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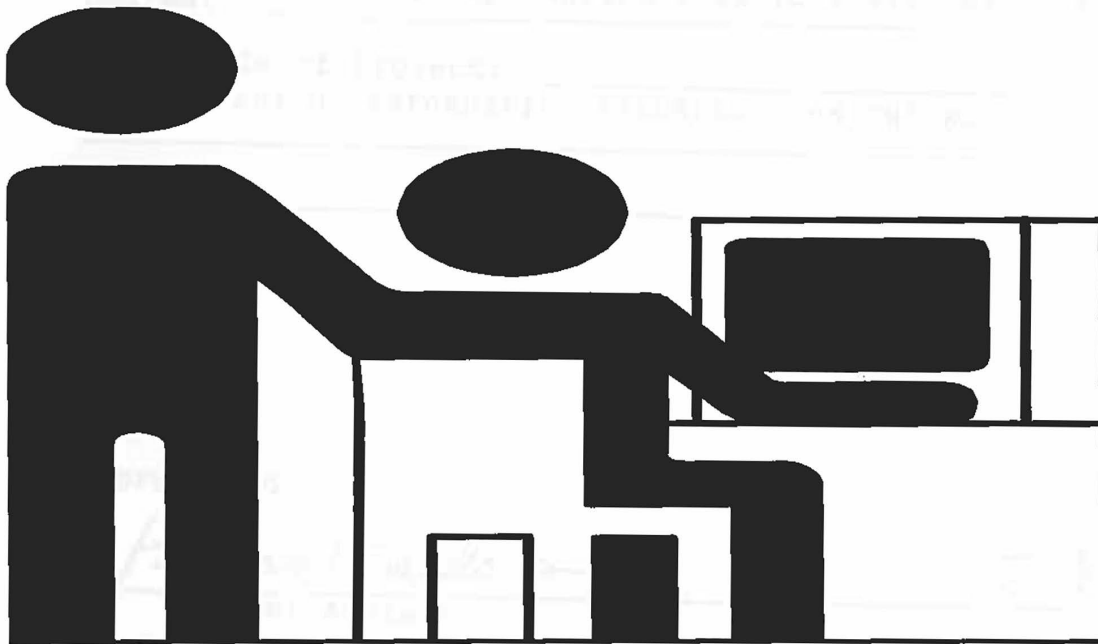
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The Impact of Information Technology on the Accounting Profession



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Honors Program

(To be submitted by the student to the Honors Program with a copy of the Honors Project suitable for binding. All signatures must be obtained.)

THE IMPACT OF INFORMATION TECHNOLOGY ON THE ACCOUNTING PROFESSION

Date _____

Honors Program Director for Honors Council	Date
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The Impact of Information Technology on the Accounting Profession

Abstract

Information Technology's (IT) relationship with the accounting profession has been, is, and continues to be profound in nature. The profession is both redefining traditional roles and defining new roles for itself, because of the rapid changes occurring in IT. Not only have the functions performed by the accounting profession become more efficient and on occasion, obsolete, but IT has also changed the nature of certain tasks performed by those in the profession and opened up new professional possibilities.

The primary question this project is concerned with is determining the specific impact of IT upon segments of the accounting profession. What has been the historical significance? What are the present applications? What will be the future implications? IT has had, is having, and will continue to have similar yet unique effects upon accountants in public practice, accountants in the private sector, and accountants in the auditing arena.

This question was addressed by gathering information from a large number and wide variety of research sources. The goal of this particular approach was to obtain a broad overview of the issue. That goal was met. Authoritative research sources consulted include the journals used by various accounting practitioners; the official World Wide Web sites of professional organizations for accountants; and other World Wide Web sites of interest to professionals. Finally, a "real world" perspective was acquired when a survey of local accounting professionals was conducted. For the most part, the local professionals' responses reflected the ideas presented in and conclusions arrived at in both the printed and Internet research sources consulted.

As a result, this project finds that the accounting profession is taking a proactive instead of a reactive stance towards the changes being brought by the information technology revolution.

