

Innovator's Dilemma And An Association For Accounting Information Systems Educators

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Abstract

Recently, there have been debates on whether it will be services to the accounting information systems (AIS) educators and the society if AIS educators form a new organization independent of American Accounting Association. As like any new discipline, AIS emerged from many existing disciplines, including accounting, computer science and information systems. Yet, different from their counterpart in industry, the leadership in accounting academics across the nation has been slow in embracing the new reality based on information technology and has the difficult time to make a smooth transition to restructure their old curriculum to the fast changing market places. Yet, the strong market demands for information technology graduates and declining enrollments in the traditional accounting programs across the nation provide an incentive for accounting educators in many institutions to rethink their long term strategy in surviving this tumultuous time and preparing for the challenging future ahead (Albrecht and Sack, 2000). Against this backdrop of radical changes, the new conferences for AIS educators held consecutively for two years (AIS Educator Conference, 1999, 2000) were devoted to the professional growth of AIS educators. And the conferences drew serious attention from AIS faculty, particularly, those who are interested in teaching practical and hands-on application-driven information technology (IT) to their students. In this paper, I examine various issues related to this idea of creating a new organization for AIS educators independent from AAA. First, I highlight the paradigm shift in accounting industry for the last three decades from the traditional accounting services to accounting and information systems (AIS) services. Then, I delve into exploring who AIS educators are. Once the AIS educators' model is established, I examine the missions and purposes of two independent organizations: one is the existing AAA, and the other is one yet to be formed, a new organization for AIS educators. Once the differences and similarities between organizations' missions and purposes are established, I examine the implications of creating the new AIS educators' organization, using the findings from Christensen's study (1997), and similar studies on the impact of innovative technology on organizational changes.

Introduction

Whether accounting information systems (AIS) educators should have an organization independent from American Accounting Association (AAA) is quite an important issue. Before the organiza-

tion is officially formed, it may be imperative for AIS educators to debate and contemplate about implications of such an organization on the professional growth for AIS educators, and their relationship with AAA. In the long run, how-

this forming of a new organization may indicate a critical milestone for the professional development and growth of AIS educators, and significantly affect the dynamics of both AAA and the new organization to be formed for AIS educators.

It may be presumptuous to assume that someone has a crystal ball on the future. Yet, the past history may provide some guidelines on where we should go collectively as AIS educators. In some ways, the future may be determined by the decisions of the past. The decision to create a new organization for AIS educators will determine the future of AIS educators, since the course of our decision and follow-up actions will bring a different future to us.

The central issue for forming an independent new organization for AIS educators is analogous to a decision as to whether a business organization internally develops the new line of innovative technological line of business or spin-off the innovative technological line of business to a new independent organization with its own governing structure. Christensen (1997) discovered that when the new, innovative technology is not properly nurtured to grow internally within an organization, the initiative to develop such an innovative line of business internally fails, and eventually the organization based on the existing technology fails to adapt to the new business environment. AAA may be viewed as an organization based on the traditional accounting. And it appears that just like many business organizations that failed to embrace the new, innovative technology, the old, dominant culture from the old accounting technology so far has prevented the new culture from the innovative technology from making a home at AAA.

I may define the traditional accounting as the legacy accounting systems based on the old accounting technology: centuries old double entry bookkeeping systems (Association of Chartered Accountants in the United States, 2000 a, b, c, and d). Most financial accounting texts (Harrison and Horngren, 1998; Kieso and Weygandt,

1998; Needles and Powers, 1998) still use the legacy accounting systems as the conceptual foundation for teaching business students, while the legacy accounting systems are no longer in use for business processing in corporate America.

The parsimonious double entry legacy accounting systems served businesses over centuries, when computers were not widely used in every facet of business transactions (Association of Chartered Accountants in the United States, 2000 a). The legacy accounting systems provide a simple way of summarizing business activities of a modest size, and have been quite effective as a teaching tool for teaching business students.

By emphasizing too much on the legacy accounting systems, however, most traditional accounting programs provided students with hopelessly outdated pictures of modern financial information processing. The most lamentable fact is that such legacy accounting systems are continuously taught at many accounting programs across the nation, and prospective CPA candidates are also continuously tested, as if learning these out-of-dated conceptual foundation and learning tool were a ritual to become a CPA that all aspiring CPA candidates have to go through, no matter how outdated is the knowledge being tested. Most traditional accounting programs continuously use such accounting texts (Harrison and Horngren, 1998; Kieso and Weygandt, 1998; Needles and Powers, 1998) in which conceptualization of accounting systems is heavily based on the double entry bookkeeping methods that can go back to 15th century during the time of Luca Pacioli (Association of Chartered Accountants in the United States, 2000 a, b, c, and d), while modern businesses no longer use such outdated methods for financial information processing. The end results are the over decades of out-of-dated education and training of future financial and assurance professionals based on the out-of-dated conceptual foundation and implementation tool.

On the other hand, AIS is a new discipline that is based on the constantly evolving information technology (IT). Since IT is constantly innovating, so is AIS. AIS initially was created to implement the financial information processing, using computers. As information technology advanced, AIS in 21st century utilizes many advancements in new developments in technological breakthroughs in database management systems, data mining, data warehousing, distributed computing, e-commerce, intelligent agents, nanotechnology, networking, object technology, optical storage, parallel processing, photonics and any other new IT developments for constantly updating its knowledge and expertise base for assisting and championing the efficient and effective information processing, and operational management for corporate America.

While traditional accounting educators have been clinging to their paper-based double entry bookkeeping method for purpose of teaching, business community have found a new way of recording and storing data, and process them, retrieve, and report information in a far more efficient way, using computers, instead of papers.

The traditional accounting educators that have been institutionalized throughout centuries using paper documents have been slow to adapt to the business environments that no longer rely on the old ways of using paper. In some ways, the elegant way of representing financial conditions of complex business entities in summarized formats of four basic simple financial statements may have shown merits. Yet, as business becomes more complex, and information technology continues its advancement in data storage, data warehousing, and networking, the traditional documenting, processing and reporting formats have shown the signs of their limitation in market places. And investors and other users of traditional financial accounting information have increasingly relied on other formats and sources of information, making the traditional financial accounting reporting processes increasingly obsolete in the market places. For instance,

investors may retrieve their requested information in various formats such as intelligent query formats on the Web from a database server.

Against this backdrop of changes in business environments, emerged a generation of AIS educators who saw the fallacies of teaching the legacy accounting systems to their students. While the emergence of accrual accounting became a mainstream (Taggart, 1964) and the traditional accounting educators' dominance in AAA shadowed the progress in the true information science of accounting, AIS, the business world moved out of legacy accounting systems, and marched toward database management systems, enterprise resources planning (ERP) information systems, and Web based enterprise application integration (Oracle, 2000; SAP, 2000).

The traditional accounting educators' conceptualization of businesses and financial information processing were rooted and formed in the old days of paper documentation where computers were not as powerful as they are now. In this new world, the old legacy accounting systems do not scale well for large business information processing. Therefore, AIS educators and students of business have observed that there is a growing disparity between what business students learn from the traditional accounting educators and what is being practiced in the IT-driven business world on financial information processing. The growing disparity has contributed to the gradual decline of enrollment in many traditional accounting programs across the nation.

