

Original Research Article

Investigation on XBRL adoption Based on TOE model

ABSTRACT

Most organizations hold that financial information transparency provided can attract many investors and customers, improving economic status and financial growth of an organization. The internet is referred to as a means of disseminating information to the public. XBRL language or Extensible business reporting language can be used to disseminate information of interest.

Aims: The research as a model would help organization implement XBRL language in an attempt to provide financial reporting.

Methodology: It was tried to investigate factors affecting TOE model including environmental, organizational and technological factors on the implementation of XBRL. For each group of factors in the model a series of related indicators was selected and after obtaining experts' opinion and knowledgeable people and finalizing indices, the standard questionnaire was used and the effect of each index on implementing this type of innovation in an organization was investigated.

Results: In this study, in investigating the effect of various factors on the implementation of XBRL based on TOE model, environmental factors with 0.95%, technological factors with 0.90% and organizational factors with 0.85% had the greatest importance, respectively.

Conclusion: In order to implement a technology and innovation, every organization should assess the foundations for implementing as well as operational capabilities of a new project so that it can prevent relevant risks.

Keywords: Financial reporting, extensible business reporting language (XBRL), TOE model, extensible markup language (XML)

1. INTRODUCTION

Extensible reporting language is a language for the electronic business and financial communication that can change the way of information distribution. International data format has been designed specifically for business communication and data transmission [13].

XBRL has created a structure for organizations to reports their activities in order to emit their informational reports through internet. Financial information can include all the financial statements and key information in an organization to extract any analysis. Much of the information published in this way can be used repeatedly and can be archived [8]. In addition, organizations can implement XBRL to reduce their emission and compliance costs and thereby take advantage of potential investors [5].

Although the progress of these initiatives will be done quickly, but it is essential to consider a number of issues in order to implement and do it in the best way and it can be improved and grown in the next steps. In many countries, implementation of XBRL is not still regarded as necessity. Therefore, comparison and analysis of reports will be in trouble internationally. The implementation of this innovation is influenced by many factors [19].

Many researchers consider factors such as environmental, organizational and technological factors to be effective in implementing this type of innovation. Before undertaking any form of innovation and technology, it is essential to investigate the organization's environment, culture, conditions and prior experience and the ability of implementation. Thus, in this study, the effects of these factors have been studied in the form of TOE model on XBRL implementation.

2. RESEARCH BACKGROUND

Today, the speed of the preparation, distribution and comparability of information specifically financial information is very important. Financial statement users look for the fastest way to achieve the desired results in the least time possible, with the highest accuracy and transparency. It is clear that the financial information are prepared and offered in traditional formats such as PDF, Excel, Html, etc. but the users of this kind of information cannot use and archive information practically. On the other hand, the use of the internet leads to the distribution of data and information without standard and specific format. In other words, this type of financial reporting doesn't have the capabilities of the new financial reporting formats and cannot be easily compared and waste much time. But in the digital format, information can be compiled and put together on a regular basis with new technologies in order to be able to be easily compared, analyzed and decided [19].

According to the researchers, XBRL is associated with easy observation of standards of accounting and finance, encoding, publishing and editable information by users. XBRL is a language derived from XML, but its capabilities are more and its usage is designed more advanced and more extensible [6].

Extensible language encrypts related items using specified and common national or international labels to define the concepts of financial reporting. Labels can be used for a word or a group of key words to relate users with the information of financial reports and in this way, they will be more understandable for browsers [11].

According to Richards (2002), financial reports' results that are consistent with the labels are called a sample document. Each industry can design its own glossary for optimal use of this language [17].

Extensible language, as a tool, can enter the information in the financial reporting system by estimating the highest level of information. In the study conducted by Peng (2010), it was stated that XBRL is one of the two successful technologies in the field of accounting and auditing [14] and Yoon (2011) introduced this language as a factor increasing levels of accuracy, reliability and efficiency of electronic business financial communication [20].

The use of this language for business reporting is proposed as an essential source in the information value chain. Extensible business reporting language enhances the capacity of intra-organization electronic commercial transactions by increasing the flow of information and interaction and expands the contribution of organizations in others' information repertoire [19]. In other words, XBRL is a dynamic format that enables electronic changes of organization's information [11].

