

# How technology has changed the accounting profession essay sample

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## 1. Introduction

Thirty years ago, most financial accounting was done manually, leading to a great deal of paperwork. Currently, most accounting information is recorded via computers and wide area networks (Journal of Accountancy, 1994a).

Technology has certainly changed the face of accounting over the years.

While it is unclear whether technology's impact on accounting has been positive or negative, it is clear that technology has drastically changed the accounting profession. Often a technological advance may be an asset to a business, but a liability to the firm's accountant. For example, information can be provided in a timely and more accurate manner, but at the price of confidentiality. Some of the impacts of technology are neither positive or negative; they are simply changes. So in essence, the impacts of technology on accounting have been positive, negative, and neutral, but each impact results in a demand on the profession to conform to the changes.

The obvious advantage of technology is in the various tools that it has provided. Examples of these tools include computer-integrated manufacturing, communications technology, image processing, the Internet, and expert systems. These are a few examples of the many tools of technology whose purpose is to provide more detailed and accurate information in a timely manner. Computer-integrated manufacturing has had a significant positive impact on the financial world and especially on cost accountants. With automated manufacturing, computers collect and report information almost simultaneously. This results in 'an operational information system that fully integrates manufacturing with marketing and accounting data', increasing both the quantity and timeliness of the

information (Hansen & Mowen, 1997, p. 8). This detailed information has been significant in cost accounting, allowing accountants to develop activity-based costing systems.

These new costing systems allow accountants to allocate overhead more efficiently. These systems can also distinguish non-value added costs providing cost accountants the opportunity to convert them to value added costs (Hansen, p. 8). Technological tools work to promote efficiency in the transferring of data between corporations and their different divisions, offices, customers, and even their accounting firms. Communications technology utilizes a combination of technologies to transmit data in a variety of forms to each of these recipients. This particular form of technology is of considerable importance for large accounting firms, because its enhanced communications capabilities allow for easier expansion into the worldwide market. This global aspect of technology is necessary for accounting firms to maintain their international competitiveness (Journal of Accountancy, 1996). The Internet, or World Wide Web (WWW), has become the newest location for conducting business (Journal of Accountancy, 1995). Internet transactions are a prime example of how to obtain timely, accurate information. Electronic commerce leads the way in providing the information for Internet transactions by linking multiple firms through both computers and communications technology ( Journal of Accountancy, 1996).

This speeds up the transfer of information between an entity and its accounting firm. For accountants, this means getting the most current information to work with. According to the Journal of Accountancy, this

electronic commerce ' will become a prime link between a business and its CPA's for exchanging data' (1995). For the smaller business, services provided by the Internet include on-line banking and automatic bill paying which eliminate many clerical duties of today's accountant ( Byte, 1995). Technology is progressively working to eliminate paper work almost entirely. Paper work slows down transaction time and burdens entities with maintenance needs. Image processing was voted by the Journal of Accountancy as the top technology affecting accountants in 1996 (1996). This process uses scanning to convert important paper images into electronic documents. These electronic documents are easier to transfer both internally and externally, resulting in more efficient, timely information (Journal of Accountancy, 1996).

Expert systems and advanced accounting software that have recently been designed could be perhaps one of the greatest assets of technology to accountants. Users of this recent development in technology range from the smallest proprietorships to the largest of corporations. Expert systems are a type of artificial intelligence that assists accountants in their decision-making (Journal of Accountancy, 1996). These systems are especially useful in both auditing and tax decision-making but can be developed to aid users in many different areas including inventory control and financial statement preparation ( Pincus and Accounting). A software company called Intuit recently developed a program called Quicken 4 for Windows. This software provides accountants with on-line documentation, multimedia tutorials, and even interactive advice from financial experts ( Byte, 1995). Visual

Accountmate developed a program called Manufactures' Inventory that posts

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the goods to the appropriate accounts as the inventories move through the manufacturing process. For the small privately owned business, Windows 95 has developed a program that helps accountants to develop financial statements by presenting a series of specific questions ( Accounting Technology, 1997).

These are just a few examples of how expert systems and accounting software can assist today's accountant. A new, innovative approach to completing projects within the business world is groupwork via computers. Workflow technology and collaborative computing are examples of technologies that promote groupwork. Workflow technology is designed to transfer information between designated workgroups. Collaborative computing and groupware is a type of software that allows an entire group of people to view and update documents from different sites. These types of software increase the number of participants, and therefore input and knowledge, on a project (Journal of Accountancy, 1996). In accounting, groupwork can be especially useful in the audit side of the practice. The auditing team that is working in the field can touch base with the corporate office and exchange information. Groupwork software is also useful for companies that have divisions nationally or abroad.

