

Change Auditing in Information System Consulting

David C. Chou

Department of Computer Information Systems, Eastern Michigan University, Ypsilanti, MI 48197
Tel: (734)-487-0054
E-mail: david.chou@emich.edu

Amy Y. Chou

School of Information Technology, Illinois State University, Normal, Illinois 61790
Tel: (309)-438-2804
Email: aychou@ilstu.edu

ABSTRACT

This paper discusses the concept and implications of IS consulting methodology. Various companies' consulting methodologies are collected and compared to illustrate embedded insinuations. It also identifies encountered changes and risks in IS consulting practice. Change management and change auditing processes are also discussed. The pros and cons of integrating change auditing into IS consulting practice are listed.

INTRODUCTION

Information system (IS) consulting is an important section within the information system industry. Many IS consulting firms exist in nations to serve either domestic or international customers. In order to make their IT services successful, most IS consulting firms developed a formal methodology that describes needed processes to be followed. The main goal of adopting consulting methodologies is to enlist the techniques required to deliver quality consulting projects that fulfill client's expectations within requested timeline and budget.

Most consulting methodologies must be created based on firm's disciplines, believes, and technical specialties. Usually, consulting methodologies define and describe needed processes that to be enforced by the firms. The components of consulting methodologies are broad and diversified, including project management, change management, development of service-specific toolkits, and development of standards related to documentation, training, security, contingency planning, knowledge transfer, etc. (Freedman, 2003).

IS consulting projects may involve unexpected demands for changes during their working period, such as scope changes, technology changes, people changes, or even contractual changes. In addition to these reasons, innovation is also a major cause of changes. Any clients may have new ideas after signing a consulting contract, it then gradually to be developed into a concept and a concrete invention may be integrated into this project. Innovation, in essence, involves change requests. Most change activities in IS consulting may "create not only high levels of

annoyance but also significant amounts of chaos” (Chou and Chou, 2007) to consulting firms. For these reasons, consulting methodology should include the principles of handling “change management” as one of its major processes.

Managing project changes can contribute a vital impact to the success of IS consulting business. Therefore, creating a process to manage and track project changes and requests is an essential part of consulting methodology. This practice also indicates that the practice of change management should be in place to ensure that standardized procedures are applied in consulting life cycle for timely handling of changes. Change control “can be a very complex process, consisting of a formal review process, weekly change meetings, and several levels of approval processes. It can also be a simple tracking process that is completed after the change has taken place.” (Tardugno, et al., 2000).

Change management in consulting projects involves many risks and uncertainty. It is worth to discover these risks and problems. One way of managing project change is through the auditing work. This paper intends to tackle the functionality of change auditing in IS consulting practice. We would like to propose a model of change auditing that to be integrated into IS consulting life cycle in order to enhance the capability of change management in IS consulting practice.

This paper first discusses the concept and implications of IS consulting methodology. Various companies’ consulting methodologies are collected and compared to illustrate embedded insinuations. The next section identifies encountered changes and risks in IS consulting practice. Change management and change auditing processes are discussed in the next section. The next section discusses the pros and cons of integrating change auditing into IS consulting practice. These pros and cons will lead to a final conclusion of this paper.

CONSULTING METHODOLOGY

Defining Methodology

According to Merriam-Webster online dictionary (2008), the term of “methodology” is defined as:

*“a body of methods, rules, and postulates employed by a discipline;
a particular procedure or set of procedures; and
the analysis of the principles or procedures of inquiry in a particular field.”*

A traditional information system consulting practice usually offers IS and IT services to their clients, the goal of this consulting work is to deliver customer satisfied high quality services. Since individual IS consulting firms may specialize in specific technological areas or applications, their delivering methodology may be varied. For example, HCL Technologies (2008) adopts consulting methodologies for individual consulting areas, such as risk management, business process reengineering, knowledge management, data warehouse management, IT process, supply chain management (CRM), customer relationship management (CRM), healthcare system, etc.

