THE ROLE OF INFORMATION TECHNOLOGY IN FINANCIAL REPORTING QUALITY: IRANIAN SCENARIO

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Summary

This paper investigates the role of information technology in financial reporting as well as the relationship between using information technology and its impact on the quality of financial reporting. To identify the impact of information technology on quality of financial reporting, a questionnaire was designed and developed. In order to test the hypotheses, T-Test, ANOVA and Duncan's Test were employed. The results show that the information technology enhances the relevance and reduces the reliability of accounting information. It also increases comparability, albeit in a small amount, and diminishes the negative impact of dominant limitations on qualitative characteristics of accounting information.

Key words: information technology, qualitative characteristics of accounting information, financial reporting quality, financial reporting on line.

1. INTRODUCTION

21th century is the new age of technological revolution and innovation, and information technology (IT) has outrun other industries in this field. The powerful convergence of computer, IT and communications has given rise to new models of business (Frishamar, 2002). The ever increasing advances along with rapid changes occurring within the activity range of various enterprises, have amplified the need

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to provide and offer qualitative financial information by economic units. Financial information is considered qualitative if it possesses specific features and can offer benefits to users of financial information and help them in making decisions.

Some of these features are relevance, reliability and comparability. Thus, there is hope that the quality of this information can improve through IT usage, and this paper aims to make the role of these technologies obvious in financial reporting (Salehi, Rostami and Moghada, 2010).

IT is one of the most important variables which have become a fact of life in the organizations of today. IT plays a key role in removing time and place limitations and causes information to become available to users more quickly and in a more satisfactory way. It also changes the way of performing tasks and transforms paper methods into electronic ones. This is called electronic exchange of information. The changes provide conditions in which time needed for information exchange is shorter and the way of making financial exchanges has changed i.e. financial information is exchanged instead of money (Salehi, Moradi and Ariyanpour, 2010).

2. IMPORTANCE OF THE STUDY

Today, remarkable evolutions have occurred in the area of IT and its advances have become all-inclusive – evolution trends have started in different areas. The most important IT specifications include high speed of data processing, high attention, high speed of data access, being up to date, possibility of interchanging electronic information, high quality and very low price. On the other hand, we are faced with developing the operational capacity and complicating tasks (Hematfar, Salehi and Bayat, 2010).

 If we take into account these specifications, there is no need to say anything more about the necessity of using IT in the modern world of today. In this regard, there is no other choice but to use all or some of the new procedures in offering accounting services, since, according to "Gary Sundem" the ex-chief of the American Accounting Society, the role of information has gotten more important. Therefore, providers of information, especially accountants, should provide state of the art information in order to sell their services (in high prices). Otherwise, they will have no place on the market of the future (Salehi and Huisi, 2011).

Therefore, it is necessary to carry out research in order to identify modern technologies and figure out which of these technologies should be applied and how they should be used to improve the quality of the accounting discipline, as well as to achieve that progress in accounting coincides with the basic evolution in IT. The aim of this research is to take a step in this direction.

3. ISSUE

To use the Internet means to apply IT to a high degree. In this case, the integrated financial system of a firm is always connected to the Internet and users of ac-

counting information anywhere in the world can refer to the website of the firm and see their financial lists with the latest changes. Intelligent software like HTML[3], XML[4], and XBRL[5] etc, can help in this regard (Moradi, Salehi and Ariyanpour, 2011).

Therefore, there is no need to publish and distribute financial lists at mid-term or at the end of the fiscal year. This kind of financial reporting in which the information is available and accessible anytime and anyplace through the Internet is called online continuous financial reporting.

Taking into consideration the objectives and principles of financial reporting, financial information should always possess specific characteristics to be effective for the decision-making of investors, active/potential credit-givers and other users. These characteristics, called Qualitative Characteristics of financial reporting include:

- Reliability: completion, caution, truthfulness, impartiality and preferring content to form.

- Relevance: specific selection, value of validation and anticipation.

- Comparability: appropriate revelation and stable policy.

- Understandability: integration and classification and rate of users' power.