In this paper, I examine various issues related to this idea of having an independent organization for AIS educators from various angles. First, I highlight the role of IT as a disruptive technology to traditional accounting educators for the last three decades, while the accounting industry has embraced IT and moved from the traditional accounting services to accounting and information systems (AIS) consulting services. Then, I delve into the exploration of AIS

educators' identity. On this issue of AIS identity, I articulate that by and large, AIS is distinctively a new emerging and rapidly growing discipline, substantially distinguished from the old accounting technology. Once the AIS is defined and AIS educators' mission is established, I examine the mission of AAA, and compare that with the prospective mission of the new, emerging organization for AIS educators.

After the differences and similarities between two different organizations' missions are identified, I examine the implications of creating the new AIS educators' organization, using the findings from Christensen (1977), and other related studies such as Dahlstrand (1997), and Krishnaswami and Subramaniam (1999). In the last section, I conclude the paper with other issues related to this research topic. And in the following section, I also suggest the future research in this area.

IT As A Disruptive Technology To Educators Of Traditional Accounting

Accounting education industry and recruiting organizations that hire the college graduates, particularly, accounting firms, have a symbiotic relationship. Accounting education industry plays a role of suppliers to provide their graduates to various types of organizations. Those recruiting organizations are customers to accounting education industry. When the accounting education industry over the years failed to provide the type of graduates that those progressive employers needed, those customers shopped elsewhere, particularly, in disciplines other than accounting, such as computer science and information systems.

Over the past three decades, as business community has integrated IT into every facet of their operational and management activities, and progressive accounting firms have gradually integrated IT into their practices, the primary revenue generating activities in the accounting profession have gradually moved from simple

bookkeeping and financial auditing/reporting to sophisticated enterprise wide information systems-based consulting. Using the figures in *Public Accounting Report*, McNamee, Dwyer, Schmitt and Lavelle (2000), for instance, reported that in 1999 Big Five received 51% of their income from management consulting, in which management information systems (MIS) consulting services were their specialty. Also, according to the *Public Accounting Report*, the share earned in auditing and assurance services dropped to 30% from 45% in 1993.

As a result, large, progressive accounting firms have been increasingly passing on low margin and labor-intensive traditional accounting services to smaller local firms, and have actively pursued information systems services opportunities. Many small local accounting firms may not have resources to keep their technically competent IT staff from their IT consulting competitors. This trend by progressive accounting firms has brought diminishing market values to accounting majors from programs that prepare students solely for careers in traditional accounting services such as financial reporting and auditing. This shift has contributed to an alarmingly large decline in the enrollment of accounting students in numerous accounting programs across the nation.

Furthermore, recognizing IT's ability to efficiency and productivity in industry, professional organizations for traditional accounting such as American Institute of Certified Public Accountants (AICPA), and Institute of Internal Auditors (IIA) have been involved in a number of projects in bringing IT into the center stage of accounting graduates' professional activities. Such examples include AICPA's certified IT professional (CITP) certification project (AICPA, 2000), and IIA's infrastructure assurance project (IIA, 2000).

Many traditional accounting programs across the nation have served accounting graduates and the traditional areas of accounting pro-

profession well. These programs emphasized, and continue to emphasize, the traditional professional accounting service mix, which is heavily geared towards financial reporting, tax, and auditing. Because of changes in the service mix of most professional accounting firms, due in part to rapid advancements in IT, employment opportunities and salaries for accounting majors with those traditional skills are increasingly diminishing or, at best, remaining flat. Many accounting professionals have warned that traditional accounting programs have not responded effectively to the changes in business and the accounting profession. Indeed, Albrecht and Sack (2000, p. 1) observed that "accounting leaders and practicing accountants are telling us that accounting education, as currently structured, is outdated, broken, and needs to be modified significantly."

The number of high quality students at many traditional accounting programs who choose accounting as their major has been decreasing rapidly. Students were communicating that the traditional accounting program was not as valuable as alternative majors both within and outside many business schools. Market realities also suggest that the students were correct. According to Taylor Group's study (2000) commissioned by AICPA, it appears that the current precipitous enrollment decline in accounting programs in the nation might have resulted from high school and college students' perception that accounting graduates are no longer working in a well rewarding profession. In the past decade, the traditional accounting services have produced flat or declining revenues and consequently contributed to diminishing demand for traditional accounting skills. The students' perception confirms the market reality that the accounting firms are no longer able to compensate students hired for the traditional accounting services, not as well as for those hired for IT work. Albrecht and Sack's findings confirm this assessment (2000, p. 1).

The AIS consulting service firms such as Big Five and other progressive AIS firms, have gradually realized the different market values for

college graduates between traditionally trained accounting graduates and information systems graduates, effectively creating a two tier pay scale, even though both types of professionals work in the same firm. AIS consulting service firms, are willing to pay higher compensation to IT professionals than to traditionally trained accounting graduates, in order to be competitive with other high paying IT consulting and services firms.

For this changing reality, ambitious and aspiring college students have responded with low enrollment in the traditional accounting programs, fleeing to take other lucrative career alternatives such as e-business and IT. In this environment, the accounting and information systems services firms have moved to more lucrative areas of their business, hiring an increasing number of technically competent graduates of information systems, and training them on the necessary business skills. The AIS consulting service firms observed that training information systems graduates on necessary business skills for business related IT consulting assignments is more cost effective than training traditionally trained accounting graduates on the information systems to work on IT consulting assignments.

Albrecht and Sack discovered why accounting practitioners would not major in accounting again (2000, p. 35). Their findings listed below support what I have discussed so far:

- The business world has changed dramatically, while traditional accounting education has not.
- Traditional accounting education is perceived as being too narrow and backward-looking and too costly for the benefits received.
- The idea of a career in traditional accounting has lost favor because of technological and competitive change.
- Business people who want an interesting and rewarding career are looking elsewhere other than traditional accounting

Recognizing the high margin in IT business, in recent years, the AICPA has been actively encouraging its member firms to be engaged in IT business, and moving toward supporting their e-business and IT services. Two of its major efforts in the IT area are AICPA's strategic initiative (AICPA, 2000) for supporting its member firms' assurance services and certifying its member's professional IT competence. The assurance services include e-business and IT services such as CPA WebTrust services, CPA SysTrust services, and OSI 9000 services. AICPA's Center for CITP provides various certification and IT business related services, while recognizing its qualified member's professional IT credentials and expertise with CITP designation as a preferred IT professional in the business community. The CPAs that pass the CITP examination and meet the necessary requirements for certification will be awarded with an IT specialty designation, CITP.CPA.

This initiative is similar to what U.S. is done by medical profession to encourage physicians to pursue specialty education and lucrative compensation. Specialized physicians with additional education and training are awarded with an additional designation beside their general Medical Doctor (or M.D.) designation, and are highly respected by the medical profession and society at large due to their specialized expertise. In the long run, the 150 hour requirement for candidates to sit for the CPA exams will foster an environment in which accounting students will opt to specialize in lucrative specialty areas such as IT and information systems audit, control and security (ISACS). The rapid advancement in computer science, IT, and continuing education requirement in certified IT professionals such as CITP.CPA and Certified Information Systems Auditor (CISA) will enable the specialized CPAs to provide highly specialized and high margin services.