The Impact of Information Technology on the Accounting Profession

I[nformation] T[echnology] is creating a wave of change that is crashing over accounting's shoreline – Robert K. Elliott

Introduction

Elliott's observation and its ramifications are coming to the forefront as the accounting profession undergoes a process of self evaluation and reexamination, the likes of which has never been seen before. Essentially, the information technology (IT) revolution is causing the profession not only to redefine traditional roles, but also to define new roles. In the near future, the method of accounting used in the disappearing Industrial Age will be replaced by a method that is better suited for the emerging Information Age (Elliott 1992, 61-3). The IT revolution is already having a significant impact on the profession. In addition to making the functions performed by the accounting profession more efficient and on occasion, obsolete, IT has changed the nature of certain tasks performed by those in the profession and opened up new professional possibilities. For CPAs in public practice, demand for audit/attest and tax services is constant while demand for consulting and assurance services is rapidly growing. For management accountants, decision-makers both internal and external to the organization are less concerned with historical events and are instead, clamoring to get and decipher more up-to-date information. For auditors, electronic transactions and evidence are replacing the paper trail (see SAS 80). The most profound effect of IT on the accounting profession has been how and why information is processed. This project will examine the past impact, present applications, and future implications of IT on the accounting profession and present a small sampling of viewpoints held by local accounting professionals on this issue.

Past Impact

The profession has had a checkered past with IT. One way of understanding this relationship would be to think of it as unfolding in “. . . three major phases: the ‘first kiss’, the separation, and the courtship and marriage” (Hollander et al. 1996, 11). During the first phase, the “first kiss” was eagerly anticipated and a welcome event once it occurred. IT automated the cumbersome aspects of accounting and made the process faster and more efficient.

Unfortunately, irreconcilable disagreements led to a parting of ways. The disagreements had to do with increasing information demands. Accounting professionals did not wish to provide non-accounting information to management whereas, IT professionals were more than willing to answer any information request. This strain was eventually seen as counterproductive. As a result, a whirlwind “courtship” and “marriage” occurred. Since both accounting and IT professionals were concerned with disseminating information, the task became to seek ways in which the two could complement rather than antagonize each other (1996, 11-3). The “marriage” is still in its early stages -- both sides are getting to know the other’s strengths and weaknesses while at the same time are becoming used to the changes taking place in themselves.

Present Applications

IT has grown from a tool of automation to one of invention and innovation. Automation of accounting tasks is firmly entrenched causing the profession to reexamine what it has to offer in light of this IT displacement. A change in attitude towards the possibilities of IT is occurring among professionals. For example, the American Institute of Certified Public Accountants (AICPA) has a committee solely devoted to IT issues. In a sense, IT has been both a threat and a help to the profession. For instance, a computer system performs certain accounting functions

quicker and more effectively than any human accountant could. On the other hand, IT has enabled accountants to become more effective communicators in terms of being more accessible and responsive to existing clientele as well as reaching out to a pool of potential clients that is bigger than any in the past. New opportunities, including consulting and assurance services, are emerging for the profession. These opportunities allow the professionals to help make IT not only more accessible but also more trustworthy to their diverse clientele of businesses, other organizational entities, and individuals.

Communications:

An area of IT that is of great importance to the accounting profession is communications. Electronic mail (e-mail), the World Wide Web (WWW), and newsgroups are of the most significance. The WWW is a multi-faceted device that the profession is currently finding many uses for. E-mail is, of course, an instantaneous way of exchanging messages. Newsgroups are discussion forums where accounting professionals can find advice about and commentary on the issues of concern amongst their peers (Steed 1997, 60).

The WWW serves in many capacities for the accounting profession. One of its more popular applications is as a tool for research. The amount of information available is boundless and current. Search engines are becoming easier to use (of course, some are better than others). Also, research capabilities are enhanced and/or made more efficient because of the links WWW sites have with each other. As a result, a researcher examining the contents of one particular WWW site probably identifies links to other sites that contain related information or information of interest (Demery 1997, 29). An added bonus is that much of the information on the WWW is free. One of the more important aspects about using the WWW for research is the ability to offer clients individual and customized service in a rapid manner. After performing the required

research to satisfy a client's request, the accounting professional can use the same technology, (i.e. the WWW and e-mail), to instantaneously respond to the client (1997, 26).

The WWW can also be used as an effective marketing tool. A reputation can be made on and communicated through the WWW. A recent case study discussed how a sole practitioner attracted more clients by using newsgroups and advertising on the WWW. The practitioner added individuals and/or organizations located out-of-state and overseas to his clientele base by answering online questions and describing what other kinds of services he could offer. This was quite an accomplishment because the traditional modes of communication and advertising would have been ineffective in marketing his services in these particular client markets. In fact, his mastery of IT was one of the major selling points to these clients. He also advertised on other WWW sites to allow interested individuals to get more information about his practice and find out how to contact him via e-mail (Dennis 1997, 40-1). The above example is representative of a growing trend as more firms and individuals establish commercial WWW sites. Part of this shift is due to the fact that the size and resources of a firm do not constrain the amount of advertising/marketing that can be done on the WWW as would be the case when using traditional forms. An estimate of the amount of business communication to occur over an electronic medium by the year 2000 is 80 percent. The above mentioned electronic mediums could handle a variety of business communication needs ranging from billings to payments to research (Steed 1997, 60).