The concurrent access to the characteristics of reliability and relevance has not always been possible because of technological limitations. Thus, the importance of reliability has always led to marginalizing the feature of relevance, while users accessing data request and expect information on what happened yesterday or today morning, and not one or two months ago. Therefore, traditional reporting (cyclic and publishable) has not usually been able to meet the needs of users on accessing data at the right time, because of its deficiencies regarding fast processing of bulky data and high costs (Salehi and Abdipour, 2011).

Application of accounting knowledge creates the accounting system of different units. Each accounting unit has three functions: the informational, service and control function. The most important function or the dominant function of an accounting system is the information function because accounting is basically considered an information system.

Financial statements are the basic part of the financial reporting process. A complete set of financial statements consists of the balance sheet, profit and loss account, comprehensive profit and loss statement, cash flows, and footnotes.

4. IT: DEFINITION

According to one definition, IT is centered on the technological part of an information system which consists of hardware, data base, software, networks and

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[3] Hypertext Markup language
[4] Extensible Markup language
[5] Extensible Business reporting Language

other instruments. According to this definition, it is possible to consider IT as a sub-system of the information system. Sometimes the IT and information system are used in a similar fashion and sometimes it is also possible to use the term IT more extensively to include a set of multiple information systems, users and managing directors of an organization (Turban, 2002).

Therefore, it is difficult to define IT. Different persons with different points of view provide different definitions of IT. The best and most appropriate method for defining such an extensive subject is to provide related concepts and ideas about it. Explaining matters and areas associated with IT can also help in recognizing it. Therefore, we should speak about IT in a way that would help in identifying it. IT is a series of concepts and thoughts, regardless of the strategic dimension of IT and its instruments and tools; IT acts as a thought or idea for performing tasks in an optimal way.

In the present research we have considered IT as a series of hardware, software such as applicable software including intelligent software, data bases, networks, including the Internet and its instruments, Internet-based protocols-and other technologies that have an effect on accounting reporting which moves toward on line financial reporting. In the system centered step, the major addressee of IT were firms, because in this step the costs were so high that public people were not able to use it.

5. IMPACT OF IT ON FINANCIAL REPORTING

There are various technologies for financial reporting, and the most public of them is the World Wide Web. Other procedures like direct access to the computer center of a firm are also possible. Considering the impact of technology on rules of organizations, content and the structure of financial reporting, accounting texts and professional organizations have determined the following procedures for applying technology:

1. Systems designed by authorities.

2. Using the World Wide Web for financial reporting.

5.1. Effective technology for financial reporting

There are three types of technologies which affect reporting and move it towards electronic reporting:

1. Fixed display of information like CD, electronic paper and HTML.

2. PLUG-INS, multi media (like Microsoft Media player, Apple's QuickTime, Real Player and 3D pictures like VRML).

3. The impact of users and scientific managers like data base searching instruments, JAVA and ACTIVE/X, intelligent software, XML and the language of financial reporting XBRL.

5.2. Objectives of financial reporting

The general purpose of financial reporting is to provide information on the financial effects of transactions, operations and financial occurrences that have an effect on the financial status and the operation results of a profit-making unit. The provided information can help investors and creditors and other users outside the organization to get a picture on profit-making of an economic unit. This general goal is subdivided into specific objectives; achieving each of these objectives requires provision of specific information:

- provision of information for assessing financial status and economic capacity;

- provision of information for assessing function and capacity of profitability;

- provision of information for assessing how to supply and consume cash;

- provision of information for assessing how to fulfill management responsibilities and carry out legal duties;

- provision of complementary information for better understanding of offered information and anticipating future status;

- provision of information on additional value in production and services, profit, efficiency and promoting staff health, and on efforts in the field of environmental protection and other social and cultural activities.