Over a number of years, Information Systems Audit and Control Association (ISACA), a global IT audit, control and security organiza-

tion, has been publicly recognizing competence of IT professionals in the area of audit, control and security with a designation of CISA. The services provided by ISACS profession has become increasingly valuable, while ISACS specialists command high compensation and enjoy good career opportunities. At the same time, the business community has embraced the new business model enabled by Internet technologies, and corporate America has been working diligently to transform itself in order to keep up with the New Economy. This ISACS profession has become an attractive career choice for both of traditional accounting and information systems majors who aspire to work in this profession.

Facing this new reality, a number of progressive accounting programs in the nation have already moved to educate their students for this new type of forward-looking, high margin and high income accounting services that emphasize IT as an enabler. These new types of accounting services include reengineering business entities by automating slow and costly traditional accounting functions, and increasing revenues using data warehousing, data mining, ERP, and intelligent systems.

On the other hand, still a large number of accounting programs serve mainly traditional areas of accounting profession, while the income percentage from such services in Big Five has been shrinking to merely 30% this year (McNamees, Dwyer, Schmitt and Lavelle, 2000). There is a substantial difference between what is demanded from the market places through major high end recruiting firms, and what a large percentage of accounting programs across the nation supplies. IT came to accounting education industry as both an opportunity and a disruptive technology. The practicing accounting profession, particularly, large progressive accounting firms like Big Five, took IT as an opportunity for possible revenues, and expanded their business to unknown territories.

On the other hand, a large number of traditional accounting programs across the nation took IT as the disruptive technology, instead of enabling technology, and failed to adapt to the changing business environments, bringing decline in enrollment over the years. AAA is largely a reflection of such collective thoughts of traditional accounting educators who are still afraid of crossing the bridge to the modern business world. That was exactly in the way that many failed industry leaders did, as Christensen (1997) observed.

AIS Educators' Identity

Forming a new organization is a crucial step for AIS educators to have a unique identity. As for now, our identity falls under the discipline of accounting to general public. Since accounting is associated with bookkeeping or tax preparation for a layman, AIS educators as those who prepare future IT professionals in this information society are far misunderstood by general public as what we do. General public will continuously misunderstand AIS educators as the educators who train mainly traditional accountants, as long as AIS educators continue to be associated mainly with AAA without our own organization.

AIS is a new discipline grew out of accounting and many other related disciplines such as computer science and information systems. The body of knowledge in the traditional accounting has been advancing slowly. On the other hand, the revolution in IT, including advancements in computer science, computer engineering, and nanotechnology, have accelerated the body of knowledge in information systems (IS) component of AIS to explode.

Decades ago, many accounting programs did not have a course in AIS. If so, what AIS educators did was simply to help accounting majors understand rudimentary features of computer usage so that the students would be aware of relevance of computers in modern business processing. At that time, the business models of most

traditional accounting firms were evolved around traditional auditing and tax services. Since major Big Eight specialized on particular industries, they were able to charge premiums for their audit services, and accounting graduates were sought after. And most business processing in corporate America was done in back offices by those who were comfortable with old legacy computer systems such as mainframe computers, largely supplied by IBM or their clone makers.

In the 80s, client server systems brought a different picture to corporate America. Particularly, Microsoft Windows brought computers to fingertips of managers and employees, for whom computers were no longer the sole domain of computer science trained IT professionals. The invention of object-oriented programming in 70s and developments in graphical user interface in 80s allowed business students to build information systems without involving themselves heavily in low-level programming such as assembly languages. Throughout the country, during this time, various business schools started to offer new academic programs in IT.

During this period, traditional accounting firms have also made a gradual transition from pure financial auditing and tax service firms to AIS consulting service firms (McNamees, Dwyer, Schmitt and Lavelle, 2000). The market mechanism in the business world has played an instrumental role in sharing opinions of partners in the accounting firms to reach a decision on this transition. The revenue from IT consulting services and impact of the revenue on the bottom spoke volumes on their decision-making processes (McNamees, Dwyer, Schmitt and Lavelle, 2000).

Recognizing these tremendous demand from the market places, a small number of progressive accounting departments across the nation initially started to offer accounting information systems programs along with their traditional accounting program such as financial auditing, management accounting, and taxation. On the other hand,

shielded from market pressure, many accounting programs in the nation responded slowly to this new market environment, until the declining enrollment in many of such programs has become alarmingly precipitous.

The relationship between AIS and traditional accounting subdisciplines may be contrasted with the relationship between MIS and traditional management subdisciplines. Similar analogies can be drawn between geographic information systems (GIS) and traditional geography subdisciplines, and biotechnology and biology. In both cases of geography and biology, the cutting edge research activities are taking place in GIS and biotechnology such as bioinformatics, since both technologies are pushing the boundary of the research frontiers in their older counterparts.

AIS is a forward-looking discipline that belongs to IT that also includes the disciplines of computer science, computer engineering, information science, information systems, and other IT related subdisciplines. The essence of traditional accounting is in the past, and its major activities take place in taking care of the past. The same issue of financial disclosure can be approached from very different angles. The traditional accounting researchers may engage in their research endeavors with the assumption that the current structure of institutional reporting mechanisms and requirements will be maintained. Therefore, a large percentage of financial accounting academicians' research activities revolve around event studies for financial disclosure issues.

On the other hands, AIS researchers can approach the financial disclosure issues from completely different angles. For instance, they may not assume any existing institutional structure of financial reporting mechanisms and requirements. Instead, they may approach the issues from designing and developing a completely new, innovative way of disclosing financial data and information. Such innovative type disclosure may involve intelligent query, using data ware-

housing, data mining, and intelligent agents on the World Wide Web.

One notable example of designing a new type of an institutional structure of financial disclosure may be found in Cushing's work (1989). Cushing's work is innovative, because it was focused on the designing a completely new institutional structure of corporate financial reporting from a fresh perspective, instead of incrementally examining disclosure events in the confinement of an existing institutional structure in the way that a large percentage of researchers working in traditional accounting do. As we examine the current controversy of auditors' independence issues (McNamees, Dwyer, Schmitt and Lavelle, 2000), it may be the time that AICPA, SEC and other interested parties may invite AIS researchers for exploring and researching new ways of reengineering the existing institutional structure of corporate financial disclosure mechanisms, using IT as an enabler. The salient feature of reengineering is the role of IT as an enabler in reengineering processes (Hammer and Champy, 1993).

As all the rest of the business community moves toward the consumer-centric business model, the current institutional structure of corporate reporting is still based on a preparer-centric reporting model hampered by the rigid, and old accounting technology: reporting essentially only four financial statements with footnotes in a rather limited fashion. On the other hand, even including SEC, a government agency, provides an EDGAR database available to all investors on the Web, and there are services that provide financial data using a customer-centric information query model or other communication formats, not bounded by the paper formats. In the end, as Cushing (1989) described, the financial disclosure industry will become customer-centric like other industries, using advanced information technologies such as data warehousing, data mining, intelligent agents, networking, Web documentation tech-

nology, and any other similar information technologies.

Different from traditional accounting reporting industry, corporate America reengineered itself by using IT as an enabler. As IT became an enabling engine for transforming businesses for higher productivity and various forms of e-business models are integrated into traditional brick-and-mortar businesses in corporate America, IT took the center stage, and the traditional accounting firms are no longer what they were. As more traditional accounting firms entered IT consulting services along with their traditional accounting and tax services, the traditional accounting firms have become AIS consulting and service firms. And as the auditors' independence issue in the New Economy becomes a boiling issue for traditional accountants (Zweig, Verity, Forest, Burns, Hof and Harris, 1996), in the long run, the solutions will lie in IT, as the data warehousing, data mining, intelligent agents, and other information technologies will provide cost-effective business solutions for continuous and real-time auditing.