Redefinition of Roles:

CPAs today are repositioning themselves by offering consulting services in addition to traditional services. Consulting services are being driven by IT. Although the Big Six public accounting firms have been the trendsetters in the consulting arena, small CPA firms have been

slow to follow. In 1996, 43% of the revenues received by the Big Six came from their consulting services whereas only 5% of the revenues received by smaller firms came from the same source (Koreto 1997, 59). This will quickly change because professional organizations and IT vendors are beginning to recognize the tremendous growth potential for smaller firms if they were to offer consulting, especially technology consulting, as a part of their services. In 1997, this recognition led to an alliance among the AICPA, Microsoft Corporation, Great Plains Corporation, and Compaq Computers to offer an educational conference. The conference's goal was to educate CPAs about how to harness and use IT both for the benefit of themselves and their clients (1997, 60-1).

An excellent example of a technology consulting service offered by CPAs is the Year 2000 issue. CPAs can serve in a consulting capacity by independently assessing the problem, identifying potentially expensive oversights and mistakes, and monitoring (and/or ensuring) that compliance documentation has been carried out adequately (McKell and Romney 1997, 44). A note of caution is in order; CPAs engaged in this type of consulting should take steps to protect themselves from the inevitable litigation that will be a consequence of the Year 2000 issue. Possible precautions include carefully screening clients, documenting all communications made with the client, and having a contingency plan in place (1997, 44). Auditors should also be careful since the potential for a lawsuit would loom largely if material misstatements appearing in an organization's financial statements due to the Year 2000 issue were not detected (1997, 43).

Management accountants also are actively redefining the role they play within business organizations. Since IT has automated many of the traditional tasks they once performed, they are no longer consumed with capturing historical accounting information but instead find

themselves analyzing and interpreting data in addition to performing financial modeling and planning functions. In fact, many management accountants no longer see themselves as accountants but rather as part of the “finance function” or as “decision-support specialists.” What is fueling this change in attitude/perception? IT is the catalyst. The primary decision-makers within business organizations are constantly bombarded with large amounts of information and need others to help them sort through it (Kulesza and Siegel 1997, 56-8). Management accountants are ideal candidates for that role because of their analytical ability and familiarity with the information (1997, 58). Accounting professionals are moving beyond focusing solely upon one part of the business organization (i.e. accounting information) to concentrating upon the whole.

Auditors are finding themselves in the midst of profound changes as well. On the one hand, IT is making an auditor's assignments more challenging and difficult to complete. For instance, the paper trail that auditors have traditionally examined and reexamined during the course of an audit is disappearing. A variety of electronic data storage devices are replacing the paper documentation of the past. As a result, new audit issues and concerns demanding immediate attention have emerged. A few examples include security, continuous auditing, and image processing. In terms of security, an auditor must determine if an entity has a system in place, which prevents unauthorized individuals from accessing sensitive data, software, and equipment. Continuous auditing is an appropriate option in those circumstances where most, if not all, information exists only in an electronic format. Continuous auditing encompasses embedding audit modules within the electronic information processing/storage system. These modules contain instructions (given by the auditor) on how to identify what items do not belong in or are being inappropriately used within the system. A primary concern is the authenticity of

image processing. In other words, are the electronic images a true representation of actual events or are they a doctored version? In order to determine authenticity, an auditor would need to examine the process that converts paper documentation into electronic images (Helms and Mancino 1998, 45-7).

On the other hand, IT is enhancing an auditor's performance and productivity. IT presents new tools, such as electronic sensors and software agents, for performing auditing tasks. In fact, computer assisted audit techniques can be used for substantive testing as well as testing for financial and application controls (Guy et al. 1996, 286-8). Computer models are able to "learn" from auditing procedures that have been previously performed and use this "learning" as a guide for what to do next (AICPA Effect of Information Technology on the Assurance Services Marketplace Report 1997b).

Future Implications

The future of the accounting profession will be profoundly different because of IT. However, IT is not the exclusive domain of the profession and as a result, existing and emerging competitors are waiting in the wings to offer services to the same client base. Accountants in the future will need knowledge of and an understanding of how to utilize IT to maintain their current position and stay ahead of the competition (AICPA Assurance Services Report 1997b).