5.3. Literature of literature

Technology plays a key role in today's business environment. Many companies rely greatly on computers and software to provide accurate information in order to manage their business effectively. The impact of IT in companies is extensive and is manifested in the most varied ways (Granlund, 2007; Alves, 2010). "Prior to the emergence of this environment, the presence of IT in the organization has typically taken the form of specific computer application systems, such as accounts payable and financial reporting systems, which either automate specific operational procedures or support certain managerial processes" (Teng & Calhoun, 1996: 674). It is usually argued that the first use of an information system was in relation to accounting (Rom & Rohde, 2007), because IT was often centered around the firm's financial ledgers and reporting systems (Granlund & Mouritsen, 2003). But, "the constantly growing and changing field of information technology has a significant impact on the roles of executives at all levels of business organizations" (Crescenzi & Kocher, 1984:34).

Nowadays, research within management accounting and information systems is coming alive with the advent of integrated information systems such as enterprise resource planning systems (Chien & Tsaur, 2007). In this context, "information management has emerged as the most common brief name for the management of the use of information technology in an organization" (Frishamar, 2002:149). Since the

use of IT in financial reporting does not have a very long history, some research has been carried out in this regard with its major focus on the Internet technology and its effects. Although this research has not precisely investigated the effects of IT on the characteristics of accounting information, it has touched some of its points in some cases. In the following section, this paper discusses some of this research related to the subject of the present study.

Majrebiyan (2005) conducted a study about the impact of web-centered accounting on the quality of information, on the accessibility of data and finally on economic decisions of managers. Results show that based on the responses of participants, qualitative characteristics of accounting information increase through the use of web-centered accounting, and access to data also becomes easier and faster. Therefore, it can be claimed that by using a web-centered accounting system, managers of enterprises could be better prepared for making wise and reasonable economic decisions.

Lodhia, Allam, and Lymer (2004) investigated commercial reporting on the Internet. In conducting this research, they studied websites of 50 companies in Australia and observed that in the vast majority of websites financial information was included. However, they did not use the full potential of the Internet in order to reveal information to users and they had a low tendency to reflect paper-based reports on the Internet. These researchers found that the reasons for this were lack of innovation in the field of Internet financial reporting, lack of appropriate leadership by study centers, universities and valid accounting publications, lack of reliability, low IT skills, security etc.

Dedrick, Gurbaxani & Kraemer (2003) investigated the impact of using superior communication technology in offering financial inventories at the request of users. Their research focused on studying the impact of superior communication on decisions and predictions, on the level of data accessibility and on the time required for decision-making by users. The study focused on two kinds of companies: small and big companies. In the case of big companies, results did not differ no matter whether financial inventories were done by using superior communication or not, while there was a meaningful difference for small enterprises between these predictions.

5.4. Research hypothesis and related questions

In order to achieve research objectives, the study has introduced the following hypotheses:

H_1: There is a positive meaningful relationship between the level of applying IT and the relevance of information included in financial statements.

H_2: There is a positive meaningful relationship between the level of applying IT and the reliability of information included in financial statements.

H_3: There is a positive meaningful relationship between the level of applying IT and the comparability of information included in financial statements.

H_4: There is a positive meaningful relationship between the level of applying IT and the dominant limitations on qualitative characteristics of information included in financial inventories.

H_5: The role of IT in each of the qualitative characteristics of information included in financial inventories is different.

5.5. Methodology

As regards the objective and the method of data collection, this study is categorized as descriptive. First, the researcher has gathered data through explaining the theoretical basics of research and describing the current situation by designing and distributing a questionnaire. Second, data collected were analyzed by using statistical software. This study first describes the current conditions and then uses a questionnaire as an instrument for data gathering. It could be concluded that this research is a descriptive-surveying study in which these two methods of analyzing literature and then employing a questionnaire were employed for gathering data.

The statistical population of research includes financial managers, accounting managers, accounting supervisors, book authors, faculty members, PhD scholars and researchers with at least an M.A. in accounting who are familiar enough with the subject of the study.

