Standardization Online Accounting System Based on Information Technology

Fadjar O.P. Siahaan
Expert Staff in Indonesian Supreme Audit Institution
Kebangsaan University Bandung

Abstract

Technology is a common thing that people used for various purposes. With the development of technology, the utilization also can be developed. One of the technology is the information technology (IT). Interaction of the world of work can be unlimited to place of work. With the information technology that utilizes the Internet can allow users to access the required work even though the user is not at the office. The evolution of IT has fundamentally changed the way accountants perform their jobs. In the simplest form, the automation of accounting system enabled accountants to generate annual reports in a more timely and accurate basis. Accounting systems based on IT play an important and active role in improving the efficiency and effectiveness of institutional performance. The adoption of information technology has increased in various accounting fields. This paper shed light the effect of IT on accounting, then propose standardized online accounting method based on IT system

Keywords: Information technology, Accounting, standardization.

Introduction

Information Technology (IT) is a powerful tool that can play a big part in making an organization's business a successful one. IT is widely used to share information and coordinate business resources such as physical resources, managerial expertise, technical knowledge and market information across multiple markets (Clemons et al., 1993; Gurbaxani and Whang,1991). Firms invest in IT such as computers and telecommunications technologies in order to improve their economic performance. IT can improve information sharing, decision-making, coordination, product quality, responsiveness, and distribution (Malone et al., 1987, 1989; Gurbaxani&Whang, 1991; Brynjolfsson, 1993; Brynjolfsson&Hitt, 1996).

IT have radically transformed the nature of business and accounting practice (Hunton, 2002). Application of IT in accounting fields is to provide some IT relevance to improve the efficiency of decision-makers and to facilitate the accounting information accurate and error-free. Nowadays, the application of IT in accounting has become all pervasive even to the smallest businesses (Ismail & King, 2005). The IT based accounting intends to provide information and insight to internal and external users to make decision. Application of IT in accounting depends on individual organizations' vision and appropriate system or technology acquired. If the need for strong and structured technology is not installed, an organization can waste its capital investment on technology. As such, application of IT in accounting would result in benefits to the organization depending on the technology applied.

There is a myriad of studies undertaken by researchers in order to investigate the effect of information technology on accounting information. El Louadi (1998) confirmed that organizational IT sophistication has a direct effect on the amount of external and internal information provided. Ismail and King (2007) found a significant relationship between IT sophistication and AIS alignment. More recently, Moghaddam et al. (2012) found that with the use of IT the accuracy of accounting process become higher than before.

Information Technology

Definition of Information Technology

Information Technology (IT) is a generic term that covers the acquisition, processing, storage and dissemination of information. It involves the application of computers and communication technology in the task of information handling and information flow from the generation to the utilization levels. IT consists of all the hardware and software that a firm needs to use in order to achieve its business objectives (Laudon and Laudon, 2010). IT refers to the hardware and software used in computerized information systems (Bawaneh, 2011).

Components of Information Technology

There are two basic categories of technology: hardware and software (Haag et al.,2005). Hardware consists of the physical devices that make up a computer (often referred to as computer system). Software is the set of instructions that your hardware executes to carry out a specific task.

(a) Technology Hardware

Hardware can be classified in six categories as follows:

1. Input device – tool you use to enter information and commands. Input devices include such tools as a keyboard, mouse, touch screen, game controller, and bar code reader.
2. Output device – tool you use to see, hear, or otherwise recognize the results of your information-processing requests. Output devices include such tools as a printer, monitor, and set of speakers.
3. Storage device – tool you use to store information for use at a later time. Storage devices include such tools as a hard disk, flash memory card, and digital optical disc (DVD).
4. Central processing unit (CPU) – the hardware that interprets and excutes the system and application software instructions and coordinates the opration of all the hardware. Popular personal CPUs include the Intel Pentium Xeon product lines and the AMD Athlon series. RAM, or random acces memory, is a temporary holding area for the information you are working with as well as the system and application software instructions that the CPU currently needs. Together, the CPU and RAM make up the brains of your computer.
5. Telecommunications device – tool you use to send information to and receive it from another person or computer in a network. For example, if you connect to the Internet using a modem, the modem (which could be a telephone, digital subscriber line (DSL), cable, wireless, or satellite modem) is a telex communications device.
6. Connecting hardware – includes such things as parallel ports into which you would connect a printer, connector cables to connect your printer to the parallel port, and internal connecting devices that mainly include buses over which information travels from one piece of hardware to another.