Process or Procedures as Methodology

Many IS consulting firms adopt procedures or process based methodology. For example, HP Services (2008) implements a methodology that involves the following procedures: initiation, planning, requirement setting, design, coding, testing, and closure. Ernst & Young's Business Advisory Services (2008) offers five stages methodology, including identify, diagnose, design, deliver, and sustain.

The benefits of adopting procedures based methodology are:

- The workflows are clearly defined and identified;
- Project planning and scheduling can be easily executed;
- Project resource can be efficiently allocated;
- Risks can be easily identified;
- Change control can be implemented in right order;
- Auditing process can be done easily.

Method as Methodology

Using established "methods" as an IS consulting methodology is another practice in the IS consulting industry. For example, Satyam Computer Services (2008) and Wipro Technologies (2008) adopt Six Sigma method as their major consulting methodology. Similarly, Accenture (2008) adopt Lean Six Sigma method as their major consulting methodology.

Six Sigma is "the application of the scientific method to the design and operation of management systems and business processes which enable employees to deliver the greatest value to customers and owners" (Pyzdek, 2003). There are two important Six Sigma models: DMAIC and DMADV. DMAIC represents a simple performance model known as Define-Measure-Analyze-Improve-Control. Within this model, five steps are implemented the quality improvement: "define the goals of the improvement activity, measure the existing system, analyze the system to identify ways to eliminate the gap between the current performance of the system or process and the desired goal, improve the system, and control the new system" (Pyzdek, 2003). DMADV, on the other hand, represents Define-Measure-Analyze-Design-Verify, is used to develop "a new or radically redesigned product, process or service" (Pyzdek, 2003). DMADV model contains five steps: "define the goals of the design activity, measure, analyze the options available for meeting the goals, design the new product, service or process, and verify the design's effectiveness in the real world" (Pyzdek, 2003).

PDCA (Plan, Do, Check, and Act) is another important software quality method that has been widely used in the software industry. The PDCA cycle describes the software creation life cycle that starts with a set of planning (or designing) activities, then doing (or coding) programs, then checking (or testing) programs, and finally acting to develop (or debugging) programs. Software quality process, according to Arthur (1993), contains the following five objectives: "increase customer satisfaction, decrease application unavailability, improve software performance, reduce software development costs, and improve software reliability." The PDCA method has been acknowledged as a foundation for software total quality management (TQM) process (Arthur 1993, Goetsch and Davis 1995).

Lean Six Sigma is “a business improvement methodology that maximizes shareholder value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, process speed, and invested capital.” (George, 2003) Lean and Six Sigma are two distinct quality methods, each has specialized approaches and handling processes. Lean method emphasizes on maximizing process speed and analyzing process flow to reduce the cost of complexity for the project. Six Sigma, on the other hand, utilizes the process of statistical control to managing customer needs and quality requirements in the project. The combination of these two improvement methods makes a powerful quality tool for the IS consulting industry.

In summary, the implementation of various methodologies may provide the following benefits to the IS consulting practices:

1. reduce the operational and managerial costs in the project life cycle;
2. speed up the activities and processes that allow clients to gain faster time to market;
3. increase client’s satisfaction with high quality to each project;
4. improve project governance and flexibility;
5. reduce project risks;
6. enhance the implementation of auditing activity

CHANGES AND RISKS

Changes in IS consulting practice

IS consulting practice indeed causes client side’s organizational change since new work force and technologies need to be integrated into the client company. Leavitt (1965), in his organizational change model, identified four major system components (structure, task, people and technology) and also pointed out that any change in these components would result in change among others. Chou (2007) indicated that IS outsourcing caused substantial impact to organizational changes, including “managerial structure change, task and jobs changes, people and relationship changes, and information technology and infrastructure changes”.