Data of this study is qualitative; formulas appropriate for qualitative data are applied. Furthermore, as regards the unlimited statistical population, the proper formula for calculating the sample volume is as follows:

$$N = \frac{Z_{\alpha/2}^2 \sigma^2}{d^2}$$

For calculating n in the above equation with the error margin of 0.05, $z_0.025$ =1.96 and the amount of 6 can be calculated $as\ R = 6\sigma$ and the range of questions is clear. After selecting a preliminary sample of 30 persons, the amount of $\sigma\ was$ estimated to be 0.204 in the above equation, d being the margin for deviation from the real parameter amount i.e. the average, which is the abstract error amount or half of the reliability distance and is considered 0.05 for the sake of precision:

$$N = \frac{Z_{\alpha/2}^2 \sigma^2}{d^2} = \frac{(1.96)^2 \cdot (0.204)^2}{(0.05)^2} = 63.95 \approx 64$$

5.6. Testing of hypotheses

After data was collected, various tests were employed in order to test the hypotheses. Table 1 shows the tests which were employed in order to test the hypotheses, while Table 2 shows the results of testing all the hypotheses.

Table 1: Statistical methods applied for investigating research hypotheses

Research hypotheses	applied statistical method
H_1, H_2, $H_{3, and}$ H_4	The average assumption test (T-Test)of a community
H_5	Variance analyses test for accepting or rejecting hypotheses, least meaningful difference tests(Duncan) for ranking qualitative characteristics of financial information

Table 2: Results of hypotheses

result	comparison	p-value	statistical methods	statistical hypotheses	YH
according to the level of reliability of up to 95%, the H_0 is rejected thus the first hypothesis is accepted	p-value < 0.05	0.03	T-Test	$H_0 = \mu \leq 3$ antitheses $H_1 = \mu > 3$ theses	first
according to the level of reliability of up to 95%, the H_0 is accepted thus the second hypothesis is rejected	p-value > 0.05	1.000	T-Test	$H_0 = \mu \leq 3$ antitheses $H_2 = \mu > 3$ theses	second
according to the level of reliability of up to 95%, the H_0 is accepted thus the third hypothesis is rejected	p-value > 0.05	1.000	T-Test	$H_0 = \mu \leq 3$ antitheses $H_3 = \mu > 3$ theses	third
according to the level of reliability of up to 95%, the H_0 is rejected thus the fourth hypothesis is accepted	p-value < 0.05	0.000	T-Test	$H_0 = \mu \leq 3$ antitheses $H_4 = \mu > 3$ theses	fourth
according to the level of reliability of up to 95%, the H_0 is rejected thus the fifth hypothesis is accepted	p-value < 0.05	0.000	ANOVA	$H_0: \sigma_i = \sigma j$, i=j, $H_5: \sigma_i /= \sigma j$	fifth

In order to find the obtained differences in the fifth hypothesis, Duncan test was used.

In order to rank the qualitative characteristics and their dominant limitations based on correlation, by applying the Duncan Test, Table 3 shows the results of the study in this stage.

Table 3: Results of the study

Priority	Level of correlation	Qualitative characteristics and their dominant limitations	The average of uniform subsets
first	Very high	limitation	4.06
second	High	relevance	3.12
third	Average	comparability	2.52
fourth	Negative impact	reliability	0.96

If we take a look at the presented data, it can be seen from the above table that among the qualitative characteristics of accounting information and their dominant limitations, the components of limitation, relevance, comparability and reliability have the highest correlation with using IT, respectively.

Table 4: Ranking based on priority

The average of uniform subsets	Qualitative characteristics and their dominant limitations	Priority
4.78	being timely	first
4.41	profit and cost considerations	second
4.14	stability of procedure	third
3.47	validation value	fourth
3.13	anticipation value	fifth
3.05	appropriate revealing	
3.00	balance between qualitative characteristics	
2.77	specific selection	sixth
1.53	preference of content to form	seventh
0.88	completion	eighth
0.86	impartially	
0.83	caution	
0.70	truthfulness	
0.39	comparison between firms	ninth

As indicated in the above table, the level of IT for each of the qualitative characteristics and its dominant limitations, is ranked based on the Duncan Test in 9 uniform set.

