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The Information Systems (IS) Role of Accountants: A Case Study of an On-line Analytical Processing (OLAP) Implementation

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Abstract

Today's organisations place heavy reliance on computerised information systems (CIS) for the provision of timely and quality information to management. The quality of an accounting information system (AIS) is critical to the success of a firm. Executives now require real-time information with multidimensional views to manage firms operating in a dynamic and competitive environment. The use of OLAP technology in financial reporting will greatly improve the flexibility of information available from various databases. This study reports a case of implementing an OLAP tool to build complex financial reports for the use of senior management. The case illustrates the importance of the IS role of accountants with the emergence of the "systems accounting" role and the benefits of OLAP to accountants.

Introduction

Information systems (IS) is a relatively new discipline compared with accounting that has a history of several centuries. However, the two disciplines are closely linked together both in practice and academic research. Early research work showed the relationship and linkage between IS and accounting (Firmin and Linn, 1968; Godfrey and Price, 1971; Colantoni et al., 1971). Since then accounting information systems (AIS) has developed as one of the core courses in universities' business curriculum. AIS has also become a separate area of research within the IS domain.

Among the various professions, accountants are the pioneers in the application of computers and IT to process large volumes of data beginning from the 1960s. Whilst today's accountants place heavy reliance on computerised AIS to compile information required by managers, a plethora of IS technologies have emerged over the last two decades, examples include Decision Support System (DSS), Executive Information System (EIS), On-line Analytical Processing (OLAP) or Business Intelligence System, to name a few. In view of the significant impact of IS development on accounting activities, the traditional roles of accountants are changing continuously.

The purpose of this paper is to investigate the IS role of accountants and the benefits of using OLAP to accountants in generating complex management reports. A

case study is conducted and a public sector organisation is selected as the research site. The case reports the implementation of OLAP by the accountants to improve the value of AIS and quality of financial reporting. It also illustrates that the emerging role of systems accounting is important in bridging the gap between the accounting and IT specialists in the process of maintaining and upgrading the AIS.

Background

Previous research has demonstrated that the value of computerised accounting information is critical to survival and success of a business (Cathey and Phillips, 1994). The performance of the IS function has a direct impact on the performance of the AIS. However, the measure of IS performance is difficult, if not impossible, and subject to much controversy. Cases of IS failure in business firms are commonplace in the literature (Reimus, 1997).

Different types of managerial decision-making relate to different roles of accounting (Burchell et al., 1980). The increasing adoption of IT in organisations will change the computation and judgment roles to the compromise and inspiration roles (Stambaugh and Carpenter, 1992). The IT impact on corporate financial reporting is significant, though its degree and pattern are contingent upon environmental (internal vs. external reporting), organisational (small vs. large firms) and managerial (short-term vs. long-term management compensation plans) characteristics (Xiao et al., 1996).

In some organisations, the IS role of the accountants is significant as the chief financial officer has a dual responsibility in the IS area, whereas others have a separate chief information officer (CIO) taking charge of all the IS issues. The power struggle between the CIO and CFO is fierce in the boardrooms (Mendham, 1998). The increasing competition of the global markets has reduced the value of historical and periodic financial statements in managing and controlling a dynamic business.

Today's executives require real-time information with multidimensional views to continuously achieve competitive advantage in the marketplace. The recent development of OLAP enables accountants to manipulate accounting data and information in different perspectives. An OLAP system gives end users easy access to large

volumes of numerical data on-line through the use of a multidimensional database that reads and aggregates large groups of diverse data to analyse relationships and look for patterns, trends, and exceptions (Thierauf, 1997).

The Case Study

The company, hereinafter called ABC (true name disguised to protect identity), is a public sector organisation in the state of New South Wales in Australia. The firm has 9,300 employees with an annual revenue of A\$1.5 billion. The Australian public sector has undergone a series of drastic reforms in the past decade. However, it is not the intention of this paper to investigate the impact of those institutional changes on the IS and accounting activities.

Systems Problem

Prior to July 1998, there was much dissatisfaction from users across the entire organisation with the delivery of IT services. During the period from July 1994 to July 1997, a new management information system (MIS) encompassing all functional areas, including finance; payroll; human resources; supply and maintenance, was implemented to deliver information to all levels of staff. A post-installation review was conducted in September 1997 to highlight any deficiencies of the MIS. It was discovered that the lack of user friendly and efficient reporting tools did not meet the reporting requirements of ABC. The following are extracts of comments from the users documented in the review report:

- Available reporting tool is complex and difficult to use.
- Report generation is slow.
- Screens are busy and are costly/difficult to change.
- Lack of user friendly tools to extract and download data.