An outsourcing organization will cause managerial structure change. It would affect more if this organization adopted the pattern of business process outsourcing (BPO) since the whole division or department would be outsourced. Under such circumstance, job cutting or downsizing becomes a reasonable choice. IS outsourcing, in essence, will result in information systems task and jobs change within an organization. Depending on the scale of outsourcing project, the size of task and jobs restructure may be varied. Another impact to IS outsourcing is people and relationship change. New work force and expertise will be unavoidably integrated into client side to carry out new project. Thus a newly built up coalition or relationship should be maintained. The last IS outsourcing impact is related to information technology and infrastructure changes. Most IS outsourcing vendors offer new information technologies or tools to execute outsourcing projects. The client side must update its infrastructure to adapt to these new information technologies.

Risks in IS Consulting Practice

The changes caused by IS outsourcing are not cost free. The uncertainty to the success of IS outsourcing project generates tremendous amount of risks. Risk can be defined as “an undesirable event, a probability function, variance of the distribution of outcomes, or expected loss.” (Aubert, et al., 2005). Risk can be calculated through “a function of the probability of a negative outcome and the importance of the loss due to the occurrence of this outcome.” (Aubert, et al., 2005). Any events which divert from planned path would cause risks and loss.

Within the IS outsourcing life cycle, risks were identified in the each contracting phase. These risks are listed below (Chou and Chou, 2009):

A. During pre-contract period:

- lack of market information
- inadequate outsourcing plan and lack of outsourcing strategy
- lack of vendor information

B. During contracting period:

- inadequate project management knowledge and tools
- lack of quality control process
- cost related risks, such as unexpected transition and management costs, switching costs, costly contractual amendments, disputes and litigation, service debasement, cost escalation, loss of organizational competency, and hidden service cost (Aubert, et al., 2005)
- irreversibility of the outsourcing decision that is related with vendor, such as breach of contract by the vendor, vendor’s inability to deliver, biased portrayal by vendors, vendor lock-in, lack of trust, and hidden cost (Jurison, 2002)
- risk of loss control, such as loss of autonomy and control over IT decisions, loss of control over vendor, loss of critical skills, uncontrollable contract growth, loss of control over data, and loss of employee morale and productivity

C. During post-contract period:

- lack of assess measurement, metrics, and tools
- lack of certification and quality control

The above mentioned risks must be identified and monitored in the IS outsourcing life cycle to ensure their minimum occurrence, this way we can enhance the benefit and quality of the outsourcing project. Another area the outsourcing company must do is to establish and implement the change auditing process to ensure the success of IS consulting practice.

CHANGE AUDITING

In order to successfully manage changes during IS consulting practice this section discusses the importance of adopting the auditing process to monitor the needed activities within change management. A carefully planned auditing process can fully control those change events during the consulting practice. This way can reduce risks and uncertainties during IS consulting

practice. Other than that, change auditing can be used as a standard to monitor quality requirements that set by consulting firms.

Change Auditing

Auditing is a way of assessing the quality control process. A quality audit is defined by ISO (International Standards Organization) as “a systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.” (Chou and Chou, 2000).

Auditing process can be applied to various situations, including evaluating a potential vendor, verifying an organization’s own quality system practice, verifying vendor’s quality system and practice during contracting period, and evaluating an organization’s quality system against a standard (Chou and Chou, 2000). An auditing process is “initiated for internal or external purposes”; the audit requirements and standards “are set by internal and external sources.” (Chou and Chou, 2000). The internal audit and requirements standards are set by specific organizational purposes, usually for the product quality maintenance and customer needs. The external auditing standards are determined by quality agencies such as ISO, ASQC (American Society of Quality Control), IEEE (Institute of Electric and Electronic Engineering), and governmental agencies such as FDA (Food and Drug Administration) and EPA (Environmental Protection Agency).

Auditors, who are the personnel conducts auditing process, should comply with the applicable audit requirements, communicate with employees about audit requirements, planning and carrying out the auditing activities, documenting and reporting the audit results (Chou and Chou, 2000).

The internal auditing activity can be applied into change management process. Since change management process engages in various risk occurrences, failure to follow authorized processes may result in pre-identified risks and losses. For these prominent reasons, change management audit should be integrated into IS consulting practice to ensure its proper handling of the project.