Also Hannon (2003) considers this language as a non-specific standard language based on the Internet that is used to provide and publish financial statements via computer and software platforms based on the accounting standards [10].

Organizations can use XBRL as a global framework with the aim of increasing efficiency and improving the reporting path and thereby increase the quality of their financial disclosure and dissemination of information and attract more investors by raise the level of trust resulted from transparency of information.

Extensible language can increase organizations' and companies' ability to compare themselves with other organizations and industries. Using XBRL, flexibility of companies' information for immediate analysis and compliance with financial models increases and with this view, foreign investors are interested in starting up an activity with the company [19]. With this innovation, many of the costs and time related to the release of information is reduced.

3. INTERNET FINANCIAL REPORTING

Focusing on all human aspects of technology and IT has started in the 21st century which called information era. In this era, internet, as a tool associated with human activities, has changed the flow of information from suppliers to users and vice versa, as well as access to information. Internet users can process and analyze the data [2]. Internet has changed the distribution and distribution of all kinds of information and financial reporting [6].

Today, financial reporting via internet has increased in many companies. Using the Internet as an information distribution channel is a growing phenomenon and organizations provide financial information on their sites voluntarily [4].

Internet financial reporting increases mentally and reduces the cost of distribution. Thereby, linking suppliers and users will be easily accomplished. Information is made available for users quickly and it's usable and able to be processed. On the other hand, the disadvantages of the dissemination of information via the Internet is hacking and destroying information by hackers; also, not all have access to the Internet, causing a loss of some investors and users of financial reports.

4. RESEARCH METHODOLOGY

4.1. THE RESEARCH MODEL

TOE model is a multi-aspect framework developed by Rocco DePietro and Edith Wiarda and Mitch Fleischer [1]. This framework is a theory of organizational levels and is often used for research and study issues related to the organization.

In 2011, Baker said that this model is a part of the process of implementing an innovation of how a specific content can affect the implementation of an organizational innovation [3]. In 2010, Wang and Yang reiterated that this model is a comprehensive picture for the users of a specific technology that can improve implementation of an innovation, the facing challenges, effects on the activities of the value chain, promotion of the inter-organization adoption, decision-making based on adaptation with innovation and organization's capabilities in using innovation and put a more appropriate way forward for the organization [15].

According to the TOE model, three organizational factors can alter the course of the implementation of innovation. Technological factors that investigate the internal and external technologies of an organization and can affect the implementation process by comparing and analyzing existing technology in an organization with peers and competitor organizations. These technologies can be comprised of any type of equipment or software. In 2003, Premkumar claimed that all issues related to the field of technology arise from organizational factors [15].

Technological factors include competitive advantages in contrast to the costs, complexity and rigidity of the system, the ability to adapt and the visible results [17]. In other words, the ability of adaptation and integration of the system can make its acceptance easier [20]. Perceived costs to income and benefits of an innovation, difficulty and complexity are of the technological factors [20]. Testability, integrity and ease of technology affect its acceptance [5].

Organizational factors are related to the resources and structure and ability of an organization [1]. According to Salwani and Marthandan, 2009, organizational factors are all the descriptions related to an organization such as the size, ideas, manpower and management [18]. Also Dedrick and West, 2003, stated that the phenomenon of adaptation to an innovation is affected by formal and informal intra-organization mechanisms for communication and control of resources and initiatives [9]. Structure and attitudes of managers, staff capabilities and resources are among the organizational factors [16]. The size of the organization in terms of the workforce and the managers and the power of organization are effective in accepting innovation and technology [20].

Environmental factors refer to the environment of an organization including industry, competitors and technology suppliers. In 1990, DePietro added that the dependent variables in the industry including communications between buyers and sellers, a sense of competition and defining the nature of the industry are among the factors that gives meaning to the environment. Relevant set of rules and guidelines, government and monitoring agencies are among effective environmental factors [12].

In this research, based on TOE model and conducted studies, indicators for each factor are determined and after obtaining the opinion of experts, the following model has been used.