Since July 1997, an interim spreadsheet-based (using Microsoft Excel) solution has been in operation. However, the Excel solution had the following problems:

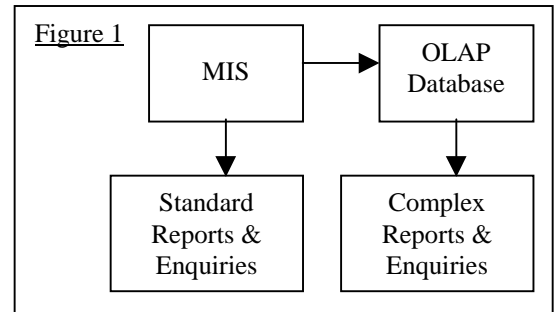
- Complexity and logistics of reporting process/systems means less time and commitment available for quality analysis.
- Cannot drill down to the underlying numbers in the reports.
- Maintenance of reporting templates and the processes or systems necessary to generate and update forecasts is slow, complex, not properly documented and reliant on one person.

Systems Solution: OLAP

In view of this reporting dilemma, the corporate finance division (CFD) took an active role to improve the financial management reporting and supporting systems and technology. In April 1998, the CFD initiated implementing a more efficient, effective and robust financial reporting tool using OLAP technology to meet the sophisticated reporting requirements in ABC. The Systems Accounting Manager (SAM) was in charge of this project.

In August 1998, the OLAP reporting system was fully operational with improved speed and quality of information available to management. The structure of the new system is depicted in Figure 1 and the main features of the system are:

- An OLAP database is linked to the MIS storing transactions from different operational systems. The OLAP database allows data to be accessed by users on-line with extremely fast response times.
- Financial management reporting templates will be used as a window to the data in the OLAP database and will allow users to drill down to the underlying data and update forecasts directly in the OLAP database.
- The results of changes to forecasts will be available to all levels of management immediately (on-line).
- Systems accountants are responsible for accessing the data from the OLAP database and generating sophisticated management reports through the creation of multi-dimensional models.



Benefits of OLAP to Accountants

The traditional two-dimensional view of the AIS has been replaced by a sophisticated, real-time multi-dimensional environment. Accountants can now manipulate the various multi-dimensional cubes to produce top-quality information to management. At ABC, the benefits of the new reporting tool can be summarised as follows:

- Reduce the time and streamline the processes/systems associated with distributing, analysing, forecasting and consolidating financial management reports periodically.
- Provide better tools to analyse data underlying the line items in the monthly financial management reports more effectively and efficiently.
- Reduce the risk associated with undocumented and complex processes and reliance on one person to maintain the systems that support financial management reporting.
- Streamline and simplify the maintenance of reporting templates and supporting systems.
- Provide the potential to realise productivity gains in areas currently using inefficient reporting tools and areas responsible for coordinating, staging, distributing and consolidating financial management information.

- Provide opportunities to implement improvements in other areas such as budgeting and project reporting.

Implications from the Case

The case has demonstrated that, in light of the failure of the IT function to deliver satisfactory and quality system solutions to the accounting users, accountants play a critical role to add value to the AIS through the use of multi-dimensional reporting tools. It is clear that the "systems accounting" role has emerged in today's organisations having intensive use of IT and further research is required to develop solid theories. This role is certainly critical to the survival and success of firms operating in today's competitive world. While Mouritsen's (1996) five aspects (bookkeeping, consulting, banking, controlling and administration) of accounting departments' work encompass a wide range of work performed by accountants, the new systems role seems to complicate the dimensions. The systems accounting role in ABC include the following:

- Support and enhance MIS financial modules.
- Develop and support management reporting systems using different state-of-the-art tools.
- Streamline and improve processes, systems and procedures.
- Assist line department plan, design, project, manage and implement systems initiatives.

Specifically, the lessons learned from this case and the directions for future research are:

- The IS role of accountants exists but is unclear. Further research is required to investigate the empirical relationship between the accounting and IS functions, especially on their roles in different types and sizes of organisations.
- Accountants can complement any unsatisfactory IS services by having a proactive attitude towards systems design and development. Further research is necessary in exploring the systems accounting role of accountants.

Conclusion

From the empirical evidence of this case study, the image of accountants is no longer bean counters but value-added internal systems consultants (Baker, 1994). They are even ready to expand their roles to act as IS planners and managers (Falconer and Hodgett, 1997), or assume the position of the CIO in managing the IT activities. This indicates that the traditional role of the accountants as information-gatherers has diminished, rather they are the information brokers and analysts, also acting as interpreters and advisers in CIS design and development.

Since IT is now an indispensable weapon for achieving businesses, CFOs have to take an active role to improve under-performing IT departments. Accountants are becoming more involved in IS planning, design and

implementation. The demands on them to make use of IT to improve reporting capability are great. The emerging area of systems accounting is important to the accounting practitioners and academics in the years ahead.

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