(b) Technology Software

Software is a program consists of the step-by-step instructions that tell the computer how to do its work. There are two main types of software: application and system. Application software is the software that enables you to solve specific problems or perform specific tasks. Microsoft Word, example, can help you write term papers, so it is application software. From an organizational perspective, payroll software, collaborative software such as video conferencing, and inventory management software are all examples of application software.

System software handles tasks specific to technology management and coordinates the interaction of all technology devices. Within system software, you will find operating system software and utility software. Operating system software is system software that controls your application software and manages how your hardware devices work together. Popular operating systems include Microsoft Windows, Mac OS, Linux (an open-source operating system), and Unix.System software enables the application software to interact with the computer hardware. System software is "background" software that helps the computer manage its own internal resources. System software is not a single program, rather it is a collection of programs:

- **a.** Operating systems are programs that coordinate computer resources, provide an interface between users and the computer, and run applications. Windows XP and the Mac OS X are two of the bestknown operating systems for today's microcomputer users.
- **b.** Utilities, also known as service programs, perform specific tasks related to managing computer resources. For example, the Windows utility called Disk Defragmenter locates and eliminates unnecessary file fragments and rearranges files and unused disk space to optimize computer operations.
- **c.** Device drivers are specialized programs designed to allow particular input or output devices to communicate with the rest of the computer system.

The Effect of Information Technology on Accounting

The effect of information technology on accounting is well known. The business press frequently reports the many ways in which IT is profoundly changing the way that accounting and many other business activities are performed (Bawaneh, 2011). The information age and the IT that created it, are influencing all areas of accounting, including financial and managerial accounting, auditing, and taxation.

a. The Impact of IT on Financial Accounting

Corporations today need accounting systems that provide accurate and reliable information, adhere to the highest standards of transparency and controls, fulfill varied legal and management reporting requirements. In order to achieve a competitive advantage, companies must continue to lower the cost of doing business. One way that many companies are making this happen is by standardizing and centralizing administrative processes. IT offers support for these initiatives by formalizing the generation of global accounting entries into centralized accounting rules. Traditional AIS tended to mirror historically developed manual accounting processes (Mauldin &Ruchala, 1999). Therefore, it was unable to adapt to change, to support critical business processes and models, and to satisfy users' information requirements, which are constantly changing over time (Paul, 1994). Modern AIS, however, can generate various types of information including accounting and non-accounting information to assist management manages short-term problems and integrates operational considerations within long term strategic plans (Mitchell, Reid, & Smith, 2000).

b. The Impact of IT on Management Accounting

Management accounting plays a major role in planning and decision-making functions in the management process. The traditional role of accountant was mainly to involve in budgeting and reporting for the organization. Application of IT in management accounting has changed the perspective of traditional management accounting. The primary changes include the change of financial structures as a result of the effect of developing technologies upon the production systems and consequently, the change of financial systems. Especially, the changes which have occurred in information technologies (IT) within the last twenty years, have significantly decreased the costs of information collecting and processing. The IT is changing management accounting system to become integrated with standardization &routinization, localized and disseminated in an organization (Granlund, 2007).