In the mean while, what AIS educators research and teach has continuously evolved away from the legacy accounting systems, as the advancement of IT is accelerated, while the impact of legacy accounting systems continue to be marginalized in the technologically advancing society. Just as Big Five continue to clamor for computer science majors or technically competent IT graduates for their highly technical consulting assignments, what AIS educators research and teach rapidly have become accounting and business applications of computer science, expanding the domain of IT.

Just in the way that biotechnology and GIS have formed symbiotic relationship with their old counterparts in biology and geography, AIS will share commonality with the traditional accounting for some time. However, also like biotechnology and GIS, AIS has been growing as a separate discipline independent of traditional ac-

counting, as the educators in the traditional accounting have been reluctant to adapt to the new business environments or a large number of such educators are waiting for retirement. There will always be some demand in traditional accountants, just like biologists and geographers in demand in certain sectors of the society. That is like a situation where traditional cartographers are still employed in a society, even though their impact on the society has been diminishing due to the advancement in computer-aided design, satellites, and other advancements in communications and image mapping technologies in IT.

AIS may grow into an applied business discipline of computer and information science that deals with analysis, design, development, and other issues in financial information systems, risk assurance, and other related areas in business such as e-business, using the advancing information technologies. AIS educators will continue to integrate into its core knowledge and expertise base expertise drawn from various related disciplines such as accounting, finance, computer science, information science, and other related disciplines, while building a new information science of accounting, AIS. For instance, increasing part of auditing activities has become part of IT auditing and control, as demonstrated by the activity in Information Systems Audit and Control Association (ISACA), also supported by AICPA and Institute of Internal Auditors (IIA), as IT had made inroads into traditional auditing activities.

As for now, AIS educators are classified as part of accounting faculty members in most academic institutions. That is different in MIS. Most MIS faculty members belong to an independent department of computer information systems, information systems, management information systems or a similar department title. Currently, MIS educators have about three major organizations behind: (1) Association of Computing Machinery (ACM, 2000), (2) Association of Information Systems (AIS, 2000), and (3) Decision Sciences Institute (DSI, 2000). In addi-

tion, International Conference on Information Systems (2000) is a major conference for all IS faculty members, along with numerous national conferences sponsored by the three major organizations for IS faculty members. Although all these major IS academic organizations along AAA supports AIS's mission and purpose, there is no single academic organization solely for AIS academicians.

One reason that MIS educators were able to progress more proactively than AIS could be attributed to the formation of its own organizations with their own governing structure and mission independent from their old counterparts in management or management science. Another reason behind their rapid progress is the influx of non-management IT Ph.D.s into the discipline, including Ph.D.s in computer science, which helped build a new discipline of MIS.

One of missions of AIS educators' new organization may be to facilitate for the educators to disseminate and advance the knowledge and expertise in AIS. As discussed earlier, AIS may be defined as an information science that focuses on assurance services, risk management and financial information technology, among others. Those include analysis, design, and development of financial information systems, various types of assurance services, communication and networking of financial data and information, and systems reliability of financial database management systems.

In order to help AIS students prepare for the career path that utilizes such knowledge base and expertise described above, the AIS programs may need to educate and train AIS students on rigorous foundations. The educational processes for AIS majors may include solid conceptual business and programming foundations. The programming foundation may require industry standard computer language courses such as Visual Basic, Java and C++. While basic accounting and other conceptual business courses provide the basic building blocks of business com-

munications for students, the programming foundation will equip students with the basic building blocks of communication skills with computers. Once the foundations are complete, students can move onto to learn about database management systems, systems analysis and design, data warehousing, data mining, financial data communications and networking, information systems audit and control, application programming interface, enterprise application integration, and so forth within the confinement of financial information systems, assurance services, and risk management.

The AIS curriculum can be designed in such a way that all of basic concepts in both conceptual and programming foundations are reviewed and expanded in succeeding classes so that students will gradually learn the deeper aspects of both accounting and programming foundations applied to the areas of financial information systems and assurance services. This program can be uniquely tailored to the students who have an interest in financial information systems and assurance services. Thus, this type of IT program will be uniquely tailored to educate students who are interested in working for AIS firms such as Big Five, financial IT consulting service firms, and any IT department who are interested in hiring students with background in both accounting and IT. The students in this type of AIS programs will leverage their conceptual knowledge in accounting and business with their modern IT concepts of financial information processing concepts based on technically competent IT implementation and operational skill sets. This type of students are prepared to pursue a career in accounting and business savvy IT professionals or to become a new generation of IT savvy financial officers in the 21st century.

Zweig, Verity, Forest, Burns, Hof and Harris (1996) wrote a special report on finance's info-tech revolution. In the article, they provided evidence that the cutting edge accounting is moving rapidly to become a co-partner with management in enhancing the revenue side of the

bottom line equation. That was a drastic departure from the traditional accounting where the emphasis is in cost management, not necessarily revenue management. In most traditional accounting programs, there is a course in cost accounting, but not revenue management, that may utilize techniques in data mining and knowledge management.

In their article titled, "Beyond Bean-Counting," Zweig et al. (1996) shared their findings on the new type of information-age modern chief financial officers (CFO) by redefining the role of CFO. Their new trend is summarized in the table below.

As traditional accounting is no longer not as attractive to new crops of high school or college students, as indicated in the study by the Taylor Research & Consulting Group, Inc. (2000), the faculty members in the existing accounting departments across the nation may have to decide the destiny of their future. The alternatives are either to embrace IT and integrate into their core curriculum, offering an independent AIS programs, or stay as they are now, until they are forced to accept the changes in the market places.

In the long run, the new organization for AIS educators will provide a leadership in AIS education through both research workshops and teaching seminars, not only for AIS educators in U.S and Canada but also in other continents such

as Europe, Asia and other remaining continents. This new organization may also serve some of practicing IT professionals as well, just as the old AAA did in the old days until the traditional accounting educators leading AAA has gradually divorced from integrating ever evolving financial information processing into their research and teaching activities.

AAA was created to serve the traditional accounting educators (AAA, 2000 c). Over the years, there has been little change in this regard. According to the by-law of AAA, as discussed earlier, it was meant to be that way (AAA, 2000 b). The new organization for AIS educators, on the other hand, will provide a fresh and new leadership to accounting academicians and AIS practitioners, thoroughly incorporating evolution of IT into the professional growth and opportunities for all AIS educators and practitioners. For instance, the new organizations may form alliance and work closely with ISACA (2000) or any other IT-based professional organizations. In addition to ISACA, other professional organizations like IIA and Institute of Management Accountants (IMA, 2000) may also wish to join the alliance because internal auditing and practices in management accounting have become increasingly computerized and based on large-scale databases such data warehouses (David and Steinbart, 2000). They may wish to expand their practices to an increasingly sophisticated level of IS analysis, design and implementation, for instance, using data mining and intelligent agents

Table 1
Comparison of Old and New Roles of the information-age Chief Financial Officer
(Zweig, Verity, Forest, Burns, Hof and Harris,1996, p. 130))

Old Role	New Role
Bean-counter; minor player in formulating corporate strategies	Major player; involved in line activities and long-range planning
Focused on narrow treasury and accounting matters	Uses financial technologies for more challenging analytical tasks
Preoccupied with cost efficiencies	Integrally involved in boosting revenues

for auditing, control, and post-modern accounting practices.

