December 1999

Information Quality Process - A Primary Success Requirement in Management Information Systems Projects: Results from a Case Study

Olayele Adelakun

Turku School of Economics and Business Administration

Follow this and additional works at: http://aisel.aisnet.org/amcis1999

Recommended Citation

http://aisel.aisnet.org/amcis1999/228

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 1999 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
Information Quality Process – A Primary Success Requirement in Management Information Systems Projects: Results from a Case Study.

Olayele Adelakun, Turku School of Economics and Business Adm., olayele.adelakun@tukk.fi

Introduction

Organizations and their information systems (IS) have undergone and continue to undergo fundamental change. In the 1980s, management changes concentrated on portfolio management and financial restructuring, in the 1990s management changes have focused on business processes (Grover, et al., 1995). Similarly, the quality focus in the 1980s in many organizations was mainly on technical quality. Nowadays, the quality focus is more on business benefits derived from the investment in IS projects (Eriksson, et al., 1991; Braa, 1995; and Salmela, 1997).

Drawing from a large body of literature on IS planning, IS development (software engineering) and IS use, the present study develops a conceptual process framework for implementing IS quality in organizations. It has already been established by several researchers (e.g. DeLone and McLean, 1992) that one of the most important requirements for any IS success is the quality of the IS. Nevertheless, how to go about the implementation of the quality process in many organizations remains a problem. In this paper IS quality is defined as a process of integrating business, technical, and user's dimensions of quality in the planning and the development of the IS.

The overall intent of this study is to test the quality process by identifying patterns related to the success of IS projects, so that we can move closer towards a generalizable theory of IS quality. As a means, 40 hours of personal interviews were conducted with 13 senior managers, four of whom are in vice-president positions. All the interviews were taped. Survey data from 45 questionnaires were also collected from the end users of the system. The remaining part of this paper presents the theoretical background followed by a discussion of the case. Finally, lessons and challenges from the study are presented.

The IS Quality Process

The IS quality process model, figure 1, was developed based on a literature review on IS planning, IS development (software engineering), and IS use. These three categories cover the IS life cycle related areas. IS planning is a process of identifying IS that could be used to support a business strategy (Lederer et. al, 1996; Reponen, 1994). This body of literature gives us insight into the business dimension of quality. The business dimension of quality is defined as meeting or exceeding the stakeholders' expectations of the business benefits from the IS project. Examples of this business dimension of IS quality include: increasing productivity, improving customer services, reducing cost, compressing cycle time, and improving the accuracy of delivery process. Most of these objectives are close to the objectives in many business process reengineering (BPR) projects (Grover, et al., 1995; Bahn, et al. 1998).

There are some other business benefits of IS projects not included in many BPR projects but they are mostly intangible. Based on the literature review on IS planning the following was concluded. It is very important for the senior managers to identify this business dimension of quality and to properly document it before starting the IS project. It is even more important to communicate this business quality to the developer. The present study proves this activity to be one of the most difficult activities in an IS project. It is not only necessary to communicate this business benefit, it is also critical to follow it up, because the lack of it may result in an unsuccessful IS project.

The IS development phase traditionally focuses on the development of the software artifact. In this phase of the IS project the quality focus is primarily technical. IS developers use methods such as prototyping or a modified version of the life cycle approach to develop the software. Many software companies apply the software section in the ISO 9001 quality standard or capability maturity model in the development of the software product. These standards often view the IS development process as a linear one, starting with the functional requirements, programming, inspection and testing, delivery, and installation. Several researchers note that an unquestionable application of these standards in software development can lead to serious development drawbacks. (Braa et al., 1995) Many software companies are realizing the limitation of these standards and are gradually moving away from them. For example, the two software companies visited during this study have stopped using the ISO standards.

The last part of the IS quality process as we define it in our framework concentrates on the use quality. The use quality is primarily the user’s view of quality. Concepts such as usability, quality-in-use etc. are applied here. One of the main points is that during the use of the IS, new use quality will be identified that perhaps could
not have been identified before the system is taken into use. One argument in favor of the use quality is that the actual quality of the system can only be determined during its use. See Adelakun et al., (1998) for graphical illustration of the framework.

The three phases discussed above are not totally sequential. It is important to note that the process should be iterative. Three important elements of the model are (1) the various stakeholders involved at each phase, (2) the content of the expected document to be communicated to the next phase of the process, and (3) a need for a deep understanding of the quality focus at each phase.

The Case

ABC company (name disguised to protect identity as agreed) is a manufacturing company headquartered in Finland, with a strong market position in Finland and the Baltic Sea region. The company net sales is about 130 million US dollars per annum and the personnel about 800. The company operates three plant locations and several sales offices in about 12 countries in Europe. The company has three major lines of product and several ranges of products along each product line.

The company is rather stable, with long historical traditions. Until now it has been a functional organization. From the beginning of this year a new organizational structure was developed, which is more process oriented. The company’s success has been driven by a focus on high quality products. For example, the company has got the ISO 9001 and 9002 quality certificates to illustrate that it is the company’s philosophy to produce high quality products. The other key to success is locating plants close to customers since they sell most of their products locally. Export sales are only about 46 millions US dollars compared to 130 millions US dollar net sales.

In late 1990/1991 the IT department made a proposal to the executive board for the replacement of the then order processing IS. The reasons mentioned in the proposal were that the system was too old (more than 10 years old in 1990), and it was written in the Cobol programming language. Therefore, it was difficult to find people capable of maintaining these codes. Moreover, the cost of maintenance and the complexity of adding new functionality to the system increase exponentially every time. Despite this, the proposal was rejected.