Technology promotes consolidation of information into a central database. Eugene H. Flegm, a former general auditor for General Motors, refers to these consolidations as their ' common systems'. Previously, each division of General Motors maintained its own set of books that were consolidated a year-end for financial statement presentation. Computers have allowed

General Motors to incorporate all of their data on payables, receivables, purchases, etc. from every division into one central database. This database provides current, accurate information that can be accessed conveniently from headquarters and each divisions simultaneously (Journal of Accountancy, 1994a). Databases like the one used by General Motors, exemplify technology's greatest accomplishments in the access it provides for timely and accurate information. Technology allows us to move from the traditional accounting system to a system that Hansen and Mowen, authors of Cost Accounting, call a Data Based Relationship accounting system (Hansen & Mowen, 1997, p. 10). Traditional systems can be viewed as a funnel. As transactions move through the funnel, much of the useful information is lost.

An example is the aggregation of accounts receivable into the general ledger. The general ledger only keeps the totals of the receivables. In a data based system, all of the original transaction information is retained in a central database including customer name, purchase date, items ordered etc. Users can derive specific information such as a customer's total number of orders. This database can be accessed by different users from different sites simultaneously ( Hansen & Mowen, 1997, p. 10). Completely Integrated Business Environment (CIBE) is an example of a data based relationship accounting system. The CIBE system works to organize the major outflow of information produced by all of these technologies without eliminating any important details in the process. These data based relationship accounting systems are of great value to management accountants. This CIBE system is completely integrated allowing all financial and management information to

be controlled by a single corporate database. This single control point will allow the business to operate more efficiently and effectively. CIBE collects and analyzes data automatically.

For management accountants, this means that specific factors contributing to the health of the entity can be monitored on a continual basis. Information becomes a 'strategic resource' to the entity. Information from all sources can be combined when necessary. This provides management accountants with a very effective and efficient method of analysis, management reporting, and control (Management Accounting, 1990). 3. The disadvantages of technology to the accounting profession As we have seen, the advantages of technology over the last several years have been numerous. Unfortunately, the disadvantages are equal in quantity and impact. Technology has provided accountants with many avenues for extracting detailed and precise information in a timely manner. At the same time, accountants run the risk of losing accountability and confidentiality. The elimination of the 'paper trail' can prove to be a key concern of accountants in this electronic information age. Some technologies actually allow for more fraudulent activities with the elimination of this paper trail. Image processing works to reduce the amount of paperwork needed for a business transaction. As a result, traditional backup papers may not be converted and will therefore not be available for support.

In an Electronic Data Interchange (EDI), routine business transactions between two enterprises are conducted primarily with a computer system rather than by personnel. The use of EDI for processing everyday

transactions results in a purely electronic audit trail for auditors. This electronic trail becomes even more difficult to follow with the use of area networking and collaborative computing. Area networking is an approach that allows resource sharing by various computers at different sites. Unfortunately, this networking makes it more difficult to track the origin of a transaction, opening the door for fraudulent activities. As previously mentioned, collaborative computing increases the volume of input on a subject. Unfortunately, this increased number of participants in a project jeopardizes the verification process and accountability for the information. Consequently, accountants must take into consideration the control over and the reliability of the information provided by these technologies (Journal of Accountancy, 1996).

As mentioned earlier, confidentiality is a primary concern of accountants in the 20th century. Security enhancements should be a standard precaution taken by accountants in the protection of vital information. Several technologies contribute directly to the increase in security risks including the use of the Internet, communications technologies, and groupwork (Journal and Journal). Accountants need to take the necessary precautions to limit access to confidential financial information to authorized users. This can often be accomplished with the use of a PIN number or a multilevel password (Byte, 1995). CIBE systems have attempted to resolve this security problem by adding a feature to the program that can restrict areas even for authorized users to very specific, individual areas of information (Management Accounting, 1990). Accounts must 'monitor their activities to ensure the maintenance of ... confidentiality,' according to the Standards of



Ethical Conduct for Management Accountants ( Hansen & Mowen, 1997, p. 18). One of the greatest disadvantages of technology is its dependency on human forethought.

Technology is a product of human innovation, and therefore, repeats human error. Human error, when intertwined with technology, can be very costly. This is best shown by what is known as the ' Year 2000 Problem'. This problem, which affects virtually every computer, began when many computers were originally programmed 20 or 30 years ago. At that time, computer memory was very expensive, and as a result, technicians only used two digits, instead of four, to represent the date. The problem will be on January 1, 2000, when computer systems everywhere will think it is January 1, 1900. This misunderstanding will cause chaos for most businesses unless the problem is corrected. Correcting this problem is not a simple or cheap task. Worldwide, it has been estimated that the correction will cost between \$300 and \$600 billion. Yet, if the ' Year 2000 Problem' goes unresolved, the cost will be much greater.