In the research model, easy understanding and fluency of system and compliance of innovation with previous systems have been considered as indicators of technological factor, implementing the successful implementation of innovation and available resources such as human and financial forces and manpower skills and experience have been considered as indicators of organizational factors and finally, the environmental pressure from regulatory agencies and the competitive pressure from peer organizations have been considered as indicators of environmental factors and after finalization of the model, the effect of parameters on the implementation of XBRL has been studied and analyzed.

Each of the selected indicators of each factor can affect the implementation of XBRL. With this model, the effect of individual indicators is assessed and the impact of each is calculated and compared. In other words, by focusing on this research, an organization will realize which of the indicators is more effective and has a greater significance on the implementation of these innovations. Through statistical analysis, the effect of each factor on the implementation of XBRL is also measured and calculated, because what is important for institutions is that which of the model's factors including environmental, organizational and technological factors can affect the course of implementation of a new technology and for more project management and implementation and adaptation of the project, it is necessary to have greater focus on that area.

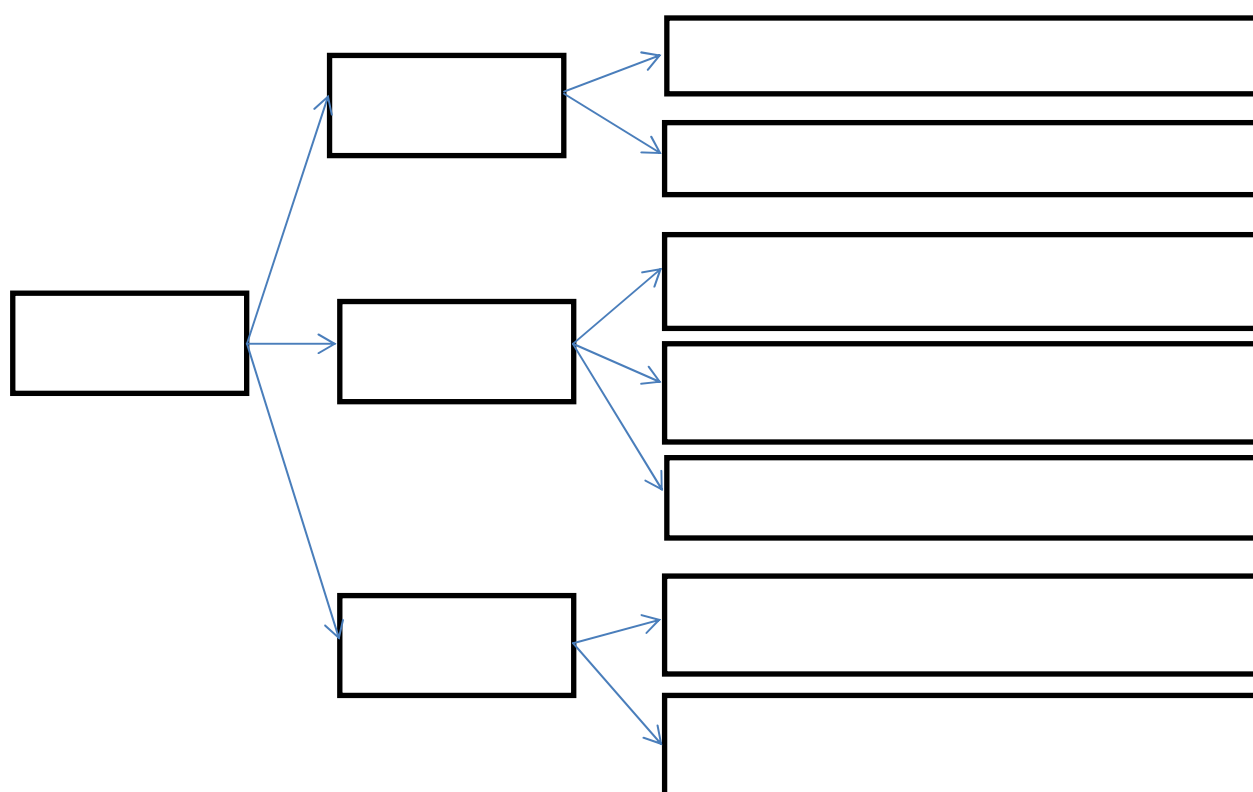
4.2. RESEARCH TOOLS

In this study, a standard questionnaire has been used as the instrument to measure the relationship between the TOE model's factors on implementing XBRL. The validity and reliability of the questionnaire was evaluated. To prove the validity of the questionnaire, Cronbach's alpha was used and to prove the reliability of structures confirmatory factor analysis (CFA) was used.