Another effect is that integrated systems such as enterprise resource planning (ERP) affect managerial accounting applications. ERP systems have radically changed the nature of managerial accounting. The need for employed managerial accountants has dramatically decreased together with collecting and processing the data and preparing the reports with the automation and regression structure, which constitutes the ERP systems. Managerial accounting is also developing new costing approaches such as activity based costing (ABC) systems, new performance measurement approaches such as the balanced scorecard (Kaplan & Norton, 2001).Caglio (2003) indicates that ERP systems provide standardization in managerial accounting applications. Hyvönen (2003) determined that ERP systems increase the use of advanced managerial accounting techniques, such as ABC and Balanced Scorecard. Scapens and Jazayeri (2003) stated that the ERP system causes a change in managerial accounting practices, in terms of providing global information flow and standardization, and that conventional managerial accounting procedures are eliminated after ERP.

c. The Impact of IT on Auditing

The impact of technology on auditing has been profound. Independent auditors, also known as certified public accountants (CPAs), conduct audit work to ascertain whether the overall financial statements of a company are, in all material respects, in conformity with the generally accepted accounting principles (GAAP) (Konrath, 2002). Financial statements include Balance Sheets, Profit and Loss Statements, Statements of Cash Flow and Statements of Retained Earning. Generally speaking, what auditors do is to apply relevant audit procedures, in accordance with GAAP, in the examination of the underlying records of a business, in order to provide a basis for issuing a report as an attestation of that company's financial statements. Such written report is called auditor's opinion or auditor's report. Auditor's report expresses the opinion of an independent expert regarding the degree of reliability upon of the information presented in the financial statements. In other words, auditor's report assures the financial statements users, which normally are external parties such as shareholders, investors, creditors and financial institutions, of the reliability of financial statements, which are prepared by the management of the company.

While the use of IT in the business world has grown exponentially in the past two decades, the extent to which auditors have adopted IT such as computer assisted auditing techniques to meet this growth remains an empirical question (Arnold and Sutton, 1998; Curtis and Payne, 2008; Janvrin et al., 2009).

The computerized assisted auditing is computer tools that extract and analyze data from computer applications (Braun and Davis, 2003). Technology permit auditors to increase their productivity as well as that of the audit function (Zhao et al., 2004). For example, computerized assisted auditing can automate previously manual audit tests reducing total audit hours expended. They enable auditors to test 100 percent of the population rather than a sample, thereby increasing the reliability of conclusions based on that test (AICPA, 2001; Curtis and Payne, 2008). In addition, the computerized assisted auditing may be used to select sample transactions meeting specific criteria, sort transactions with specific characteristics, obtain evidence about control effectiveness, and evaluate inventory existence and completeness (AICPA, 2006).

d. The Impact of IT on Taxation

The rapidly increasing pace of technological change will also have a significant impact, positive and negative, direct and indirect, on tax administrations (Alink and Kommer, 2011). the availability of tax software and extensive tax databases influences both tax preparation and tax planning. Most people associate information technology with the efficiency benefits of the increased use of electronic processing by taxpayers and other agents to prepare tax returns and transmit them to the tax authority, and faster and more accurate processing by the tax authority. Advances in technology will clearly change the tax environment. Technology will provide additional tools to tax administrators to observe and monitor individuals and transactions (e.g., it is likely that many capital goods such as cars, heavy machinery, or even televisions will have identification and tracking tags included as part of the manufacturing process.) This combination will provide an opportunity for countries to make tax policy changes both as to the relative role of different taxes in financing government, and as to the design of specific tax instruments.

Standardization Online Accounting System Based on Information Technology

By utilizing the development of information technology, it can be created of a standardized accounting system that makes workers and other interested parties can access data from within the office and outside the office. Workers can do their job inside and outside the company's building. Government can have privilege access to specific data that allowed to access inside the company's building. Server will be maintained and managed by an administrator chosen by company. All data will be accessed and stored to a database.

Advantages of Standardization of Online Accounting System Based on IT

The business environment is becoming more technologically focused. Current business processes rely heavily on information systems within industries. Complexity and the increasing numbers of information systems force companies to establish processes to perform business functions on information systems and operate in a more controlled environment. The IT systems and software applications used by various users and made by different vendors must be able to communicate so that usable data can be exchanged accurately, effectively, and consistently. Standardization of hardware, software and data is often to be beneficial for an organization. Standardization promote universality by making it easy to communicate all kind of hardware and software of different sources. The advantages of standardization of online accounting system based on IT are as follows:

a. To fulfill the information needs of multi users

With integration of IT in accounting systems, users of accounting systems can access accounting information easily through the systems. Users of accounting systems can be divided into two major categories, external users and internal users. These two user groups do not have the same information needs because of their different relationships to the company providing the economic information. External users are actual or potential investors (stockholders and bondholders) and creditors (such as suppliers and lending institutions). There are also other external users, such as employees, financial analysts, advisers, brokers, underwriters, stock exchanges, taxing and regulatory authorities, labor unions, and the general public. Investors have a direct relationship with the company. Investors use accounting information to make decisions related to buying and selling the company's stock (shares of ownership). Creditors, such as suppliers and lending institutions, also have a direct relationship with companies. Although creditors do not purchase securities, they make similar decisions that require accounting information. The decisions in this case are to extend credit, to maintain the credit relationship, or not to extend credit. Other users use accounting information in their decision making.

For instance, stock exchanges use accounting information for listings, cancellations, and rule- making decisions. Labor unions use accounting information in negotiating wage agreements. Financial analysts use accounting information for making investment and credit recommendations. Customers who purchase from the enterprise need information to allow them to assess the quality of the products they buy and the faithfulness of the enterprise in fulfilling warranty obligations. Governing bodies of the state, especially the tax authorities, are interested in an entity's financial information for taxation and regulatory purposes. Taxes are computed based on the results of operations and other tax bases. In general, the state would like to know how much the taxpayer is making to determine the tax due thereon. Another Governmental agencies such as the Trade Commission may have an interest in whether the enterprise meets certain governmental regulations that apply. The general public may be interested in the extent to which the reporting enterprise is socially responsible (for example, does not pollute the environment).

Internal users are the company managers who plan and control its operations on a day by day and a long term basis. Internal users may request any information that the accounting system is capable of providing to help them make decisions on internal operations. For example, internal users may ask for information relating specifically to the purchase of new equipment or the addition of a new product. Employees are interested in the company's profitability and stability. They are after the ability of the company to pay salaries and provide employee benefits. They may also be interested in the company's financial position and performance to assess the possibility of company expansion and career opportunities.

b. Good Governance

Advances in online accounting systems based on IT offer potentially beneficial effects on governance. The systems promote good governance in three basic ways: (1) by increasing transparency, information, and accountability; (2) by facilitating accurate decision-making and stakeholders participation; and (3) by enhancing the efficient delivery of public goods and services.

c. Better Cooperation

Any thing is always linked to certain environment, exists and develops third-party logistics enterprises in the supply chain linking play a role of a bridge. Although the third-party logistics business as a separate entity exist in the market, it and other enterprises still have to maintain a close relationship (Salehi et al., 2010). Online accounting systems based on IT represents the eyes and the ears (sometimes even a part of the brain) of the supply chain management, gathering and analyzing the necessary information in order to take a good decision. A good on line accounting systems allows users not only to obtain data from the supply chain but also to analyze the decisions which maximize the profitability of the supply chain.

Components of Standardized Accounting System Based on IT

Based on the explanation above, the online accounting system based on IT can be presented as follows:

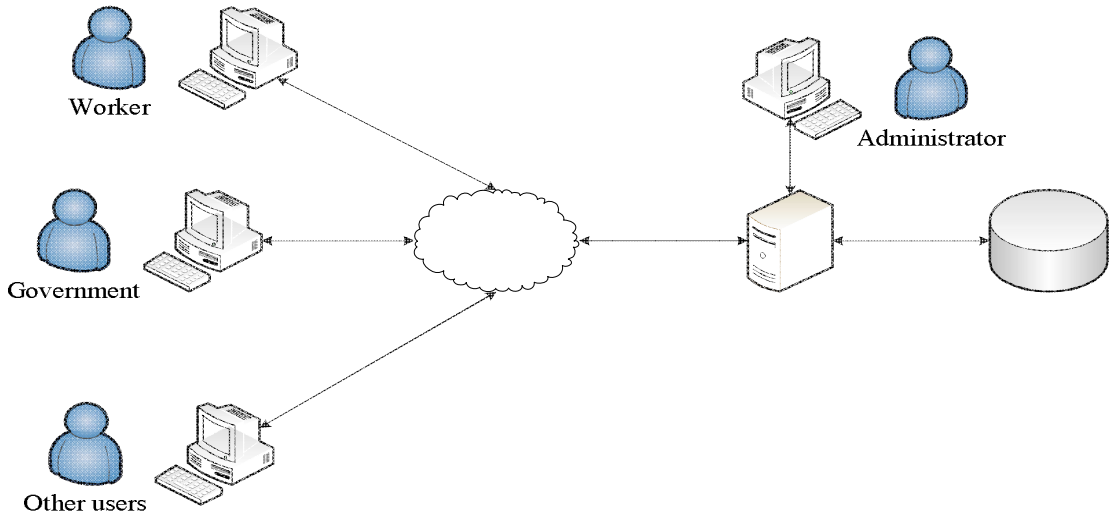

Figure 1: Online Accounting Information System Based on IT

There are attributes that are involved on this architecture design (Yadav et al., 2009). Hardware, Software and Middleware or Network. The requirement of these attributes will be described as follows

Hardware Requirements

To make the information system architecture as described above, the required hardware is needed as follows:

1. Server (for serving clients / users request)
   The term server refers to both the software application and the physical computer on which the network software runs. The server is designed to process requests and deliver data to other computers over a local network or the Internet.
2. Database (for storing data from server)
   A database is an organized collection of interrelated data reflecting a major aspect of a firm's activities. Examples include customer and inventory databases.
3. Required hardware for Networking i.e. : Router, Switch, etc (for connecting users to server)
4. Computer (for input and output data)

Software Requirements

To make the information system architecture as described above, the required software is needed as follows:

1. Software at least can work in the designed network architecture
2. Software at least can do function such as input and output.
3. Software can process data as needed.

Network Requirements

To make the information system architecture as described above, the required network is needed as follows:

1. Network can be established by cable or wireless.
2. Network at least can connect user inside building to server (Intranet). So users inside building can connect to server even without internet connection
3. Network at least connected to internet. The internet allows companies to exchange information and data with partners in a much quicker and/or more convenient way than the traditional media (Kettinger and Grover 1997; Bird 2000). Furthermore, the internet communication enables one company to customize the information that it provides to its specific partners. Thus, the partners can obtain as much relevant information as they desire from the company's computer systems through the internet.

Identification of Actors

According to system information architecture that already been explained, there are some actors involved that will be explained as follows:

Table 1: Identification of Actors

Name	**Description**
Users	Users are persons who interact with the system, as described above that the users of accounting systems consist of internal and external users.
Administrator	Administrator is the person in Client/Server environment, who understands the availability of resources desired by client. A server administrator or systems administrator works with computer networks and ensures that they run efficiently by maintaining software updates, designing and implementing new system structures, monitoring server activity and auditing server security. The Server Administrator will apply proven communication, analytical, and problem-solving skills to help identify, communicate, and resolve issues in order to maximize the benefit of IT systems investments.

Conclusion

The ongoing IT revolution has numerous impacts on accounting fields. Applying IT in accounting is in optimistic direction by the management in which they can benefit in terms of advantages provided by the technology. The integration of IT in accounting systems offers unparalleled visibility into enterprise wide accounting information.

IT addresses the concurrent needs for more complex accounting processes with diverse accounting needs. Standardization online accounting system based on information technology enables a company to meet the needs of the multiple users of accounting information requirements and to access better information and provide better reporting.

References

Alink, M and V. Van Kommer, 2011, *Handbook of Tax Administration*, 2011, IBFD

American Institute of Certified Public Accountants (AICPA). 2001. *The Effect of Information Technology on the Auditor's Consideration of Internal Control in a Financial Statement Audit*. Statement of Auditing Standards No. 94. New York NY: AICPA.

American Institute of Certified Public Accountants (AICPA). 2006. *Audit Risk Exposure Standards*. Statements of Auditing Standards New York NY: AICPA.

Arnold, V. and S. Sutton. 1998. The theory of technology dominance: Understanding the impact of intelligent decision aids on decision maker's judgments. Advances in *Accounting Behavioral Research* 1: 175-194.