The new organization for AIS educators may distinguish itself from AAA members from the following perspectives. The new organization strives:

- To foster worldwide excellence in the creation, dissemination, advancement and application of AIS knowledge base and expertise.
- To actively engage in teaching and mentoring the new generation of AIS faculty to thrive and succeed in both academic and real world environments.
- To facilitate an environment conducive to both IT academicians and practitioners to closely work on common issues.
- To make alliance with all IT academic organizations and business organizations to work together on the development and advancement of AIS.

As I will explore below, AIS educators cannot realize this type of mission, and shared purposes and objectives under the roof of AAA. AAA was created to serve educators in the traditional accounting, and therefore, AIS educators are not well represented in AAA's governing body in any meaningful way.

AAA's Mission, Purposes and Objectives Incongruent with AIS Educators

AAA may share with AIS educators some commonality through accounting, but has a very different mission, and purposes and objectives from AIS educators. Traditional accounting educators founded AAA. AAA states its mission on its Web site (AAA, 2000 a) as "To foster worldwide excellence in the creation, dissemination and application of accounting knowledge and skills."

The AAA Web site does not provide much information about what accounting is. However, as I examined what the purposes and objectives

of the association should be (AAA, 2000 b), it became clear that the association is to mainly support the members in the areas of financial accounting and management accounting. For instance, in the item (3) of the purposes and objectives, AAA clearly stated that one of the purposes and objectives of AAA is to "advance the development and application of accounting concepts and standards and seek their adoption for financial statements prepared for external purposes." Further, in the item (4), AAA states that another purpose and objective of the AAA is to "advance the development and uses of accounting for internal management purposes."

It appears that both items refer to the traditional financial accounting for external reporting and the management accounting for internal reporting. None of the items in AAA's purposes and objectives states anything explicitly about the advancement of information technology for purposes of improving accounting and related business practices. As of now, it is too early to conjecture what is going to be the mission of the new organization for AIS educators. However, one of the important missions of the new organization for AIS educators may be to foster worldwide excellence in the creation, dissemination and application of AIS knowledge and expertise. Since legacy accounting information systems and AIS in 21st century have overlap very little, the missions of both AAA and the new organization for AIS educators are hardly congruent to each other's mission, unless accounting educators in the legacy accounting systems abandon their legacy systems.

Traditional accounting educators are increasingly moving toward the applied discipline of financial economic in some of research universities, abandoning the accounting root of information processing. On the other hand, many progressive accounting programs across the nation are gradually moving toward their information-processing root, inviting IT colleagues into the accounting departments.

Yet, a large number of Ph.D. granting accounting programs does not produce enough Ph.D.s in AIS to support the new trend in the expanding AIS programs in many progressive accounting departments. Since AAA has lost its partnership with professional practitioners, scholars in traditional accounting dominate the governing body of AAA. As long as those scholars favoring the traditional accounting lead AAA, there will be very little room for AIS faculty members to innovate and flourish in the AAA.

In the long run, there will be an increasing schism between two groups of AIS educators and traditional accounting educators that dominate AAA. One group is the AIS educators who have been gradually upgrading their root in financial information processing, assurance services and risk management from the legacy accounting systems to modern database management systems, ERP, and e-business (Oracle, 2000; SAP, 2000). The other group is the traditional accounting educators who mistakenly believing that IT is not accounting, have been reluctant to embrace IT into their knowledge base and expertise. They forget about the humble beginning of traditional accounting rooted on a half-millennium old rudimentary form of financial information processing systems. By divorcing themselves from the traditional role of practical business application of financial information processing, the traditional accounting educators lost their home discipline, struggling at the mercy of their finance colleagues or financial economists. In the long run, these traditional accounting educators may face a decision whether they will be forced to retire or be willingly to be absorbed into a group of finance educators or financial economists, unless they proactively embrace IT and integrate it into their research and teaching activities by returning to their root and upgrading it.

Innovator's Dilemma

AIS educators are innovators, whether their original studies and degrees came from account-

ing or other disciplines. They committed to get involved in educational mission different from the traditional accounting. Just in the way Christensen (1997) eloquently described in his book about new industries forming under the noses of well-established industry giants like AT & T and IBM, many AIS educators initially started as a small group of traditional accounting educators who recognized the importance of IT in revolutionizing the traditional accounting practices, and expanded them beyond accounting, but also all related business areas. Also, another group of innovative AIS educators are those who came from disciplines other than accounting such as computer science or MIS to help build AIS in partnering with their AIS colleagues from accounting.

Honda Supercub, Intel's 8088 processor, and hydraulic excavators share one commonality. They are all examples of disruptive technologies that fostered a new business environment to redefine the competitive landscape of their respective markets. These products did not come about as the result of successful companies carrying out sound business practices in established markets.

In his seminal book, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Christensen (1997) showed with these and other products cut into the low end of the marketplace and eventually evolved to displace high-end competitors and their reigning technologies. At the heart of Christensen's *The Innovator's Dilemma* (1997) is how a successful company with established products keeps from being pushed aside by newer, cheaper products that will, over time, get better and become a serious threat.

Christensen (1997) wrote that even the best-managed companies, in spite of their attention to customers and continual investment in new technology, are susceptible to failure no matter what the industry, be it hard drives or consumer retailing. The situation is quite similar to what is

emerging among AIS educators' gatherings for these two years (AIS Educator Conference, 1999; AIS Educator Conference, 2000). AAA is a large and old organization with the glorious legacy and old culture that served the Old Economy well. So far, the organization has been dominated by its old culture and hampered by its burdensome legacy, while trying to survive in this post-modern times and also attempting to accommodate the New Economy.

In his seminal work, Christensen (1997) pointed out several implications for managing disruptive technological change. They are directly applicable to the current situation between the AAA and the new organization for AIS educators. In the following subsections, I discussed those implications.

AIS Educators in the New Organization As A Separate Group

One major concern that most accounting educators in legacy accounting systems have is whether the new AIS programs will negatively affect their already eroding enrollment in the traditional accounting classes. A large percentage of such accounting educators who do not like to be retrained for IT may not want to see their well established position eroded by the declining enrollment in their traditional courses from the newly established AIS programs. The same fear may dwell not only on the accounting educators of legacy accounting systems, but also on the leadership of AAA.

Christensen (1997) found that prudent management in industry solved this problem by either finding or developing new markets that valued the attributes of the new, innovative technology, rather than search for a technological breakthrough so that the new, innovative technological product could compete as a sustaining technology like legacy accounting systems in mainstream markets.

A good and solid AIS program explored earlier are designed for very different markets than traditional accounting programs so that rather competing with the traditional accounting programs, they will be complementary to those traditional accounting programs. Further, as the new organization for AIS educators takes a shape, it will not compete with Information Systems (IS) or Artificial Intelligence and Emerging Technologies (AI/ET) sections of AAA, because the new organization is designed for new coming generations of AIS educators whose major mission is to disseminate and advance the new discipline of AIS, than playing a secondary role in supplementing traditional accounting in AAA.