In 1994 there were some kind of changes in the organizational structure, so the IT department made another proposal for a replacement of the old system. The argument for the replacement was the complexity in maintaining the old system. This time the proposal was approved and four project groups were developed plus a central group that was supposed to work with each of the four groups, a steering group, and the executive committee. Project groups one and two work on product identifications and definitions in all the plants so that a product will have the same ID in every plant. Project group three defines new business processes that the new system will support. Project group four works with the central group to select a vendor with the right application to support the new business processes.

After an extensive evaluation of about eight vendors the group selected the IFS system, after initially selecting the SAP/R3 system and test-using it for three months among other systems which were also tested. The selection process took about 1½ years altogether. The final selection was based on three factors: the cost, the closeness of the vendor's application to the newly defined business processes, and the amount of modification required before the system could be taken into use. In January 1997 IFS presented a compromised solution to ABC, because IFS was not capable of delivering a system that could support the newly defined business processes. The compromised solution was reviewed, modified and finally accepted. An agreement was made that the compromised system should be delivered by January 1998. The new system contains the following modules: invoicing, sales statistics, inventory, EDI connection, order/delivery system, main planning (i.e. product information planning), capacity planning, and production planning (manufacturing program on a daily basis).

At this point the previous projects groups were dismantled and a new implementation team was chosen. The implementation group consists of one project group, which reports to a steering group, and the steering group reports to the executive board. Many of the members in the implementation team do not have a common understanding of the objective of the IS project, neither do they ‘care’ to know what is going on at the project group level. For example, only the project group leader communicates with the steering group. The new project group after 1996 recognized that the project was too big, and therefore they recommended that only the essential modules should be developed first. The first prototype was available in October 1997 and it was tested in one of the plants.

The prototype includes at least order processing, invoicing, and sales statistics as defined in the new business processes. During the prototype testing, the project group realized that they have developed a system that supports the new business process but the organization has not been prepared for the new business process. The problem now is what should be done. It was October 1997, and the management group wants a system running by January 1998. However, the project group knows that the new system is not usable in the
organization as it is even if it is ready by January 1998. To make the situation worse, the users resisted the new system very much for reasons which include an unfamiliar new platform, a new and totally different way of thinking and operating. Previously, they worked with an old character based system where the only requirement was simply to press F1, F2, etc. Therefore, they were unable to link the two systems together.

The only alternative for the project group is to re-modify the prototype back to work like the old system, at least with the same kind of operations. In March 1998, the final system was installed. It was a new hardware architectural platform but with almost the same old way of operation. The re-modifying of the system back to the old way of working cost the organisation a lot but that was the only solution because the old system was already on its way out. Training of the end user has started and business "profit season" is about to start. It is important that the organization can take in orders for the season and invoice and deliver the products because the business is seasonal.

Lessons and Challenges

In this case, there were two major objectives for initiating the IS project: one, to replace the old outdated system, and two, to reengineer the business process. A good enough system (i.e. IFS system) was selected to implement these objectives. Clemons (1998) notes that an organizational IS is not a substitute for strategic thinking about changing the actual business process, nor will it by itself provide a company with any sort of competitive advantage. In this case, no one actually made any effort to change the work practice to the newly defined business process. Therefore, when the new system was ready, no one was able to use it. To make it worse, there was no general consensus on the objective of the IS project among the top management, the steering committee, and the project group. While some argue that the project objective was just to replace the old system, others are of the opinion that the business processes were meant to be changed as well because they are overdue for changing. A little training was provided but it does not help very much because the end user's need to think totally differently from the way they used to.

Following our framework, it is the role of the top management to support and partly drive the IS process and thereby keep the project focused on the business benefits (i.e. the broader view of quality) set during IS planning. The implementation of an IS of this nature is of strategic importance, especially if it affects almost all parts and processes in a business, including services to customers. In this case, the IS project was considered an IT problem by the top management rather than a business project. The top management had little interest in participating in the project. The executive board actually thought that when the new system is ready with all the newly defined business processes then they can immediately start to reap the benefits from the business. Unfortunately, they realized that it is more of a change management problem than an IT problem. The feedback communication process, that goes from user to developer to top management was in this case, not followed in practice (Adelakun et al., 1998). If this process is used, the top management will probably realize that they have to get the organization ready for the new system before it is installed.

Although, the business quality was defined it was not followed, on the other hand the technical quality were specified and implemented. Although there were some technical problems in the beginning, this was quickly fixed and since then the system has been running without any major problem. Despite the relatively good technical quality, users for three reasons rejected the system. (1) They are not familiar with such a system (Windows client-server environment). Previously, they simple had to press F1, F2 etc. to get their job done on a mainframe system. (2) The operational processes in the system require a completely new way of thinking. Most of the end users have been using the old system for over 10 years without really understanding the implication of what they were doing. Now they need to know exactly what they are doing and it is completely different from how they used to work. (3) Some older employees feel that this is an attempt to lay them off if they do not master the new system in a short time.

To get the system running the users' dimension of quality needs to be considered. This means that the prototype has to be modified to work almost like the old system if the new system is to be used

Conclusion

If the objectives of the IS project had been clearly set and shared among top managers, the situation might have been different. The two objectives came from the bottom up, from the IT department and the project group to the top management. While this is not bad on its own, it becomes a problem if the senior management do not see the business benefits in these objectives and give it the necessary support. While the project group works on implementing the agreed system, the management should work on getting the organization ready for the new system by changing the work practices.

The technical quality was good and necessary but it was definitely not sufficient in this case. The users' dimension of quality must also be considered. According to this present study both technical and user dimensions of quality will only contribute toward the IS success if, and only if, they are in line with the business quality.

Reference available from the author upon request