An extensive amount of accounting and human resource data will be distorted by this problem. Entire computer systems will become useless. Perhaps this demonstrates that another disadvantage is the profession's dependency on technology. Forty years ago, a failure of the computer system would simply be an inconvenience. Today, that same failure could destroy many businesses (Ernst & Young, 1997). The year 2000 Problems is not the only consequence of human error. All computer programs, including the expert systems mentioned earlier, are written by people. If the

programmer makes an error in the software, it will be reflected in all the results of the system. Therefore, these expert systems should be viewed as a mechanism for decision making based on ONE model. These expert systems do not produce the RIGHT answer; they only produce the best answer according to that particular model. 4. Technology as a change to the accounting profession

Technology has had many effects on the accounting profession. Not all of these effects can be labeled as positive or negative. Many outcomes of the interaction of technology and accounting are simply changes to the profession. Some of these changes include the hiring pattern of enterprises, the education and training of accountants, and the changing of the profession as a whole. An increased need for education results from advancements in technology. Accountants must be familiar with these new software programs, expert systems, and communications systems to utilize them efficiently (Journal of Accountancy, 1996). Accountants in the 21st century should expect to be involved in continuing education. Software systems can become obsolete within months of their creation. For accountants, this means the need for continued education. Technology in accounting affects the hiring patterns of accounting firms. Fewer entry-level positions will be needed as these responsibilities are taken over by computers.

In 1994, Charles B. Eldridge, a partner of Ernst & Young, said ' Hiring into our audit practice has declined over the last several years as a result of changes in that area and the impact of technology.' A representative of Peat Marwick,

who is experiencing the same hiring pattern, said this reduction ' is not a temporary measure (Journal of Accountancy, 1994c).' This hiring pattern extends beyond accounting firms into most corporations. Many firms will replace their manual, clerical functions with computers ( Journal of Accountancy, 1994a). In the 21st century, the newest generation of accountants should look to specialization and consulting to ensure a position in the profession. Consulting already makes up a large portion of business for accounting firms, and this area will continue to grow in the 21st century with the expansion of technology consulting. A major component of this consulting is network management. Consultants in this field will be responsible for the implementation of many of the new technologies already discussed. Internet access requires consultants to be responsible for the education of their clients on how to make their own companies more efficient through the use of the WWW. Research capabilities and security issues will need to be addressed.

The introduction of Intranets in the last couple of years has broadened the options for businesses and their consultants. Businesses can create their own version of the Internet on a smaller, personal scale called an Intranet. These Intranets resolve some of the security issues associated with the Internet, because they cannot be accessed by users outside the company. With this onslaught of technology, many businesses can be overwhelmed by the numerous decisions in selecting software packages. For this reason, Jeff Zulusky, an intranet specialist, says ' there is a renewed tendency among [business executives] to trust their accountants as technology advisors' (Accounting Today, 1997). The accounting profession has definitely been

influenced by the recent bombardment of technology within the industry. Some 'business thinkers' believe the accounting profession should be entirely revamped.

It is true that some technological changes have made many of the current accounting practices no longer relevant. An example is the ledger account (Journal, 1994b). Previously, this account was very important as a historical record of transactions and was used to expedite the preparation of financial statements (Knapp, 1996, p. 82). With today's timely information, the ledger account becomes less important. Computers have taken over as the record keeper for this type of information. According to a contributor to the Journal of Accountancy: 'if the accounting profession doesn't reinvent itself, it easily could ... be replaced by a profession that has yet to emerge with an entirely different vision of how information, analysis and attest services should be provided' (1994b). Competitors of traditional accountants include consulting firms, financial advisors, computer companies, and more (Journal of Accountancy, 1994b).

We have seen that technology is an asset to all businesses because of the enhanced communications skills it has provided. Technology has provided many tools that increase efficiency in any business, including accounting. Examples of these technological tools include computer-integrated manufacturing, image processing, the Internet, and expert systems (Journal of Accountancy, 1996). This enhanced efficiency within businesses allows accounting information to become dynamic, reflecting the current state (Journal of Accountancy, 1994b). This helps to fulfil management

accountants' objective of providing the most accurate and timely information. Unfortunately, a technological asset to a business may result in a liability for the business's accountant. The more timely and accurate information that is provided by the technological tools often costs the business accountability and confidentiality. There are many more opportunities for fraudulent activities due to the purely electronic audit trail accountants are often forced to deal with. These audit trails do not allow the accountant to trace many transactions to their origin.

Internet transactions, as well as other methods, lead to confidentiality issues. Accountants' dependency on computers has proven to be a disadvantage with the Year 2000 Problem. These are just some of the negative impacts that technology has had for today's accountant. Overall, technology has caused change in the accounting profession. Hiring trends, education needs, and the rise of the consulting side of accounting are just some of the impacts that technology has had on the accounting profession. These cannot necessarily be labeled as benefits or disadvantages. It is clear, however, that these impacts, as well as the advantages and disadvantages, are forcing a change in the accounting profession. In response, the accounting profession needs to conform to these changes, or the profession could be replaced by a rising generation of competitors. As one author for the Journal of Accountancy says, it is clear that the accounting profession ' needs to upgrade its practices and skills to reflect where the world is going, not where it has been' (Journal of Accountancy, 1994b).