The new organization is for AIS educators who are serious about building, disseminating and advancing a new discipline of AIS. That is much analogous to those MIS educators who built a new discipline of MIS out of management and management science, creating their own organizations. As more progressive accounting programs are building and offering new, innovative AIS programs, just as Christensen (1997) found, the organizational markets for such AIS educators will be differently from traditional accounting educators, or AIS educators who are playing mainly a role of supplementing IT side to traditional accounting pedagogy. Even these AIS colleagues will eventually recognize the different role that the organization for AIS educators, compared with the role of AIS sections in AAA, and join the organization for AIS educators, as their IT knowledge base and expertise grows, becomes ripe to become a full-fledged AIS educator, or aspire to become one. Thus, the new organization for AIS educators has a mission radically different from that from AIS sections in AAA.

The new organization also opens a completely new market for new members. As more accounting programs in the nation attract Ph.D.s in computer science and MIS, they will more likely join the new organization for AIS educators than being part of AIS sections in AAA in

which the AIS educators play only a secondary role to supplement traditional accounting. One of primary purposes and objectives of the new organization for AIS educators will be to foster an environment for IT educators and practitioners to learn from each other, and expand the frontiers of AIS in which traditional accounting may play an incredible small role.

Furthermore, alliances with various other academic and business IT organizations will bring new members to the new organization for AIS educators, because the organization is for IT educators and professionals, not for educators in traditional accounting whose research activities are recognized for innovation and being relevant to business professionals. For example, very few business professionals, not to mention even traditional accounting educators, read the scholarly articles in the *Accounting Review*. On the other hand, the majority of articles in the *Review of Accounting Information Systems* can be used in both undergraduate and graduate AIS, accounting or other business classes, and easily understandable by both business educators and practicing AIS professionals. The articles in the *Review of Accounting Information Systems* are well written for the benefits of readers' comprehension and add value to both AIS and business educators, and practicing IT professionals. On the other hand, the contribution to business community from the most articles in the *Accounting Review* is at best suspect, or hardly worthwhile. In sum, the new organization for AIS educators is in a market different from existing AIS groups in AAA. And both groups play a complementary role to each other, rather than competing.

Expanding Membership

In regard to the thought on the possible splitting of members of IT academicians among three groups such as AAA IS, AAA AI/ET and now this new organization for AIS educators, so that each group may end up having smaller members, as Christensen (1997) implied, and

discussed in the previous subsection, the markets for membership in AIS sections and the new organization for AIS educators are different.

Those members in AIS sections are serving the main mission of AAA for the purposes of traditional accounting, in which AIS plays a marginal role, as evidenced by non-existing AIS publications in AAA's primary journal and governing body of AAA. On the other hand, the members in the new organization come to create a new discipline of AIS. One of their main may be to disseminate and advance AIS for world excellence. As the IT advances, and many business schools offer AIS programs as an independent concentration or major, the new organization for AIS educators will be in a far better position to serve the prospective mission aforementioned for AIS educators than AAA.

As mentioned earlier, AIS sections in AAA are suited for members for teaching and researching AIS for supplementing traditional accounting. On the other hand, the new organization for AIS educators are mainly for those who plan to devote to create a new discipline of AIS, to educate new AIS faculty members, and to learn and research AIS in closely working with industry practitioners.

The creation of a new organization such as AISEA may provide new challenges and competition to the existing AIS groups in AAA, and the leaders of such groups will have to work hard to attract quality members to their groups. They serve very different needs for AIS educators' professional growth. And each group serves the different needs of diverse professional niches, each of which is rapidly expanding to serve a different market niche. For instance, there are many different academic organizations in computer science and computer engineering. They include ACM (2000), AIS (2000), DSI (2000), and Institute of Electrical and Electronic Engineers, Inc. (IEEE, 2000).

Information Asymmetry

Krishnaswami and Subramaniam (1999) found that the firms that engage in spin-offs have higher levels of information asymmetry compared to their industry and the information asymmetry problems decrease significantly after the spin-off. As explored earlier, the different speed of advancing AIS and traditional accounting brings information asymmetry between two groups of educators in terms of ever increasing knowledge and expertise for AIS educators, and relative stable and slowly changing body of knowledge base for traditional accounting educators.

This creates misunderstanding and miscommunication between two groups, resulting in creation of information asymmetry between two groups. By creating its own organization, AIS educators will help AAA mitigate its information asymmetry problems. Thus, if any AIS educators are serious about their professional growth, the new organization will be a home for AIS educators who sole mission is for the benefits of AIS educators. By joining the new organization, the AIS educators are indirectly helping to solve AAA's information asymmetry and disharmony problems by mitigating them.

Dominance of Old Culture

The question is whether to survive under the roof of the old, big and slow organization, or to start a fresh and new organization that fits well with the post-modern times like 21st century. What Christensen (1997) found from his research was that the old culture and legacy in the old and big company dominated the new and flesh ideas in a small division, even though the old company had gone to create such a small division to accommodate the new ideas. And eventually, the small division ended up losing itself, because the top management in the old organization did not take the ownership of the new ideas. There were several well-known such failures: eventual failures in PC business by both

two icons of American businesses: A T & T and IBM. They eventually abandoned the PC businesses. The big and slow companies were not evolving fast enough to compete with the nimble, fast and efficient competitors like Compaq, and later Dell. The old companies worked hard. But that was not good enough to survive in this new information age. They did not have the wisdom to spin out the new ideas to a new company far away from the old company.

Our AIS sections in AAA are like small divisions in AT & T or IBM trying to find their places in AAA. Once again, the old culture and legacy from the traditional accounting have been dominating AAA, including for both AIS sections. For instance, the primary journal of AAA, the *Accounting Review*, does not have any recognized AIS researchers in the journal's editorial advisory and review board in the July 2000 issue of the journal. And none of the articles in the journal is IT related. Furthermore, there are no recognized AIS educators in the leadership positions of AAA.

That fact may be contrasted with MIS educators. They have their own journals that have complete independence from the journals in their counterparts in the disciplines of management or management science. The dominance of old culture from traditional accounting in AAA has not permitted AIS scholars' work to be published in AAA's primary journal.

In the long run, as more and more quality members from both AIS and other IT disciplines join the new organization for AIS educators, the quantity and quality of publication submissions will increase. As a result, the organization may need more than one AIS journal. In both quantity and quality, the AIS journals will attract increasing attention from all scholars in IT disciplines, and command high respect in the community of all IT educators.

The creation of a new organization for AIS educators will also provide a forum for many

more exciting opportunities for teaching and research in AIS, neither hampered by the shadow of AAA nor dominated by the old cultural influence of educators in the old legacy accounting systems. As more quality AIS educators and researchers from all IT disciplines join the new organization for AIS educators' organization, the quality of the works in the AIS journals will gradually increase and more prestige will follow. In the end, different standards will emerge, not dictated by the members of the editorial boards of the *Accounting Review* or similar groups, but by those who truly understand what it means to be post-modern businesses, new business models, and forthcoming IT yet to come.

New Governing Structure

Christensen (1997) found that a new governing structure for a new independent organization fostered creative environments for competing aggressively in an innovatively technological industry. The new organization for AIS educators will have their own board of directors whose main objectives will be to foster such a progressive and proactive environment for AIS educators, not encumbered by educators in traditional accounting who have a mission different from AIS educators.

