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# IMPLEMENTING INFORMATION SYSTEMS: A STUDY OF ACTIVITY BASED COSTING SYSTEMS

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## Abstract

*Information system changes cause organizations to undergo complete transformations involving culture, ways of working and thinking. There is an evident lack of attention paid to organizational changes in the process of implementing information system changes. In this paper, we report an ongoing research on the implementation of ABC in organizations. Our case study indicates that ABC system is implemented without adequate focus on organizational changes. More importantly, not enough attention is paid to needed changes in knowledge management. Without those changes, an ABC system will not yield all the intended benefits.*

## Introduction

Information system changes cause organizations to undergo large-scale transformations involving culture, ways of working and thinking. There is an evident lack of attention paid to organizational changes in the process of implementing information system changes.

Organizational change is the key to survival in today's fast paced global environment. Though an old cliché, the statement "everything is changing and the only thing that is constant is change itself" has tremendous implications for organizations. Businesses have to be adept in reacting to changes in the environment, be proactive in anticipating change, and be ever willing to adapt themselves to be ahead of the changing environment.

The speed and flexibility with which an organization remolds depends on the knowledge and perceptions of the people and on how well the business processes are understood. Organization learning comprises of this understanding, knowledge and perceptions. The value placed on capturing and harnessing organizational learning speaks in turn about its ability to adapt and change. Leveraging the vital resource of organizational knowledge into learning for the entire organization, businesses derive competitive advantage.

During the last two decades, many organizations have implemented activity-based costing (ABC) in as a more efficient way of conducting business. Many accept ABC as a management information system. ABC determines the cost of an operation's activities, helps identify the events that drive or cause those activities to occur, and assigns the cost activities to products and processes (Nolan, 1995). ABC requires a complete rethinking of business processes. This system no longer focuses on departments or products. Instead costs are divided into activity cost pools for related activities (Krumwiede & Roth, 1997).

In this paper, we report an ongoing research on the implementation of ABC in organizations. The study concurs with the view that ABC is essentially an information system and should be implemented as one. As a part of this research, we have studied two organizations that have attempted to change over to an ABC system. The primary focus of this study is to understand the mechanisms in place to ensure the transition from the old to the new system.

## Literature Review

A survey of the Institute Of Management Accountants reports adoption of ABC by 49% of the respondents. Another 25% were considering a change (Krumwiede, 1998). 5% had considered and rejected it while 21% had not considered it at all. 89% of the users of ABC believed the cost of implementation to be worthwhile.

Common goals of adoption of ABC are accurate product costing, better cost management, better cost control, better allocation of overheads, and most accurate cost information (Sohal & Chung, 1998). Non-adopters claimed that the benefits were uncertain or the perceived benefits were insufficient in the light of high costs of implementation.

**Success and Failure of ABC**

Misconceptions about ABC and poor planning, design and implementation are leading causes for failure of ABC systems (Compton 1996). Barfield et al. (1997) describe individual, organizational and environmental barriers to implementing ABC. The first set of barrier includes fear of the unknown, shift in status quo, need to learn new skills. The second type of barrier is related to territorial, hierarchical and corporate cultural issues. Employee groups, regulatory agencies and other stakeholders build environmental barriers.

It is extremely important that the implementation team has representatives from the actual users of the ABC system (Krumwiede, 1998) in addition to managers to allow for input from analysts. For ABC to be successful, its technical theory must be “demonstrably valid”(Argyris and Kaplan, 1994). The organization must establish internal consistency and external validity. In addition, two processes have to occur. The first ensures “education and sponsorship” of the new system and the second tries to “create internal commitment” for it.

Other organizational factors that support successful implementation of ABC are top management support, implementation training, linkages to performance evaluation and compensation, linkage to quality initiatives, adequacy of resources, and non-accounting ownership (Barfield et al, 1997; Krumwiede & Roth, 1997).

Many researchers treat ABC as an information system (IS) with its implementation involving typical IS behavioral problems. Behavioral issues in an organization govern the progress of any information systems (IS) implementation (Barfield et al, 1997; Krumwiede & Roth, 1997).