Bird, J. 2000. The Benefits of Cybermeetings, *Marketing*, June 1, p. 49.

Brynjolfsson, E. and Hitt, L. 1996. Paradox Lost? Firm-Level Evidence on the returns to Information Systems, *Management Science*, 42 (4 April): 541-558.

Caglio, A. 2003. Enterprise Resource Planning systems and accountants: towards hybridization?,*European Accounting Review*, 12(1), 123-153.

Clemons, E.K., S.P. Reddi and M. Row. 1993. The impact of information technology on the organization of economic activity: the move to the middle' hypothesis, *Journal of Management Information Systems*, 10(2): 9-36.

Curtis, M.B., and E.A. Payne. 2008. An examination of contextual factors and individual characteristics affecting technology implementation decisions in auditing. *International Journal of Accounting Information Systems* 9 (June): 104-121.

El Louadi, M. E. 1998. The relationship among organization structure, information technology and information processing in small Canadian firms. *Canadian Journal of Administrative Sciences*, 15(2), 180-199.

Granlund, M. 2007. On the interface between management accounting and modern IT – a literature review and some empirical evidence. *Working paper*, Turku School of Economics.

Gurbaxani, V. and S. Whang, 1991. The impact of information systems on organizations and markets, *Communications of the ACM*, 34(1): 60-73.

Haag, Stephen, Maeve Cummings, Donald D.J. 2005. *Management Information System for The Information Age*, Fifth Edition, McGraw Hill Irwin.

Hunton, J. E. 2002. Blending Information and Communication Technology with Accounting Research. *Accounting Horizons*, 16(1):55-67.

Hyvönen, T. 2003. Management Accounting and Information: ERP versus BoB, *European Accounting Review*, 12(1), 155-173

Ismail, N. A., & King, M. 2007. Factors influencing the alignment of accounting information systems in small and medium sized Malaysian manufacturing firms. *Journal of Information Systems and Small Business*, 1(1/2), 1-19.

Janvrin, D.J., J.L. Bierstaker, and D.J. Lowe. 2009. An investigation of factors influencing the use of computer-related audit procedures. *Journal of Information Systems*.

Kettinger, W.J. and V. Grover. 1997. The Use of Computer-Mediated Communication in an Interorganizational Context, *Decision Sciences*, (28:3), pp. 513-555.

Konrath, Larry F. 2002. *Auditing : a risk analysis approach*. Australia: South-Western: Thomson Learning.

Laudon, K.C. 2010, *Management Information Systems: Managing The Digital System*, Eleventh Edition, Pearson Education , Inc.

Malone, T.W., J. Yates and R.I. Benjamin, 1987. Electronic markets and electronic hierarchies, *Communications of the ACM*, pp: 484-497.

Mauldin, E. G., &Ruchala, L. V. 1999. Towards a meta-theory of accounting information systems. *Accounting, Organizations and Society*, 24, 317-331.

Mitchell, F., Reid, G. and Smith, J. 2000. *Information system development in the small firm: the use of management accounting*, CIMA Publishing.

Moghaddam, A.T., SeyedJavadHabibzadehBaygi, RohollahRahmani and MeysamVahediyan. 2012. The Impact of Information Technology on Accounting Scope in Iran, *Middle-East Journal of Scientific Research*, 12 (10): 1344-1348

Salehi, Mahdi, VahabRostami, and SbdolkarimMogadam. 2010. Usefulness of Accounting Information System in Emerging Economy: Empirical Evidence of Iran, International *Journal Of Economics and Finance*, Vol.2, No.2.

Scapens, R. &Jazayeri, M. 2003. ERP systems and Management Accounting Change: Opportunities or Impacts?,*European Accounting Review*, 12(1), 201-233.

Yadav, Subhash Chandra and Sanjay Kumar Singh. 2009. *An Introduction to Client/Server Computing*, Newage International Publisher.

Zhao, N., D.C. Yen, and I. Chang. 2004. *Auditing in the e-commerce era. Information Management & Computer Security* 12 (5): 389-400.