TECHNOLOGY

The Evolution of Technology for the Accounting Profession

Every accountant knows that accounting is the language of business. That language has gone through many changes throughout the ages. But through all the changes accounting technology has always played a part in making the accountant's job just a little easier. As our knowledge of technology increased so has the accountant's ability to analyze statistical values. Technology advancements have enhanced the accountant's ability to interpret data efficiently and effectively. He/she now has the ability to interpret the language of business with such ease that the accountant has become a corporation's most trusted business advisor.

Agnes Ann Pepe • Apr. 19, 2011

Introduction

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[**Editor's Note:** This article is from 2011 yet still receives many visitors. For more up-to-date articles on issues facing the accounting profession, please visit the Firm Management section of our website.]

Accounting Changes through the Ages

We can start way back in the beginning with the invention of the abacus, used to keep track of calculations in business. Although we didn't call it technology, we can go back centuries with several attempts to build adding machines to help an accountant with mathematical solutions. After the first working adding machine, came the invention of the calculator for information accuracy. As technology advanced so did the speed and proficiency of the accountant's job. But even with adding machines and calculators the accountant still had to keep track of the businesses' functions with paper entry. The process of identifying, measuring, and communicating financial information was documented in the form of paper records, columns of numbers and hand written statements ("How Technology," n.d.). An accountant had to be a very methodical, detail oriented person.

Towards the end of the twentieth century the accounting profession began to take on a whole new look. Computers and accounting software has changed the industry completely. With programs such as Microsoft Excel an accountant now had an electronic spreadsheet. The need for adding machines, calculators, ledgers and pencils was eliminated. The job became less tedious with less of a margin for error. The core training for accountants which included the basic accounting, auditing and tax preparation was a thing of the past. With use of the computer an accountant can now perform statistical accounting or forecasting analysis with greater efficiency. Accounting technology has eliminated the number cruncher sitting behind a desk working on people's taxes and has allowed the accountant to find new challenges with much more to offer then decades ago when they relied on an abacus for a calculating tool (Kruglinski, 2009; "How Technology," n.d.).

E-Business, the Intranet and the Extranet

Today's accounting professionals who understand the importance of the Internet will use the Internet for e-business. They use the Internet to execute major business processes in the enterprise. Electronic business (e-business) allows the accounting firm to coordinate activities for internal management and combines the clients' relationships with the use of digital networks. Enterprise applications can be used on a small internal network called the Intranet. The Intranet can distribute information to employees such as corporate policies, and programs. It centers on a portal which is a single point of access. Information can come from several different systems using a Web interface. They can feature such things as e-mail, internal documents such as the Code of Ethics, and a search tool. It is a good means of communication within an organization. Accounting professionals can also communicate outside the organization with Web technology using the creation of an Extranet. This allows the

clients to have limited access, linking to a portion of the accounting firm's Intranet to import and export files back and forth. Linking electronically increases efficiency and cuts down on travel costs ultimately reducing operational costs (Laudon, Laudon, 2006, p.59, 62,276-277).

Diversified Opportunities

Information became available to an accountant with the click of a mouse. This changed the nature of an accountant's work. More doors were opening with the use of information technology. This diversified opportunities in the field of accounting. New specialized areas had developed. Business owners started looking to professional accountants for technology advice. Accountants became more knowledgeable about which financial systems worked best. Accountants were becoming the IT staff and trusted advisors. An accountant's role was to help these businesses become more productive. Integrating the client's technologies properly with the accountant's systems made the practice more efficient when it came time for write-ups and reconciliation processes ("Searching for Technology," 2009).

Input, Processing and Output

Not only does the client need to have proficient financial processes but the accountants themselves need software programs that keep track of clients accounting information with improved efficiency. Accountants work with systems programmers to develop a digital process that will organize their client's history and all their documents. When the clients' data is input into the computer program the processing cycle gives the computer instructions on how to process the clients' data. This enables it to change the data into useful information. Output, transfers the processed information to the accountant (Laudon, et al, 2006, p.16). He/she can analyze the data and interpret the clients' financial statements so as to increase the client's success. All the clients' records can be stored and organized on an accountant's computer system. Rather then bringing a suitcase full of file folders to a client's place of business for review, the documents can be carried on an encrypted laptop or organized on an encrypted portable storage device. The accountant has the client's sensitive information protected but yet at his/her fingertips, ready to perform statistical, accounting or forecasting analysis. The program is stored on the computer hard drive and the data is used to prepare the clients' taxes. The need for a file storage room has been eliminated (Torgerson, 2007).