**New Knowledge**

Implementation of ABC compels users to discard their existing way of performing activities and learn a totally different way of assigning costs. Discarding old knowledge and replacing it with new ideas, however, is a difficult skill to learn (Solomon 1997). Organizations should encourage people to unlearn old knowledge in the process of organizational learning (Bennis & Nanus, 1985). Yet very little research has been conducted in this area. Prior research has concentrated on combining old and new knowledge (Garvin, 1994), or developing new knowledge (Campbell, 1998; Whiting & Gilbert, 1993).

Recent research in the field of knowledge management devotes great degree of attention towards understanding knowledge. Some significant topics are operationalization of knowledge (Bowman, 2001; Haldin-Herrgard, 2000), mechanisms to capture and manage knowledge in organizations (Brown and Woodland, 1999) and use of information technology in managing knowledge within organizations (Walsham, 2001; Marwick, 2001; Strapko, 1990; Sindell, 2001).

**Research Focus**

**Table 1. Comparison of Two Models**

<b>Krumwiede and Roth</b>	<b>Systems Development Life Cycle</b>
Initiation - Pressure to improve cost system	Initiation
Adoption - Campaign to get approval for ABC	
Adaptation - Team determines scope and develops model	Development
Acceptance - General acceptance of ABC model sought	Implementation
Routinization - General acceptance of ABC model sought	
Infusion - Activity based information used for process improvement	Operation and Maintenance

Do organizations pay attention to IS behavioral implications due to ABC implementation as an information system? Do they impose ABC on employees requiring an abrupt shift from the traditional costing system? Using the model provided by Krumwiede and Roth (1997) that ABC is an information technology (IT) innovation and that implementing ABC goes through all the stages of the implementation of an information system. We have attempted to combine this model with the Systems Development Life Cycle (SDLC) to understand the implementation of an ABC system as an IS implementation. Table 1 combines and compares the two models.

### ***Research Method***

At this stage in the research, we chose to research two organizations on their attempt to implement ABC. The case studies were intended to give us detailed information on how organizations go about initiating ABC implementation. We plan to use this information to develop an instrument that will enable us to further develop and expand this study to several organizations.

We chose therefore to interview the initiators and leaders of ABC in two organizations. Based on behavioral implementation issues in the literature, we developed a series of open-ended questions. These questions were organized on the basis of combined SDLC and Krumwiede and Roth model (Appendix 1).

### ***Research Purpose***

Our study attempts to understand the behavioral implications of implementing an ABC costing system in the organization, to obtain information on efforts to educate the users and on the ways and means by which the new system was introduced to organization, and to find out if there any attempts to create internal commitment for the change.

At this stage we are interviewing relevant persons from two organizations. One organization (O-1) is an IT unit of a large supplier to vehicle manufacturers. The second organization (O-2) is a tire-manufacturing firm that has implemented ABC costing for calculating manufacturing costs.

## **Case Of O-1: Preliminary Study**

### ***The Organization***

O-1 is part of a large decentralized organization with individual divisions implementing separate ERP systems. O-1 was formed into a single unit as a merger of three independent divisions of the parent organization. Its goal is to achieve a break even in delivering its services. Its clients are the various SBUs, the corporate office and other departments of the parent company. Most of the SBUs in the parent organization are manufacturing units and are using the traditional costing system. O-1 decided to adopt ABC as its new costing system because one senior manager had used a basic form of ABC in another SBU of the parent company. At O-1, nobody understood costs, there were no costing practices and the department did not have any faith in the costing systems. O-1 had no idea what was driving its costs.

### ***Development and Implementation***

Being a service provider, the leaders determined that time spent on each project activity was a key factor in determining project costs. The staff at one unit of O-1 was accustomed to accounting for time spent on each project/ activity. But the other two subunits did not have any knowledge or experience with time accounting. Clients were obtaining cheaper services from outside and improving efficiency became the critical issue. With ABC, all the users – accountants, other staff, and managers – have to take note of every activity that is driven by time. O-1 achieved 75% accuracy in February 2000 and had reached the 90% accuracy level in March 2000.

O-1 has hired the services of trained and experienced external ABC specialists since November 2000 to assist in the process of designing the new ABC system. Their first task was to obtain information about activities directly related to projects. They met with the operating committee of managers and supervisors specifically formed to assist the consultants in interviewing the remaining staff. The response was very lukewarm and the employees were not forthcoming with information.