4.3. MEASUREMENT MODEL

According to the research content and the basis for the selection of indicators and models, analysis and measurement of research elements was done by the CFA. Based on the results of the statistical analysis, the degree of freedom and Chi - square / DF was calculated and was placed in the standard range for the acceptance of model (3>); meanwhile, the RMSEA=0.07 index was calculated that was less than 0.08 and confirms the model. Indices of NFI=0.95, NNFI=0.89, CFI=0.9, IFI=0.94, GFI=0.9 and AGFI=0.88 were also calculated (about 0.9) and analyzed. Using these calculations, the relationship between factors with the selected indices in the questionnaire was confirmed theoretically. The Kmo and Bartlett's test with a significance level of zero was calculated to be about 0.8.

Research model based on the standard organizational TOE model



5. RESEARCH RESULTS

Financial reporting is very important from the perspective of investors, shareholders and other stakeholders and affects most decisions. Many people are interested to know the financial and economic situation of companies and institutions before making any decision to invest or participation and compare it with other peer companies in that industry in order to draw the right conclusions. Thus, focusing on a company's financial statements and special reports are considered as an introduction to their investment activities.

In this study, it was tried to investigate factors affecting TOE model including environmental, organizational and technological factors on the implementation of XBRL. Based on the conducted studies on this issue, for each group of factors in the model a series of related indicators was selected and after obtaining experts' opinion and knowledgeable people and finalizing indices, the standard questionnaire was used and the effect of each index on implementing this type of innovation in an organization was investigated.

In this study, in investigating the effect of various factors on the implementation of XBRL based on TOE model, environmental factors with 0.95%, technological factors with 0.90% and organizational factors with 0.85% had the greatest importance, respectively.

In investigating the effect of each index, environmental pressure from regulatory agencies with 0.75% and competition between peer organizations with 0.74% were the affecting factors in the environmental factors' group and the results showed that both factors had nearly the same effect on XBRL implementation. In the organizational factors group, implementing the successful implementation of innovation with 0.65% and manpower skills and experience systems with 0.60% and available resources such as human and financial forces systems with 0.50% respectively were factors affecting XBRL implementation. In the third group, technological factors, easy understanding and fluency of system with 0.90% and compliance of innovation with previous with 0.70% were discussed and it was found that easy understanding of an innovation is very effective on its acceptance.

6. CONCLUSION

The results of the statistical analysis and the related analyses showed that the factors of TOE model as the factors affecting the adoption of a new technology and innovation can affect an organization. Thus, focusing on different factors can lead organizations, companies and institutions in adopting the correct decision. Paying attention to organization or company's environment that can include all competitors, peer organization or the government or monitoring organizations can impose burden on organization and thereby affect XBRL implementation. Directive assignment or obligation for implementation by monitoring organizations such as the Stock Exchange or a sense of superiority in contrast to other organizations and companies can serve as motivation for this project.

Organizational factors such as available resources including financial and human resources and organizational climate of the project implementation will be able to facilitate the implementation track of XBRL and make adoption of these technological innovations easier. Experience and skill of manpower and accepting the pattern of successful implementation of the project can encourage managers in accepting the implementation of the context of this extensible language.

Technological factors and ease of understanding the language of financial reporting in accordance with accounting standards can encourage organizations to hope in the successful result of these patterns. In general, the effect of the TOE model, or in other words the effect of environmental, organizational and technological factors will be different with respect to the indicators of any organization or company and can be affected by many factors and indicators and it is necessary to be analyzed and investigated before implementation of XBRL in order to have more acceptable results. Evaluation of incomes and expenses and the ultimate financial effects of the project and environmental forces are of the things that certainly will be different depending on the type of organization or company.