Resource Dependence

What Christensen (1997) found from his study of disruptive technology was that current customers effectively control the patterns of resource allocation of well-run companies. The situation is quite similar to most traditional accounting programs. Most traditional accounting programs have catered to their existing recruiting firms, not venturing into the new growing area. The old recruiters for accounting graduates trained for the legacy accounting systems have been kept coming back for the same type of students, because those students are still needed for a market, although the market is rapidly is shrinking with weak compensation. Since high quality students have been getting out of legacy

accounting systems markets, recruiters for accounting graduates trained for traditional accounting have been facing the shrinking pool of high quality students. Yet, those recruiters have been choking the resources that could have been allocated to creating of new AIS programs for the increase in student enrollment for high quality students.

Progressive accounting programs across the nation, however, have responded to these market changes, proactively, creating new AIS programs, just in the way that competent management proactively responded to the market changes (Christensen, 1997). Proper resources were allocated and conducive culture was formed to encourage and invite IT colleagues to create new AIS programs along with their traditional accounting programs in which IT is wonderfully integrated into their traditional accounting programs.

A Small, Niche Market At the Beginning

Traditional accounting educators in large legacy accounting programs may believe that at the inception of AIS programs, AIS markets are too small to place all of their traditional accounting graduates. Prudent management in industry positively solved this potential problem by spinning off an independent organization small enough to get excited about small opportunities and small wins (Christensen, 1997).

Creating a new organization for AIS educators with their own governing structure is similar to this situation. Mature leadership in AAA may fully support the creation of the new organization for AIS educators with financial resources. Christensen (1997) noted that established firms that successfully built a strong market position in a disruptive technology were those that spun off from the mainstream companies an independent, autonomously operated organization. Neither current IS section or AI/ET section in AAA has such an independent and autonomous governing structure or independence from AAA. For ex-

ample, members in both sections do not have any independence from AAA on financial matters or journal selection for their annual membership. Those decisions are made for the benefits of traditional accounting educators. To be a member of AAA, for example, AIS members have choice(s) to subscribe the *Accounting Review*, *Issues in Accounting Education*, and/or *Accounting Horizons* that are primarily publication outlets for traditional accounting educators, not for AIS educators.

With its own governing body, the new organization for AIS educators will initially start with a small size. Yet, in the long run, as Christensen (1997) observed in disk drive and other innovative industries, the niche markets like AIS or MIS educators will become a dominant one.

Uncertain But Promising Future

Christensen (1997) observed that there is uncertain future for new, innovative technology. He also observed that good management in industry planned to fail early and inexpensively in the search for the market for an innovative technology. And the management found that their markets generally coalesced through an iterative process of trial, learning and trial again. That was what progressive accounting firms like Big Five did, while many accounting programs have been waiting for the future to become certain. Even now, when IT becomes every facet of financial information processing, accounting educators in legacy accounting systems are still waiting for the future to settle, while they keep losing their high quality students to IT areas.

Comparing two groups of spin-off and non-spin-off firms, Dahlstrand (1997), however, found that, after an initial ten-year period, the spin-offs were growing significantly faster than the non-spin-offs. Among the major reasons for entrepreneurial spin-offs (ESO), the major reason was the ESO founder's idea not utilized by previous employer. Once again, Dahlstrand's findings support the idea that the new organiza-

tion for AIS educators will grow faster in the long run than those counterparts in AAA. One major driving force behind the growth of the new organization for AIS educators would come from empowerment of AIS educators' decision-making processes in deciding of their own destiny, instead of relying on AAA's governing body in which AIS educators have been marginalized in its decision-making processes.

Conclusion

In this paper, I defined AIS an enabling technology that drives the reengineering of traditional accounting, not as a mere assistant to traditional accounting. That is consistent with the role that IT played during the latter part of 20th century, and it will continuously play in the 21st century as an enabling technology.

Once the AIS was defined, I compared the mission of traditional accounting educators reflected as the mission statement of AAA with that of AIS educators to be reflected in the future mission statement for the newly created organization for AAA. While comparing those two missions from two groups, I demonstrated that both groups have distinctly different missions. As the differences of the missions are well established, I used Christensen's findings (1997) and findings from similar studies to illustrate what is the best course action for AIS educators on their decision on creating the new organization.

In the future, I believe that all three groups of AAA IS, AAA AI/ET AAA, and the new organization for AIS educators will work together, complementing each other. However if there is one distinguishing difference between this new organization and the other two AIS groups, that is, the new organization for AIS educators will determine its own future, not hampered by the shadow of the old legacy, whereas the future of AIS groups in AAA will be decided by traditional accounting educators whose conceptualization of accounting information processing was rooted and formed in the old days of double en-

try bookkeeping that uses the method of paper documentation.

Christensen (1997) correctly pointed out that a large percentage of failures of small divisions for new ideas in large and monolithic corporations were primarily caused by the old management, which imposed its dying culture and legacy upon the new sprouts of thinking and ideas. A similar inference can be made here between abandoning AAA and one of reasons for creating the new organization for AIS educators.

Within decades, however, thanks to the forthcoming advancements of information technology (Kurzweil, 2000; Kurzweil, 1999, and Williams, 2000), the relationship between AAA and the new organization for AIS educators will drastically change. More and more younger generations will come to the business world with more solid backgrounds and experiences in IT than even current generation of college students. Computers will be more natural to them than now, as cell-phones, Internet and World Wide Web are to them, as of now. Then, they will need a new place to stay, when those X, Y and Z generations come to academia. And their students will also need a new place to look for leadership from academia. The new organization for AIS educators will provide such leadership to the forthcoming young generations, because they are in tune with computers, IT and young generations who grew up with computers and IT.

Many old traditional accounting academicians have built their entire career working on old legacy accounting systems. Throwing away their old conceptualization of accounting and rebuilding the AIS in their knowledge base with new and advancing IT developments may appear to the traditional accounting educator as if they were demolishing their career and professional life. It will be also extremely difficult and challenging for the traditional accounting educators to unlearn their conceptualization of accounting information professing based on the old accounting technology. Thus, changes in AAA will be

very slow as usual, just like old lumbering gigantic business corporations, as illustrated by Christensen (1997). At least, for those giants, stockholders and investors will watch over their management's moribund behavior. However, the leadership in AAA has a short life and even that is circulated among those exclusive groups of academicians who think like. The changes in AAA will come more slowly than most AIS educators can ever imagine. Therefore, the new organization for AIS educators is not only for us, but also for our future young generation of AIS academicians, practitioners and students.

Suggestions for Future Research

As we observe organizational behavior, we may find that an organization and its members have a higher survival rate when the organization has clear goals and mission, and members in the organization devote to the goals and missions of the organization. In this paper, I examined the issue of whether AIS educators should have an organization independent of AAA that have these conflicting goals, missions, purposes and objectives conflicting with those of AIS educators. In a human organization, humans have a free will. The organizational goals and mission often have a conflict with an individual's goal and mission in his life. Furthermore, the free will dictates the direction of individuals' behavior in a self-interest maximizing way. From this angle, future researchers may further examine how innovative technology like IT affects such organizational behavior and creation of a new organization like an entrepreneurial spin-off in non-profit sectors like universities.