The O-1 has adopted a top down change management approach – the staff have been told to accept the change to the costing system. They are being educated on time accounting and any other issues related to the new costing system. They have been assured efficient use of time is not going to be the basis for performance evaluation immediately. It definitely will be a measure in the future but is not going to be done at present.

The staff at of O-1 who did not have any prior experience with time accounting did not appreciate the new system, which was checking on them and their time. The management has been spending time, effort and money just training and retraining them on the new system. The people whose time is billable are showing less resistance to the new system. People whose time is not billable are not comfortable with the new system and are less reluctant to comprehend the need for time accounting. In the beginning defining the actual time being spent on each project was quite troublesome and the people did not appreciate noting down how their time was spent.

The current task is to make customers and staff understand and believe in costing, specifically the ABC. There are regular people meetings at O-1. These are aimed at providing training on the project system, project time reporting and retraining. The findings of the ABC costing system are that customer support services by O-1 are grossly undercharged.

Early in 2001, the leaders at O-1 met with its staff and presented them with facts and figures to raise awareness about the costs, the cost of their areas and those of other areas in the division. In Fall 2000, O-1 informed its clients from the rest of the organization that it was shifting to ABC costing with time of the staff being the key cost driver. The response has been favorable. The two costing systems are being run parallel with the ABC mainly for internal purposes. O-1 plans to bill the clients using ABC from 2002. There will also probably be a need to phase in the new billing system with the clients.

The staff at O-1 has witnessed enormous changes in the last two years – shift to a new building, new management, and consolidation of three individual departments into one, new costing system. A people survey is conducted annually. The top management is planning on action teams to work with people to improve performance and reduce frustrations.

### ***Analysis***

While O-1 has been working steadily towards the implementation of ABC, it has been making the same mistakes that many organizations tend to make when implementing change. The organization did not spend adequate time on the initiation phase. The top management decided that ABC would result in more accurate product costing, better cost management, better cost control, better allocation of overheads, and most accurate cost information. So they rushed ahead without proper communication with the employees who would be affected by the change. People affected by change were informed about the change after change initiatives were put in place. Also, no reward systems were introduced to encourage people to adapt. The change was thrust on the organization by senior management in the organization. However, they do seem to have realized some of their mistakes in not involving people and have attempted to rectify them at a later stage.

O-1 is still in its nascent stages of ABC. Studying this organization gave us first hand information on some of the ABC implementation issues. It will be worthwhile studying this organization at a future date to explore the acceptance and success of ABC.

### **Conclusion**

This study is part of an ongoing research. The case study has so far indicated that ABC system is implemented without adequate focus on organizational changes. More importantly, not enough attention is paid to needed changes in knowledge management. Without those changes, an ABC system will not yield all the intended benefits.

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## Appendix 1

### Preliminary Questions (Open-Ended)

#### Initiation (Initiation and Adoption in Krumwiede & Roth Model)

1. Defining the need to change the existing work system – problems, error rates, need to improve and innovate
2. Identifying the people who will be involved
3. Differentiating old and new system?
4. Understanding how the IT that supports the new system work any differently
5. Conducting a feasibility study – economic, technical, and organizational
6. Specifying functional changes – importance of business problem, summary of changes in the business processes
8. Developing project plan – with subparts of the project, time line, staffing, resource requirements, links between project steps
9. Obtaining user approval along with IS personnel approval – shared understanding that the proposed changes are technically and organizationally feasible
10. Drawing the outcome of this phase as a verbal/written agreement about the direction of change.

#### Development (Adaptation in Krumwiede & Roth Model)

1. Building, acquiring, configuring the hardware, software and other resources to perform required functions.
2. Conducting detailed requirement analysis – both users and IS department involved
3. Listing external specifications and internal system design (internal specifications; hardware acquisition and installation; programming and unit testing; documentation and system testing; testing plan.

**Implementation (This phase involves major changes in the way the organizations/ individuals operate – Acceptance and Routinization in Krumwiede & Roth Model)**

1. Planning
2. User training
3. Converting to new IS/ Work system
  - a. Phased
  - b. Parallel testing
  - c. Pilot testing
4. Testing acceptance
5. Following up with post implementation audit
  
7. Mediating political issues in the organization involving power and control

**Operation and maintenance (Infusion in Krumwiede & Roth Model)**

1. Maintaining ongoing operation
2. Checking and correction of bugs
3. Developing an operations manual
4. Attempting efforts to enhance the new system