6. CONCLUSION AND REMARKS

There is no doubt that IT has changed the informational flow among companies and users supplying information. For many years now, all steps in the accounting circle, except reporting, have been carried out through an electronic procedure. The ever-increasing growth of IT, such as the emergence of the Internet and its instruments, and their application in reporting, have developed since l997 and have moved financial reporting in the direction of on-line financial reporting. Therefore, by using reporting language- XBRL- after the registration of the transactions, the results will be available to all users around the world through the Internet.

The results of this study show that the use of IT has considerably changed financial reporting, especially as regards the relevance of accounting information; it is mainly because the use of IT (particularly the Internet, its instruments and protocols or software formats based on that) has resulted in on-line financial reporting in which IT can help users make better economic and managerial decisions. By increasing the relevance of information, some of these technologies and the way that they affect decision making (and consequently affect relevance) include: databases (for analyzing data), professional systems (help in analyzing deviations, debt and risk analysis), neuron networks (as prediction tools), XBRL (making access to data easier for investors and analysts, a powerful instrument for correct exploitation and assessment of data by users), information reservoirs (providing specific information for users), intelligent agencies (analyzing data and helping the decision-making process), software for supporting decisions (helping decision-makers to analyze data and to substantiate decisions before selecting a decision) and superior communication (improving access to data).

Furthermore, the results of this research indicate that apart from various advantages of IT in financial reporting, its reliability is reduced due to two main reasons. The main reason is the lack of capacity for continuous accounting at the present time which is expected to improve with the advances in the IT sector. The other reason for decreased reliability is the security of information.

By using IT, the comparability of company information will increase (due to the procedure being more revealing and stable). As mentioned earlier, by using IT, financial reporting of firms will move towards on-line financial reporting, in which firms use a specific format and define harmonized reporting procedures, enhancing the stability of this process in those firms. On the other hand, this kind of reporting will become more revealing through publishing additional information, and through the increase in the comparability of firms' financial information (in order to analyze the change in the financial status and operation results), while comparability of information among different firms will decrease due to differences in the content and procedures for distributing financial reports in different firms.

Finally, this study shows that using IT results in removing negative impacts and diminishing dominant limitations on the quality of financial reporting is mostly due to the time of information. IT usage (especially the Internet, instrument protocols

and software formats based on them) will lead to online financial reporting that make the information always available on the Internet. Decision-makers can thus use time and diverse information for making decisions and they can find specific information that they need for a specific goal. Therefore, by means of online financial reporting, financial information will always be provided on time.

Considering these explanations and the fact that some of these features are mainly associated with suppliers of information i.e. information content rather than instruments of information supply (like caution, truthfulness, completion), and considering that some of these features are in a relative paradox (like relevance, reliability), the impact of IT on each of the qualitative characteristics of accounting information and their dominant limitations will be different.

Results of this research show that IT affects the quality of financial reporting and this impact is made through reporting. In fact, as mentioned earlier, IT moves reporting towards on –line reporting and this kind of reporting produces information via specific characteristics. Considering the ever increasing advances of IT, it is expected that the impact on reporting and consequently on qualitative characteristics of accounting information will increasingly improve, because by using more advanced technologies not only will the information be more relevant but also the reliability and comparability of information will be elevated and limitations will be reduced. On the other hand, considering the informational requirements of users and the deficiencies of the current reporting model (traditional), it becomes obvious that the financial reporting model should finally move toward on-line financial reporting. Therefore, it can be expected that the accounting system of the country will change the accounting profession simultaneously with changes in IT, in order to adapt financial and accounting information to the rapid changes of today's commercial world. If this were not so, the status of the accounting profession and the accountants' status would go through a crisis in this universal modern harmony.

REFERENCES:

1. Alves, M. (2010). Information Technology roles in Accounting Tasks – A Multiple-case Study, International Journal of Trade, Economics and Finance, Vol. 1, No. 1, pp. 103-107.

2. Chien S. & Tsaur S. (2007). Investigating the success of ERP systems: Case studies in three Taiwanese high-tech industries, Computer in Industry, Vol. 58, pp. 783-793.

3. Crescenzi A.D. & Kocher J. (1984). Management Support Systems: opportunity for Controllers. Management Accounting, Vol. 65, No. 9, pp. 34-36.