DEFINITIONS AND ABBREVIATIONS

Extensible Business Reporting Language (XBRL)

This is a business reporting system based on XML for information exchange.

Extensible Mark-up Language (XML)

This is extensible markup language for information produce, save and transfer.

REFERENCES

- 1- Alshamaila, Y., Papagiannidis, S., & Li, F. (2013). Cloud computing adoption by SMEs in the north east of England: A multi-perspective framework. *Journal of Enterprise Information Management*, 26(3), 250-275.
- 2- Amini, P., & Moradi, F. (2006). Reporting entities on the Internet. *Journal of auditor*, 39, 64-71, in Persian
- 3- Baker, J. (2012). The technology–organization–environment framework. In *Information Systems Theory* (pp. 231-245). Springer New York.
- 4- Craven, B. M., & Marston, C. L. (1999). Financial reporting on the Internet by leading UK companies. *European Accounting Review*, 8(2), 321-333.
- 5- Cordery, C. J., Fowler, C. J., & Mustafa, K. (2011). A solution looking for a problem: factors associated with the non-adoption of XBRL. *Pacific Accounting Review*, 23(1), 69-88.
- 6- Debreceeny, R., & Gray, G. L. (1999). Financial reporting on the Internet and the external audit. *European Accounting Review*, 8(2), 335-350.
- 7- Dedrick, J., & West, J. (2003, December). Why firms adopt open source platforms: a grounded theory of innovation and standards adoption. In *Proceedings of the workshop on standard making: A critical research frontier for information systems* (pp. 236-257). Seattle, WA.
- 8- Farewell, S., & Debreceeny, R. (2012). Attesting Adios! Airways' XBRL Filings: A Case Study on Performing Agreed-upon Procedures. *Accounting Education*, 21(2), 131-160
- 9- Gangwar, H., Date, H., & Rao, A. D. (2014). Review on IT adoption: insights from recent technologies. *Journal of Enterprise Information Management*, 27(4), 488-502.
- 10- Hannon, N. (2003). XBRL for general ledger, the journal taxonomy. *Strategic Finance*, 85(2), 63-67.
- 11- Hao, L., Zhang, J. H., & Fang, J. B. (2014). Does voluntary adoption of XBRL reduce cost of equity capital? *International Journal of Accounting and Information Management*, 22(2), 86-102.
- 12- Henderson, D., Sheetz, S. D., & Trinkle, B. S. (2012). The determinants of inter-organizational and internal in-house adoption of XBRL: A structural equation model. *International Journal of Accounting Information Systems*, 13(2), 109-140.
- 13- IAASB (2010). XBRL: the emerging landscape. International auditing and assurance standards board
- 14- PENG, J., & Janie Chang, C. (2010). Applying XBRL in an Accounting Information System Design Using the REA Approach: An Instructional Case Accounting Perspective, 9(1), 55-78
- 15- Premkumar, G. (2003). A meta-analysis of research on information technology implementation in small business. *Journal of organizational computing and electronic commerce*, 13(2), 91-121.
- 16- Ramdani, B., Chevers, D., & Williams, D. A. (2013). SMEs' adoption of enterprise applications: A technology-organisation-environment model. *Journal of Small Business and Enterprise Development*, 20(4), 735-753.
- 17- Richards, J., Tibbits, H., & Campus, B. (2002). CPA Australia NSW branch workshop.
- 18- Salwani, M. I., Marthandan, G., Norzaidi, M. D., & Chong, S. C. (2009). E-commerce usage and business performance in the Malaysian tourism sector: empirical analysis. *Information Management & Computer Security*, 17(2), 166-185.
- 19- Steenkamp, L. P., & Nel, G. F. (2012). The adoption of XBRL in South Africa: an empirical study. *Electronic Library*, the, 30(3), 409-425.

20- Sohrabi, B., & Khanlari, A. (2008). Prerequisites for XBRL adoption. Study of Accounting and Auditing journal, p. 79-92