Another interesting line of promising research activities is to explore various alternative designs and implementation of financial disclosure structures in this New Economy. Cushing's work (1989) is noble. The work may need to be extended by considering many new innovations in IT since the paper was published. Currently, AICPA and many other important industry leaders have been working on Extensible Business

Reporting Language (XBRL) and XBRL framework (XBRL, 2000) that show promises for disclosing financial information in radically different ways described earlier using intelligent query formats or other types of retrieval formats. Also, various World Wide Web standard setting bodies like Object Management Group (Orfali and Harkey, 1998) are working on various Internet networking standards like Common Object Request Broker Architecture (CORBA). CORBA (Orfali and Harkey, 1998) and similar standards along with XBRL and intelligent agent technology may provide implementation tools for AIS researchers to design and propose new institutional structure for intelligent financial disclosure, query and reporting.

As of now, traditional accounting educators do not have much choice but keeping using the legacy accounting systems. Once the legacy accounting systems are removed from the traditional accounting texts, what is left is financial economics in a discrete case. Except for traditional accounting educators in several research universities, traditional accounting educators in general may not be interested in teaching financial economics in traditional accounting classes. Thus, there are opportunities for AIS educators to write research papers and texts to educate traditional accounting educators, and allow them to teach accounting in a new way based on IT foundation. For instance, there may be a demand in research papers and texts in financial accounting information systems and management accounting information systems based IT concepts and practices that employ database management systems, ERP and e-business enterprise application integration. In the long run, financial accounting information systems may replace the traditional financial accounting courses. And management accounting information systems may replace the traditional cost accounting and management accounting courses. ☐

Readers with comments or questions are encouraged to contact the author via email.

References

1. Accounting Information Systems Educator Conference, Denver, Colorado, July 31 – August 2, 2000, Available online: <http://www.ais-educ.com/> (Accessed September 20, 2000).
2. Accounting Information Systems Educator Conference, Denver, Colorado, August 1 – August 2, 1999.
3. Albrecht, W. Steve, and Robert J. Sack, *Accounting education: charting the course through a perilous future*, Accounting Education Series, Vol. No. 6, American Accounting Association, Sarasota, Florida, 2000.
4. American Accounting Association, “Mission and Shared Values,” Available online: <http://www.rutgers.edu/Accounting/raw/aaa/about/mission.htm> (Accessed September 20, 2000 a).
5. American Accounting Association, “By-law,” Available online: <http://www.rutgers.edu/Accounting/raw/aaa/about/bylaws.htm#II> (Accessed September 20, 2000 b).
6. American Accounting Association, “About AAA” Available online: <http://www.rutgers.edu/Accounting/raw/aaa/about.htm> (Accessed September 21, 2000 c).
7. American Institute of Certified Public Accountants, Center for Certified Information Technology Professionals, Available online: <http://www.aicpa.org/citp/> (Accessed September 20, 2000).
8. Association of Chartered Accountants in the United States, “Italian Renaissance: Birth of Double Entry,” Available online: http://www.acaus.org/history/hs_anc.html (Accessed September 20, 2000 a).
9. Association of Chartered Accountants in the United States, “Luca Pacioli And The Summa,” Available online: http://www.acaus.org/history/hs_anc.html (Accessed September 20, 2000 b).
10. Association of Chartered Accountants in the United States, “Pacioli's System: Memorandum, Journal and Ledger,” Available

- online: http://www.acaus.org/history/hs_anc.html (Accessed September 20, 2000 c).
11. Association of Chartered Accountants in the United States, "Significance of the Summa," Available online: http://www.acaus.org/history/hs_anc.html (Accessed September 20, 2000 d).
 12. Association for Computing Machinery, Available online: <http://www.acm.org/> (Accessed September 20, 2000).
 13. Association of Information Systems, Available online: <http://www.aisnet.org/> (Accessed September 20, 2000).
 14. Christensen, Clayton M., *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business Press, Boston, 1997.
 15. Cushing, Barry E., "On the Feasibility and the Consequences of a Database Approach to Corporate Financial Reporting," *Journal of Information Systems*, spring, 1989, pp. 29-52.
 16. David, Julie Smith and Paul John Steinbart, *Data Warehousing and Data Mining: Opportunities for Internal Auditors*, Institute of Internal auditors research foundation, 2000.
 17. Decision Sciences Institute, Available online: <http://dsi.gsu.edu/> (Accessed September 20, 2000).
 18. International Conference on Information Systems, Available online: <http://www.sims.monash.edu.au/icis2000/frameset.html> (Accessed September 20, 2000).
 19. Hammer, Michael, and James Champy, *Re-engineering the Corporation: A Manifest for Business Revolution*, HarperBusiness, 1993.
 20. Harris, Walter T., Jr., and Charles T. Horngren, *Financial Accounting*, Third Edition, Prentice Hall, Upper Saddle River, New Jersey, 1998.
 21. Information Systems Audit and Control Association, *Control objectives for information and related technology*, Available online: <http://www.isaca.org/cobit.htm>. (Accessed September 20, 2000).
 22. Institute of Electrical and Electronics Engineers, Inc., Available online: <http://iee.org/> (Accessed September 21, 2000).
 23. Institute of Internal Auditors, "Critical Infrastructure Assurance Conference Series," Available online: http://www3.theiia.org/iia/conferences.cfm?doc_id=888 (Accessed September 20, 2000).
 24. Institute of Management Accountants, Available online: <http://www.imanet.org/> (Accessed September 20, 2000).
 25. Kieso, Donald E., and Jerry J. Weygandt, *Intermediate Accounting*, Ninth Edition, John Wiley & Sons, Inc., New York, 1998.
 26. Kurzweil, Ray, "Dear PC: R.I.P.," *Business 2.0*, September 26, 2000, pp. 162-166.
 27. Kurzweil, Ray, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*, Viking, 1999.
 28. McNamee, Mike, Paula Dwyer, Christopher H. Schmitt and Louis Lavelle, "Accounting Wars," *Business Week*, September 25, 2000, pp. 156-166.
 29. Needles, Belverd E., Jr., and Marian Powers, *Financial Accounting*, Sixth Edition, Houghton Mifflin Company, New York, 1998.
 30. Oracle, "Oracle Applications Release 11i," Available online: <http://www.oracle.com/oramag/oracle/00-Jan/10store.html#11i> (Accessed September 21, 2000).
 31. Orfali, Robert and Dan Harkey, *Client/Server Programming with Java and CORBA*, Second Edition, Wiley Computing Publishing, New York, 1998.
 32. SAP, "E-Business Solutions," Available online: <http://www.mysap.com/> (Accessed September 21, 2000).
 33. Taggart, Herbert F., *Paton on Accounting: Selected Writing of W. A. Paton*, Bureau of Business Research, Graduate School of Business Administration, The University of Michigan, 1964.
 34. Taylor Research & Consulting Group, Inc., *Student & Academic Research Study: Final Quantitative Report*, commissioned by AICPA, July 2000.

35. Williams, R. Stanley, "You Ain't Seen Nothin' Yet," *Business 2.0*, September 26, 2000, pp. 166-168.
36. Extensible Business Reporting Language, Available online: <http://www.xbrl.org/> (Accessed September 21, 2000).
37. Zweig, Phillip L., John Verity, Stephanie Anderson Forrest, Greg Burns, Rob Hof and Nicole Harris, "Beyond Bean-Counting," *Business Week*, October 28, 1996, pp. 130-132.

Notes