4. Dedrick J., Gurbaxani V. & Kraemer K (2003). Information technology and economic performance: A critical review of the empirical evidence, ACM Computing Surveys, Vol. 34, No. 1, pp. 1-28.

5. Frishamar, J. (2002). Characteristics in information processing approaches, International Journal of Information Management, Vol. 22, pp. 143-156.

6. Granlund M. & Mouritsen J. (2003). Introduction: problematizing the relationship between management control and information technology. European Accounting Review, Vol. 2, No. 1, pp. 77-83.

7. Granlund M. (2007). On the Interface between Management Accounting and Modern Information Technology-A literature review and some empirical evidence. Working paper, SSRN, http://ssrn.com/abstract=985074.

8. Hemmatfar M, Salehi, M and Bayat M (2010). Competitive Advantages and Strategic Information Systems, International Journal of Business and Management, Vol. 5, No. 7, pp. 158-170.

9. Lodhia, S.K., Allam, A., & Lymer, A. (2004). Corporate Reporting on the Internet in Australia: An Exploratory Study. Australian Accounting Review, Vol. 14, No. 3, pp. 64-71.

10. Moradi M, Salehi, M and Arianpoor A (2011). A Study of the Reasons for Shortcomings in Establishment of Internet Financial Reporting in Iran, African Journal of Business and Management, Vol. 5, No. 8, pp. 3312-3321.

11. Rom A. & Rohde C. (2007). Management accounting and integrated information systems: A literature review. International Journal of Accounting Information Systems, Vol. 18, pp. 40-68.

12. Salehi M, and Abdipour A (2011). A Study of the Barriers of Implementation of Accounting Information System: Case of Listed Companies on Tehran Stock Exchange, Journal of Economics and Behavioral Studies, Vol. 2, No. 2, pp. 76-85.

13. Salehi M, and Husini R (2011). A Study of the Effect of Information Technology on Internal Auditing: Some Iranian Evidence. African Journal of Business and Management, Vol. 5, No. 15, pp. 6169-6179.

14. Salehi M, Moradi, M and Ariyanpour A (2010). A Study of the Integrity of Internet Financial Reporting: Empirical Evidence of Emerging Economy, Global Journal of Management and Business Research, Vol. 10, No. 1, pp. 148-158.

15. Salehi M, Rostami, V and Mogadam A (2010). Usefulness of Accounting Information System in Emerging Economy: Empirical Evidence of Iran, International Journal of Economic and Finance, Vol. 2, No. 2, pp. 186-195.

16. Teng J. & Calhoun K. (1996). Organizational Computing as a Facilitator of Operational and Managerial Decision Making: an Exploratory Study of managers´ Perceptions. Decision Sciences, Fall, pp. 673-710.

17. Turban E (2002). Electronic Commence. A Managerial Perspective," Printice Hall,

ULOGA INFORMACIJSKE TEHNOLOGIJE U KVALITETI FINANCIJSKOG IZVJEŠTAVANJA: PRIMJER IRANA

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Sažetak

Ovaj rad istražuje ulogu informacijske tehnologije u financijskom izvještavanju, kao i vezu između korištenja informacijske tehnologije i njezinog utjecaja na kvalitetu financijskog izvještavanja. Kako bi se prepoznao utjecaj informacijske tehnologije na kvalitetu financijskog izvještavanja, izrađen je i razvijen upitnik. Kako bi se testirale hipoteze, korišteni su T-test, ANOVA i Duncanov test. Rezultati pokazuju kako informacijska tehnologija dovodi do većeg značaja ali i do smanjene pouzdanosti računovodstvenih podataka. Također dovodi do povećane usporedivosti, iako u smanjenom opsegu, te ima za posljedicu smanjeni negativni utjecaj dominantnih ograničenja kvalitativnih obilježja računovodstvenih podataka.

Ključne riječi: informacijska tehnologija, kvalitativna obilježja računovodstvenih podataka, kvaliteta financijskog izvještavanja, on-line financijsko izvještavanje.

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