Cloud Computing

To go a step further, cloud computing is becoming popular today. It is called cloud computing because the name represents the cloud symbol used in flow charts,

representing the Internet.It is a service that is being provided over the internet to permanently store data and use business applications over a remote server. Software-as-a-service (SaaS) is a web based service. The data is permanently stored in huge data centers shared by many other users. The accountant would not have to purchase anything. He/she would pay a monthly subscription so he/she would only pay for what is needed ("What is Cloud," n.d.). It would free up space on the accounting firm's hard drive while the firm rents space from giant computer centers (Laudon, et al, 2006, p.180). However, the accountant should be aware of the security issues involved when making a decision to use this technology. Cloud service providers are obliged to provide a safe environment to store the organizations sensitive information as accountants are obliged to understand the risks.

Advancements of Information Technology
Accountants were pushed towards acquiring new skills due to the advancements that information technology has made on the accounting industry. Accountants now have to have a high level of computer and technical skills. These skills have become part of the knowledge, and abilities of the accounting professionals. In its report the American Institute of Certified Public Accounts (AICPA) cities that, "The knowledge, skills and abilities necessary for the entry-level accountant now include the application and integration of information technology into the accounting process, as well as financial and managerial accounting principles" (Dillon, Kruck, 2004). From this research, not only does an accountant need to have a broad range of accounting knowledge and a strong ability to apply accounting principles, government regulations and interpret tax laws; they must also have strong skills in information technology, to be able to merge accounting with information systems. These accountants will be in greater demand by the profession (Dillon, et al, 2004).

Enterprise Resource Planning (ERP) Systems
The twenty first century accountants have strategic software applications in place to prepare for the future; such as Enterprise resource planning (ERP) systems. This is a software program that integrates different departments in the organization onto the same system. This makes data available diversely and supports activities between the different departments. The information is made available through a common central database and shared through functional areas such as; finance and accounting, sales and marketing, human resources, and manufacturing and production (Laudon, et al, 2006, p.339-340). According to Thomas Wailgum, CIOs have told him that, "Their core ERP modules were used chiefly for accounting and financial applications (96%)." And when asked which areas of their business ERP worked best, respondents

overwhelmingly cited, "The financial side of the house (70%)" (2008). ERP improves the business performance because management can get a full picture of how the business is performing at any given moment which can help with major business decision making (Laudon, et al, 2006, p.339).

Supply Chain Management (SCM) Systems
Another strategic software application is the Supply chain management (SCM) system. This helps businesses manage relationships with their suppliers. According to the authors of the textbook, Management Information Systems, Kenneth and Jane Laudon the definition of Supply chain management is, "Information systems that automate the flow of information between a firm and its suppliers in order to optimize the planning, sourcing, manufacturing and delivery of products and services" (2006, p.G 12.) This is an interorganization system because the flow of information crosses over organizational boundaries (Laudon, et al, 2006, p.56-57). Dr. Roger D. Blackwell, professor of marketing at Ohio State University and author of the best-selling book, "From Mind to Market," says it very briefly, "Supply chain management is all about having the right product in the right place, at the right price, at the right time and in the right condition" (PC Magazine, n.d.). Supply chain management has become an important area in many organizations.

There are quite a few demands of a SCM such as; planning and managing procurement, sourcing, and product logistics. These systems require financial expertise to run them. The financial and control aspects of the SCM organization needs to be monitored and supported by a staff. The CPA needs to monitor the entire supple chain, beyond the corporation itself (Kruglinski, 2009). John A. Kruglinski wrote in the Pennsylvania CPA Journal, "Supply chain finance positions typically require a strong background in inventory management and cost accounting, along with other skills, such as contract and capital expenditure evaluation" (2009). In order to meet the demands of the Supply chain management system a CPA, with a standard of excellence in financial knowledge and competencies; superior managerial abilities, is needed to oversee the operations and facilitate the processes.

IT Governance
Many doors have opened for a professional CPA who is proficient in these systems. Because information technology takes on a major part of running a successful organization the IT department needs to be managed. This manager needs to oversee that the information technologies support the organizations' strategies and objectives. The organizations' IT systems must be ahead of the competition, they must be financially responsible to the organization, they must be secure with a

backup plan for failure and they must be in compliance with effective controls. Not only must the IT systems support the organizational objectives but the organization must be in compliance with government regulations within the IT Infrastructure. The IT Governance concept is promoted by professional organizations such as, the IT Governance Institute (ITGI) which was established in 1998 and first published the IT Governance framework in that year. In 2004, the ITGI published IT Control Objectives for Sarbanes-Oxley which helped to mainstream awareness of IT Governance and establish controls. This guidance was obtained from Control Objectives for Information and Related Technology (CoBIT). This was also published by the ITGI. Other IT Governance frameworks are the IT Infrastructure Library and ISO 17799 (Information Technology -Security Techniques- Code of Practice for Information Security Management) (Schroeder, 2006).