Change Auditing Process

In general, auditing process can be classified into the following four stages: (1) preparation, (2) performance, (3) reporting, and (4) closure (Chou and Chou, 2000). The first stage, preparation, can start from the decision to conduct an audit process and then conduct team selection and information gathering. The performance stage starts with “the onsite opening meeting. It includes information gathering and information analysis through interviews and examination of items and records.” (Chou and Chou, 2000). The reporting stage “encompasses translation of the audit team’s conclusion into a tangible product. It includes the exit meeting with managers and publication of the formal audit report.” (Chou and Chou, 2000). The closure stage “deals with the actions resulting from the report and recording of the entire effort.” (Chou and Chou, 2000). If any drawback or weakness to be found during the auditing process, the closure stage should conduct needed follow-up actions to fix the problem.

Corporate management should look at change auditing as a success factor for their outsourced project. Management should work with auditors to ensure the success of change auditing process. During the preparation stage, management should focus on audit plan formation. Managers should agree to planned audit purpose, focus, and approach. Audit plan should point out those potential contracting and operational risks and their levels of severity. Another important area to be observed is the evaluation criteria that auditors will employ during assessing change management process. In the mean time, the methods to test the existing change management controls should be determined during this stage.

The performance stage involves extensive meetings among auditors, managers, and workers. A successful change audit depends on effective communications to be performed during this stage. Management should provide knowledge of site operations to auditors for their convenience. It should allow auditors to get access to any personnel for questioning if needed. Another important task for management team is to draw a comprehensible workers interview schedule for the audit team. The audit team should perform audit tests to assess the performance of the change management process during consulting practice. The audit team may select the testing methods they feel comfortable, however, management should discuss with the audit team about the suitability of these testing methods.

The audit team collects needed performance data and then prepares summaries of its key findings. It then starts the reporting stage of the auditing process. An exit meeting with managers to discuss the findings during audit tests, such as operational drawbacks, risk occurrences, and inefficiencies in the change management process should be offered. A formal audit report or publication should be provided for easy references.

Change managers should check reported problems that found during change auditing. After validation work, change managers and/or IT managers should prepare for providing feedback and comments to suggested revisions made by the auditing team. The audit team may provide additional helps to these change managers if needed. This closure stage may be completed while the consulting contract ends.

PROS AND CONS

Pros of Change Auditing Process

Change auditing process adds the following advantages to IS consulting practice:

- Change auditing monitors potential risks of IS consulting practice.
- Change auditing utilizes formal audit testing methods to control the change management activities.
- Change auditing improve the success rate of IS consulting project.
- Change auditing establishes the operational standards and guidance of IS consulting practice.
- Change auditing creates quality standards for outsourcing project.
- Change auditing reduces the project failure rate and therefore save the whole project cost.

Cons of Change Auditing Process

Change auditing process may create the following concerns to IS consulting practice:

- Change auditing increases the complexity of IS consulting practice.
- Change auditing may increase the project duration.
- Change auditing may boost the overall cost of IS consulting practice.
- Change auditing needs to hire and train additional auditing personnel.
- Corporate management needs to select suitable audit testing methods for their outsourcing projects.

CONCLUSION

IS consulting is an important practice within the information technology industry. Most IS consulting firms have developed some sort of formal methodologies to be followed. The task of developing consulting methodology is to standardize the consulting practice and to ensure the quality of their consulting work.

IS consulting projects may face unexpected demands for changes during their working period. Innovation and new technology may increase the possibility of project changes. For these reasons, change management becomes a needed endeavor to IS consulting practice. Change management in consulting projects involves many risks and uncertainty. These risks and uncertainty can be monitored and controlled through a suitable audit process to targeted activities. This paper discusses various stages and their activities of implementing change auditing during IS consulting practice.

Although change audit process adds many advantages to IS consulting practice, we can still find some concerns and limitations to the perfection of IS consulting practice. Therefore, further studies are needed to filling these gaps.

References, tables and figures are available upon request.