audit a person. One of the aims of quality audit is to gather evidences or proofs that are used to objectively evaluate the extent to which the audit criteria are fulfilled.

Upon the initiation of audit activity, an auditor seeks for the statement of purpose of a business process or procedure. Next, he looks for "evidences" that said process is implemented. "Records" provide evidences to the implementation of a process—these are the "controlled" forms that are duly filled up and filed accordingly. The third pursuit of an auditor is to look for evidence/s that the process being audited is effective in meeting its pre-defined results. The evidences are found in monthly process performance reports or PPRs (companies differ in terminologies). PPRs provide measurement of quantity, quality, cost, and cycle time in specific areas of a process or the process as a whole. For illustration purpose, the Purchasing Business Process shown in Figure 2 has one performance measure defined as: "Average number of days to receive an order from outside the country = 30 days." The operational criterion is necessary because it creates awareness among the stakeholders in the business process (Purchasing, Order Management, and Warehouse) to perform their respective responsibilities in order to achieve the pre-defined measure. The result will be either early, on-time, or late with some degree of variations spread in a 12-month period.

In the absence of PPRs, human work outputs in many organizations become menial or bad jokes where many "play games."

Quality audit findings have four qualifications, namely (the fifth is an addition derived from an audit report of an ISO Registrar): compliant (OK), major nonconformity (NC-major), minor nonconformity (NC-minor), observation (OB), observation for improvement (OFI).
When an engineering drawing fraught with errors has been submitted to a Customer it earns an NC-major finding (because a defective product has been released to and received by the customer). A Document Controller who has been using an obsolete transmittal template gets an NC-minor for violating an instruction (the engineering drawing being sent through the obsolete transmittal template was acceptable; however, the wrong template was instrumental in having the document

returned by the customer—thus, contributed to project delay).

Observation (OB) audit findings are those instances where a potential nonconformity may occur sooner or later. A project document controller found frequently asking a tea boy photocopy documents for him (instead of the photocopy machine operator) resulting in mixed-up documents is an "Observation" finding.

Observation For improvement (OFI) is an observed occurrence outside the boundary of a process being audited or within a process but is not defined. For example, a controlled form may be more effective if added with one more column that captures data about the time of release of a document.

The essence of an audit report are the findings with corresponding qualifications—they give a glimpse about the current condition of an audited process. Nonconformities (NCs) must be corrected (and prevented totally from being repeated) the soonest possible time; and observations (OBs) must likewise be prevented from occurring at minimal cost. OFIs when considered for improvement can add efficiency and effectiveness to a business process.

The most important aspect of quality auditing is the subsequent "root cause" analysis of nonconformity and observation findings. Kauro Ishikawa has been credited with the "fishbone" and "cause-and-effect" diagrams as well as for the "4-Ms"—machine, man, methods, materials. (I would like to add another M which stands for "management"—I believe it contributes much to organizational troubles.) The technique of uncovering the cause/s of a particular nonconformity is quite simple and yet so powerful that it elicits a hidden information. It is asking "why" to every answer given by an auditee about the cause of a finding. Oftentimes, at the third or fourth "why," the root cause has settled on the fifth M—management.

Nonconformity and observation findings and corresponding root causes provide valuable feedback to stakeholders; they uncover organizational defects that lead to their elimination; they also indicate areas for improvement that benefit many. Where there are successful improvement initiatives, positive changes prevail that can make work life easier in an organization and make business more profitable.

One of the key tasks of a lead quality auditor is to prepare an independent audit report. Oftentimes audit reports are used as aid to senior management in making concrete decisions. Nonconformity findings remind management of violations committed by personnel either through negligence, incompetence, accident, or in between. Audit reports inform management of what are going on in certain areas of the company be it in project sites or in corporate offices.

When findings are cleared, that is, closed or corrected and prevented, organization stakeholders can look back at certain situations prior to quality audits and "learn" something: when compiled and used as reference, these "lessons learned" become relevant guides toward the achievement of organizational goals and objectives. Statistics of root causes provides meaningful historical record of an enterprise.

Figure 3 shows a statistics of audit findings from seven functional groups of a company. The chart implies something about what is happening within the individual functional units.

Pre-Contract department, for instance, definitely catches the attention of top and middle management for its two major nonconformities and one minor nonconformity while its eight observations carry warning bells. The classified root causes of all of the 19 findings provide further useful information. Corrective and preventive actions eliminate the findings that occurred; however, it is the function of "quality control" that prevents the recurrence of the same finding. "Quality assurance" in the form of quality audit reinforces confidence to the efficiency and effectiveness of an audited business process.

Figure 3 Sample Statistics of Audit Findings

		Findings within auditees		
#	Department	OBS	NC-mnr	NC-mjr
1	Administration	2	0	0
2	HR	1	0	0
3	Contracts Management	0	0	0
4	IT Section	0	0	0
5	BD	1	0	0
6	Pre-Contract	8	1	2
7	Post-Contract	1	3	0
	Total	13	4	2
			Grand Total	19

What add significance to the function of quality audit in project management are the five "principles of auditing" prescribed by ISO 19011:2002.

Ethical conduct

This is the "foundation of professionalism." Quality auditors are deployed by senior management and as such they have already earned the "trust" of a company's top governing body toward them; quality auditors treat all their findings with "confidentiality" and "discretion." Internal quality auditors never use their role to avenge what other people might have done to them in their organization that could have offended them in the past.

Fair presentation

"The obligation to report truthfully and accurately." Quality auditors are individuals of "integrity"—they are independent in writing and reporting their findings; however, they consider the impact of their report on others. Quality auditors never use their report to aggrandize themselves. They are merely reporters of facts.

Due professional care

The "application of diligence and judgement in auditing." Quality auditors are aware that they are management functionaries chartered to do a specific and limited task. They are careful not to create resentment in an auditee. They are diplomatic in asserting themselves.

Independence

"The basis for the impartiality of the audit and objectivity of the audit conclusions." Quality auditors consciously exercise independence while conducting audits. There are times when they feel the tremendous burden of unseen stress in maintaining their independence while repelling the subtle influence of some people in the organization in which they are conducting audits.

Evidence-based approach

"The rational method for reaching reliable and reproducible audit conclusions in a systematic audit process." A quality auditor's report is supported by facts (evidences). This makes quality auditing a necessary and vital tool in project management especially if huge contracts—that is, by the millions and billions of dollars—are to be assured of quality workmanship with confidence.

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