IT managers must be in direct alliance with executive managers from all departments of the organization. Together they must orchestrate successful business planning, and compliance-related management decisions in reference to IT and the business model. He/she must be a successful, influential professional with strong IT leadership skills and superior managerial abilities (Schroeder, 2006). A CPA who is a member of the American Institute of Certified Public Accountants (AICPA) can become a Certified Information Technology Professional (CITP). The credential takes into account his/her combined expertise and makes him/her an IT professional, the most trusted business advisor (CPA CITP, 2009).

Forensic Accounting
A run in of corporate fraud in the early 2000's with such companies as Enron, World Com and Tyco deeply influenced public awareness. New regulations were developed. Corporate fraud was being seriously investigated. These scandals actually opened new opportunities for accountants in such areas as forensic accounting. A CPA's expert knowledge of accounting and finance; combined with investigational techniques and law made it a perfect union for examining criminal financial transactions. Forensic accountants help with interpreting whether activities are illegal in such areas as; financial statement fraud, money laundering, embezzlement, bankruptcies, contract disputes, insurance claims, and securities fraud. They work with lawyers, law enforcement personnel and can also be an expert witness during a trial (Accountants and Auditors, n.d; Kruglinski, 2009).

The added use of information technology has increased the existence of computer crimes such as; identity theft, e-mail phishing, computer hacking, software piracy, purposefully spreading computer viruses, stealing computer files and data, e-

commerce sales scams and the list goes on and on. The job market is open to CPA's who meet the AICPA's qualifications to become Certified in Financial Forensics (CFF) for a career in fraud prevention. Also the Association of Certified Fraud Examiners offers Certified Fraud Examiner (CFE) credentials. Forensic accounting services are very much needed and in high demand (Kruglinski, 2009).

The Sarbanes-Oxley Act of 2002: Internal Controls, Internal and External Auditors

Since the Stock Market Crash of 1929 there has not been a piece of legislation written that changed the culture and the operations of publicly held companies until October of 2002 when Congress passed the Sarbanes-Oxley Act also known as "SOX." The law was passed in an effort to stop corporate accounting fraud and consider the shareholders best interest first (McNamara, 2006).

Since the enactment, publicly held companies were required to uphold strict internal controls. The CEO and the CFO were now personally responsible for reporting financial information. Instantly there was a demand to ensure accuracy in business systems. They were required to have internal controls for operating practices, policies and procedures written and communicated. In order to accomplish this task, management accountants and internal auditors would be needed. This created new challenges for CPAs (McNamara, 2006; Accountant and Auditors, n.d.).

An importance was placed on audits of financial controls. CPA's began assisting the executive officers to ensure the financial reports where ready to be audited. The Act prohibits accountants from managing and consulting clients whose books they were auditing. As a result, the company had to hire two separate accounting firms. The internal auditor was hired to make certain the company was in compliance with corporate policies and government regulations. These internal auditors could actually design internal controls and evaluate the effectiveness and efficiency of the company's computer systems. By documenting and testing internal controls on real-time data they could ensure the company's reliability of financial reporting (Accountant and Auditors, n.d.; Kruglinski, 2009).

The external auditor was hired to conduct an audit which is an examination of the company's accounting information and financial statements. The auditor is to compile a report which is a formal statement of the auditor's opinion as to whether or not the financial statements present fairly in conformity with generally accepted accounting principles (GAAP). This report is something that shareholders and the board of directors, investors, authorities and institutions rely on to be certain that

the statements are prepared and reported properly. Under Sarbanes-Oxley a report on the company's internal controls is also required or combined with the audit report (Accountant and Auditors, n.d; Gibson, 2007, p.52-53).

According to Section 404 of the Sarbanes-Oxley Act, "It emphasizes the importance of internal control and makes management responsible for internal controls" (Gibson, 2007, p.52). The external auditor refers to, The Committee of Sponsoring Organizations of the Treadway Commission (COSO) as the, "Standard for evaluating the effectiveness of the internal control systems" (Gibson, 2007, p.51). This piece of legislation was passed as a result of the accounting sandals to try and restore ethical business practices and public confidence in large corporations (McNamara, 2006).

Conclusion
The accounting industry is now speaking a brand new language of business. It is the language of future generations of accounting professionals. The evolution of accounting technology has been tremendous with strong growth potential for the future. The advancements have taken the industry to many new levels of opportunities that I have discussed throughout this article. In comparing and contrasting the changes that have occurred with the use of technology in accounting throughout the ages, enterprise productivity has created career stability and many diverse opportunities in this successful industry of professional accountants.

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