New Accounting System:

IT is challenging the old ways of thinking about the purposes of business organizations and the methods they use to account for what they do. There is a movement underway to completely reinvent the mechanics of the traditional accounting system. The current system has five identifiable weaknesses:

- it emphasizes parts rather than the whole picture
- data is processed slowly
- only limited information about accounting transactions is recorded
- duplicate data is present throughout the system
- reaction to business risks is costly (Walker and Denna 1997, 23).

A new system, which emphasizes the occurrence of business events and how to measure them, is challenging this old system. IT is the thrust of this new system since it allows all types of information to be collected, stored, and used in a timely manner in the decision making process. This increased information capability allows for a perspective to be taken of the whole organization rather than just of specific parts.

Assurance Services:

Virtual organizations will be commonplace in the future. The concept of a virtual organization makes irrelevant the basic tenets of accounting and auditing. As is explained by the AICPA Assurance Services Report:

GAAP assumes, for example, that transactions are at arm's length, that there is a discrete entity that establishes the demand for and basis of accountability, and that enterprises have perpetual life. However, in virtual organizations, arms-length transactions could be the exception, rather than the rule. The entity concept would either apply less well or not at all. The boundaries of the legal entities might have little relevance to the economic entities. The going-concern assumption has less meaning for organizations that intend to disband when they fulfill a current contract. A virtual organization may be a shell, holding no assets and no liabilities, but bringing together the resources to respond to a one-time business opportunity. Thus, performance measurement and accountability are more difficult to achieve for virtual entities (1997b).

With the above true, what role can the accounting profession play if the traditional ones are no longer feasible? The answer lies in offering assurance services. Assurance services are "independent professional services that improve the quality of information, or its context, for

decision makers” (AICPA Assurance Services Report 1997b). Since large amounts of information are accessible but are uncertain in terms of accuracy and meaning, it is only natural for a decision-maker to want some assurances on the information s/he is using. Also, readily available nonfinancial information is becoming more important in the context of decision-making. The accounting profession has traditionally been involved in providing “assurance” on historical financial information; however, this type of assurance is less relevant and has been supplanted by achievements in IT which make current information readily and more easily obtainable. Decision-makers no longer need “point-in-time assurance,” (that is, historical points) but instead desire “just-in-time, real-time, or continuous assurance” (1997b).

An example of an assurance service that has resulted from IT is the authenticating of electronic commerce transactions. The AICPA recently announced the launch of the CPA WebTrust, an electronic commerce seal that verifies if an organization meets certain standards in the electronic commerce areas of business practice disclosures, transaction integrity, and information protection. Business practice disclosures are concerned with assessing if the entity behind a WWW site is following asserted business practices. Transaction integrity refers to whether or not the transaction is processed in the manner agreed upon by both parties. Information protection refers to the ability of the entity owning a WWW site to not only keep consumer information confidential but also, not release it to other unrelated entities (CPA WebTrust Fact Sheet 1997a).

Providing assurance on electronic commerce transactions will run into a few hurdles, however. Persuasive arguments are needed to convince online businesses that the CPA WebTrust seal provides value and adds to its customer base. Also, the CPA WebTrust is not a unique idea. Major credit-card companies are forming an alliance to offer Secure Electronic

Transactions (SET) which will, as the name implies, also offer security for electronic commerce transactions (Nacinovich 1998).

Predictions have been made that concept of CPAs assuring electronic commerce transactions will not succeed. One editor has pointed out that in many instances consumers “do not seek assurance from CPAs before making routine purchase decisions” (Zuckerman 1998). This same editor does think that a market exists either on the consumer side or the business organization side. That is to say, the fear consumers have about electronic commerce transactions will diminish over time as history has proven with technological innovations of the past. Also, neither large WWW sites nor small WWW sites appear to believe that having a CPA WebTrust seal is vital. Finally, credible competition exists. The Better Business Bureau, for example, offers an electronic commerce seal as well and presumably, a consumer may put more credence in its seal as compared to that of the CPAs (Zuckerman 1998).

Overhauling the Accounting Standards:

A probable and final future implication is the need to overhaul the standards governing the profession. The current standards setting process is not well equipped to decide upon IT related issues. The AICPA Assurance Services Report noted two major weaknesses: “Standards essentially ignore individual user needs” and “Considerable time can elapse between an emerging user need for relevant information and a responsive standard”(1997b).

As a result of the issues discussed above, the AICPA recognizes that the following should take place so that the profession is better able to take advantage of IT:

- professionals need to be made aware of the possibilities IT presents and be educated on how to take advantage of them
- professionals should continue using current IT but start to venture out into newer technologies

- standards need to address IT and the standards setting process needs to be improved
- the responses to IT by the legislative branches of government and regulatory agencies needs to be monitored
- professionals need to keep up with the advancements and trends in IT (AICPA Assurance Services Report 1997b).

Survey on IT

Methodology/Background Information:

A survey of local accounting professionals was conducted in order to learn what local practitioners thought about IT and its impact upon the profession. The survey, containing ten multiple choice questions and one open-ended question, was completed by 63 local chapter members of the American Society of Women Accountants, the Institute of Internal Auditors, the Association of Government Accountants, the State Society of CPAs, and the Institute of Management Accountants. Most of the participants worked in auditing or private industry, closely followed by government/not-for-profit accounting and accounting information systems. Other survey participants were educators or professionals involved with tax and small business work. Most professionals had 6 to 10 years experience with IT.

Results:

The results of the survey were, for the most part, in line with what the authoritative literature has reported about the accounting profession and IT. However, there were a few exceptions. One question concerning standards found that more individuals felt that the standards had kept up with the changes in IT than not. Another question found IT to be perceived as “a tool that aids in decision-making & what-if analysis.” Most respondents indicated that they obtained the skills needed to keep up with IT changes on an

incremental/gradual basis and that those skills were acquired by teaching themselves how new IT works. The respondents utilized the WWW primarily for research purposes. For those who worked at places with WWW pages, the pages served only slightly more as a marketing tool than as an informational tool for communicating with existing clients. Most individuals used IT to communicate both with co-workers and clients. Many participants answered in the affirmative when asked if their workplace had an Intranet.

The open-ended question asked what the participants thought had been the most significant impact of IT in their work environment. Some of the comments included:

- being able to accomplish more with less time
- made it [the work environment] more complex
- speed and accuracy
- in some instances, the information technology provides up to the minute feedback on critical information needed for decision making; on the other hand, information technology creates delays, problems, and etc. which at times clouds the decision making process.
- automation of tasks & communication
- quicker access to data (current & historical)
- sharing documentation & info[rmation] between nationwide centers.
- Information technology enables us to work more efficiently and effectively – we are able to do more with fewer resources

Conclusion

The accounting profession is undergoing a rapid evolution that is being driven by the revolution in information technology. The domain that the profession controlled in the past is either slowly diminishing into a computerized system or is being threatened by competitors who are IT savvy. As a result, the profession is having to redefine itself. The changes created by

information technologies are having a significant impact upon the once static accounting profession by producing a profession that is becoming more adaptable to meeting the needs of a variety of information users and it is doing so by following Peter Drucker's advice: "The best way to predict the future is to create it" (Enduring Values, Changing Competencies: A Road Map for CPAs, 1997c).

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Appendix

Survey

PLEASE CIRCLE THE MOST APPROPRIATE RESPONSE(S) FOR EACH OF THE FOLLOWING.

1. In what area of accounting do you work? If more than one, indicate the one in which you spend the most time.
 - a) auditing
 - b) private industry
 - c) governmental/not-for-profit
 - d) consulting services
 - e) accounting information systems
 - f) Other: _____
2. In your opinion, have accounting standards kept up with changes in information technology?
 - a) yes
 - b) no
3. Do you perceive information technology to be:
 - a) a tool of automation only
 - b) a tool that aids in decision-making & what if analysis
 - c) Other: _____
4. How many years of experience do you have with information technology?
 - a) less than 2 years
 - b) 3 to 5 years
 - c) 6 to 10 years
 - d) Other: _____
5. Have your skills kept up with changes in information technology?
 - a) Incrementally/gradually
 - b) Relatively quickly
 - c) At the same pace
6. When your place of employment implements a change in its information technology system, are your skills updated:
 - a) by taking a formal class
 - b) by a trainer who works with you one on one
 - c) by teaching yourself in terms of trial and error
 - d) Other: _____
7. If you use the Internet, how do you do so?
 - a) for research
 - b) for pleasure

- c) Other: _____
- d) N/A

8. If your place of employment has a Web Page (World Wide Web address), in what way is it used?

- a) as a marketing/promotional tool to attract new clients
- b) an information tool to communicate with existing clientele
- c) Other: _____
- d) N/A

9. Do you use information technology to:

- a) communicate with your co-workers only
- b) communicate with your co-workers and clients
- c) Other: _____

10. Does your place of employment have an Intranet?

- a.) yes
- b.) no

11. What has been the most significant impact of information technology in your work environment?